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CANADA:

The Land and the People

By PIERRE BERTON

AS 1955 reached its close, the people of Canada could look back with wonder and humility on the most remarkable ten-year period in their history. It was a decade to stir the national pride and quicken the common pulse, when the land disclosed unexpected bounties and the people reaped unexampled rewards—a decade of expansion and buoyancy that focused the eyes of the world on this enormous yet curiously empty country that sprawls across the northern half of North America.

Canada is less than 90 years old politically. Its people make up less than two-thirds of one per cent of the world's population. Yet for most of the decade, until it was edged out by Western Germany in 1954, it ranked third, after the United States and Great Britain, among the great trading nations. Though still partially undeveloped, it produces more nickel, platinum, newsprint and asbestos than any other country. It stands second among all nations as a producer of aluminum, gold, cobalt, zinc, wood pulp and hydroelectric power, third as a producer of silver and sawn lumber, and fourth as a producer of lead and wheat. The mineral finds of the last ten years have been greater than those of the entire previous century. In 1945, Canada imported all of its iron and virtually all of its oil. Today it is fully self-sufficient in the first and almost self-sufficient in the second. Within a decade it seems likely to become the world's largest exporter of iron and one of the top three or four producers in the world. In 1955 some geologists were predicting that its newly discovered oil fields might contain one of the four greatest concentrations of petroleum products in the world—perhaps the greatest. It has a higher potential supply of hydroelectric power than any nation except the U.S.S.R., its forests are exceeded only by those of the U.S.S.R. and tropical Brazil, and it produces enough wheat each year to feed almost 100,000,000 people. Canadians like to boast that next to the U.S. they enjoy the highest standard of living in the world.

These are some of the reasons why Canada has been in the news ever since the close of World War II. Most of the literate world knows that the country is enjoying an unprecedented economic boom and that many of its natural resources remain unexploited. Much less, however, is known of the land itself, or the people who live in it.

PIERRE BERTON is managing editor of *Maclean's*, Canada's popular fortnightly magazine. He was born in Whitehorse, Yukon Territory, where his father had gone during the gold rush of 1898. As city editor of the daily *Vancouver News-Herald*, feature writer for the *Vancouver Sun*, war correspondent in Korea, author of three books about Canada and more than 100 articles, his various assignments have taken him all over the country, especially the arctic and sub-arctic, and to Europe and South America.

"No one knows my country, neither the stranger nor its own sons." So wrote Bruce Hutchison, a leading Canadian journalist, in 1943. "My country is hidden in the dark and teeming brain of youth upon the eve of its manhood. My country has not found itself nor felt its power nor learned its true place. It is all visions and doubts, hopes and dreams. It is strength and weakness, despair and joy, and the wild confusions and restless strivings of a boy who has passed his boyhood but is not yet a man." (From *The Unknown Country* by Bruce Hutchison. Longmans, Green and Co., Toronto.)

The statement still applies and misconceptions still continue to exist about this new and rising nation that looks so simple and uncomplicated on the surface, but on closer examination turns out to be one of the world's most puzzling communities.

To most Europeans there is very little difference between Canadians and Americans.* To some Americans, Canadians seem very European with their Queen and prime minister. But the great fact of Canada is that it is neither American nor European and anyone who seeks to understand the Canadian people must grasp this essential truth. Canadians are the unique North Americans: their personality has been tempered in the twin forges of environment and history; they live in a country that has been called a political impossibility; they have been subjected to external pulls and pressures that exist nowhere else in the world; now through a long and painful effort of will they are moulding themselves and their land into a single cohesive community.

A coincidental set of circumstances, not the least of which was a fear of U.S. aggrandizement, caused the confederation in 1867 of a scattered group of British North American provinces. Considerably changed and expanded, these have become the Canada of today. Canada, then, is still a very young country. Two of its provinces, Alberta and Saskatchewan, only celebrated their 50th anniversary in 1955. They were created, half a century ago, out of an unpopulated wasteland of waving grass that has today become the breadbasket of the world and the home of almost 2,000,000 people. In those 50 years the whole nation has changed so that it is scarcely recognizable as that same land to which Sir Wilfrid Laurier referred prophetically when, as prime minister, he remarked that "the twentieth century shall be the century of Canada."

Since its confederation Canada has undergone three basic changes.

It has changed from a rural to an urban land. At the time of confederation, 81% of the population was rural. This figure has now dropped below 39%. The shift is still continuing: of the ten provinces, only Saskatchewan, the great agricultural

* The terms "America" and "Americans" are used here to distinguish the United States and its people from other North American countries and people.

CANADA: The Land and the People



CANADA: GEOLOGY AND POPULATION. Four of the principal geologic divisions are shown; the shield is of especial importance as the source of much of Canada's mineral wealth and as a natural barrier between east and west. The 15 cities shown contained 37% of the country's population according to the census of 1951

province, is still predominantly rural. Yet the nation's wheat production has increased sevenfold in the past half century.

It has changed from a country dominated by the production of primary products to a country dominated by the manufacture of secondary products. By 1955, 68.7% of its total production was going into manufacturing and construction.

It has changed from a colony, subservient politically to a European scheme, and culturally and economically to an American colossus, into an independent nation, able and ready to stand on its own feet.

The appointment of a Canadian-born governor general, the tacit dropping of the word "dominion" (which some Canadians consider subservient), the threat to build the St. Lawrence sea-way without U.S. help—all these are recent manifestations of a growing independence.

Two inevitable questions follow: How is it that a nation, wealthy in resources and larger in area than the U.S., still remains sparsely populated and partially undeveloped? And what is it that has made Canadians so different from other North Americans? It is with these two questions that this article is largely concerned.

THE LAND

On the map, Canada, like the U.S., looks rectangular. It extends almost 4,000 mi. from east to west and 2,800 mi. from

the southern border to the tip of the Arctic archipelago. Canada is the second largest country in the world, covering 3,845,774 sq. mi., exceeded in area only by the Soviet Union. But its shape is deceptive. Ninety per cent of the land is virtually unpopulated. Half the people live within 100 mi. of the U.S. border; 90% within 200 mi. of it. Politically Canada is another Chile—a slender strip 4,000 mi. long and 200 mi. thick, to which is appended a vast arctic and subarctic world of rock, tundra, muskeg, mountain, lake and forest. This political shape is one of the clues to an understanding of Canada, for so much that is distinctively Canadian—politics, economics and national character—depends upon it.

Climate and Structure

What is the reason for this singular concentration of population? European cities such as Oslo, Leningrad, Stockholm, Edinburgh and Copenhagen thrive in latitudes where no Canadian communities of appreciable size exist. Why shouldn't there be cities of comparable size in northern Canada?

One reason is climate. The chill Labrador current sweeps down the Atlantic coastline from the ice-choked Arctic and as a result subarctic conditions are to be found on the latitude

CANADA: The Land and the People

of London, Eng. The city of St. John's, Nfld., is actually farther south than Paris, Fr., but spring reaches it no sooner than it reaches the Mackenzie valley in the Northwest Territories. The huge expanse of Hudson bay, gnawing into the heart of the continent, acts as an enormous thermostat to keep the summers bleak; the winds that sweep across it from the Arctic and from the Greenland ice cap add to the bleakness. As a result, the great Arctic cold desert, the tundra, reaches down almost as far south as the latitude of Copenhagen. The climate of the interior plains of Canada is continental. The mercury can rise above 100° F., even in the north, and drop almost to -70° F. as far south as Winnipeg. The mean temperature of the settled plains in January is about -5° F.; in July it is 80° F.

The structure of the land is the second reason for Canada's sparse population. Two great barriers to development exist: the Cordilleran mountain ranges on the west and the Canadian shield on the east. Most of the province of British Columbia is choked by an ocean of mountains that rise to a height of 12,000 ft., giving the interior an alpine climate and effectively diking the flow of population. More significant is the Canadian shield, an enormous armoured horseshoe of muskeg-covered rock that defies settlement. A shield is a rigid area of resistance and there are several in the world, but the Canadian shield is the one best known to geologists. It covers half the nation and is the greatest hindrance to frontier development. It covers almost all of Quebec and Labrador, sweeps down to the edges of the Great Lakes, and curves back northwest through Manitoba and northern Saskatchewan to the tip of the Mackenzie river valley and the rim of the Arctic ocean. Some of its rocks go back 2,000,000,000 yr. in time, before life itself, and the succeeding pressures of the ages have transformed them out of all recognition. They are the stubs of ancient mountains, long since

eroded down to a peneplain, the hollows filled with fresh water, so that there are more lakes on the shield than in all the rest of the world put together.

Across most of the shield's rocky expanse agriculture is impossible, for the glaciers of the Pleistocene epoch stripped it clear of topsoil 1,000,000 yr. ago. The ice upset the drainage pattern as well, so that there are no great navigable rivers on the shield, and this, too, is a bar to settlement. Road and railroad construction over this granite sea is almost prohibitively expensive. When the Canadian Pacific railway was blasted through the Pre-Cambrian cliffland bordering Lake Superior, so much explosive was required that dynamite factories had to be built on the spot.

Before a single ton of iron ore could be brought from the Labrador interior, an outlay of \$235,000,000 was required, the greater portion going into the construction of a 360-mi. railway across the shield.

Yet the shield is largely responsible for Canada's mining boom. Cursed as a wasteland a few decades ago, it is now hailed as a treasure chest. All of Canada's uranium, nickel, titanium, platinum and cobalt comes from the shield, together with 95% of its copper, 92% of its gold, 85% of its iron, 75% of its pulpwood and 56% of its silver. (The famous Mesabi iron range in the U.S. is a spur of the shield.)

The North-South Pull

Looking again at the map, the stranger may well ask: "Why Canada at all?" For the continental grain runs generally north and south while the border runs east and west, cutting arbitrarily across the interior plains and the Cordilleran spine to the Pacific. In Canada, politics and geography are at war. A Nova Scotian is more likely to go to New England for a holi-

DOG TEAM near Churchill, Man., an arctic plain in the latitude of Stockholm, Swed.





TORONTO, ONT., AT NIGHT

day, where the white Gothic churches and little fishing villages are more familiar to him than the Norman spires and strip farms of neighbouring Quebec. A tourist from Buffalo, N.Y., will find himself completely at home in Toronto, Ont., with its skyscrapers, cocktail bars and department stores. High school graduating classes from North Dakota and Montana small towns often go on two-day excursions to Regina, Sask., the nearest large city, which looks very like any small city in their home states. British Columbians holiday in California, where the climate, the architecture, the seacoast and the casual dress are somehow more familiar than is eastern Canada. The north-south pull shows itself in other ways, too: in defense, for example, which is now continental; and in trade. Canada has, for instance, the second largest coal reserves in the world. But the coal is found largely in Alberta and Nova Scotia, while the bulk of industry is concentrated in central Canada. For these reasons it is cheaper for Ontario to import its coal from the neighbouring states of the United States, than to haul it for thousands of miles from Canadian sources. Alberta's enormous coal deposits remain largely unmined.

The East-West Inlet

Why then does Canada exist as a separate entity? The answers are largely political but there are some geographical clues as well. The chief one is the great St. Lawrence-Great Lakes water highway that knifes laterally for more than 2,000 mi. into the heart of the continent. This was the ancient fur trade route into the interior. It has its continuation in the long valley of the Saskatchewan river that cuts across the plains from the shores of Hudson bay to the barrier of the Rockies, and in the notches of the mountains themselves—the three passes through which the transcontinental railways go.

Without the presence of this great waterway, it is doubtful whether Canada could have developed as a separate nation. The country had its genesis in the St. Lawrence valley which has now become its industrial core. Canada's past lies here. The savage struggles with the Iroquois, the early, awkward revolts against colonialism, the first faint stirrings of nationhood, all took place along the St. Lawrence and the lakes.

Canada's future lies here, too, for the St. Lawrence seaway, which is expected to be completed by 1960, will turn the lake and river cities into seaports. The chief construction job involves the deepening of the International rapids section of the river above Montreal, Que., and the harnessing of its electric potential. The elimination of this shipping bottleneck will make the Great Lakes accessible to all but 15% of the world's ocean shipping. The great advantage, however, will not be in letting ocean boats into the continental interior, but in allowing lake boats to get out. In addition, the seaway will:

- (1) carry an estimated 50,000,000 tons of U.S. and Canadian freight annually—five times as much as is carried now and more than the Panama and Suez canals combined;

- (2) provide an additional 1,100,000 h.p. of cheap electric power to the expanding industries of central Canada, and an equal amount to adjacent U.S. industries;

- (3) save an estimated \$200,000,000 in the continent's annual steel bill by bringing low-cost Labrador iron ore to the smelter towns south of Lake Erie (iron ore will be the biggest single cargo carried and is the key to the seaway);

- (4) save Canadian grain farmers an estimated \$20,000,000 annually, on the basis of present crops, by dropping freight rates between the lakehead and Montreal.

But, though the seaway will accentuate the lateral flow of trade that Canada has been trying to foster for almost a century, it cannot hope to compete with the continental barriers that carve up the country into separate geographical units, each isolated by hundreds of miles of wilderness. Canada has been properly compared with an archipelago, a series of islands in which the railways do the work of ocean shipping lanes. This is one of the hard facts of the Canadian economy and one of the great influences on the national character.

The main geographical regions are:

- (1) the Atlantic seaboard, consisting of Newfoundland, Prince Edward Island, Nova Scotia, New Brunswick and the Gaspé peninsula of Quebec, a fishing-farming-lumbering community, surrounded almost entirely by the sea and cut off from central Canada by a 24-hr. train journey through the northern ribs of the Appalachian mountains;

- (2) the St. Lawrence lowlands of southern Quebec and

Ontario, running from a point west of Quebec city to the tip of the Niagara peninsula, a thickly populated hive where three-quarters of Canada's manufacturing is located;

(3) the western plains, separated from the St. Lawrence lowlands by 1,000 mi. of Pre-Cambrian wilderness, and encompassing the southern and settled sections of Manitoba, Saskatchewan and Alberta. Traditionally, the plains economy has been tied almost solely to wheat but recent oil discoveries are bringing rapid changes;

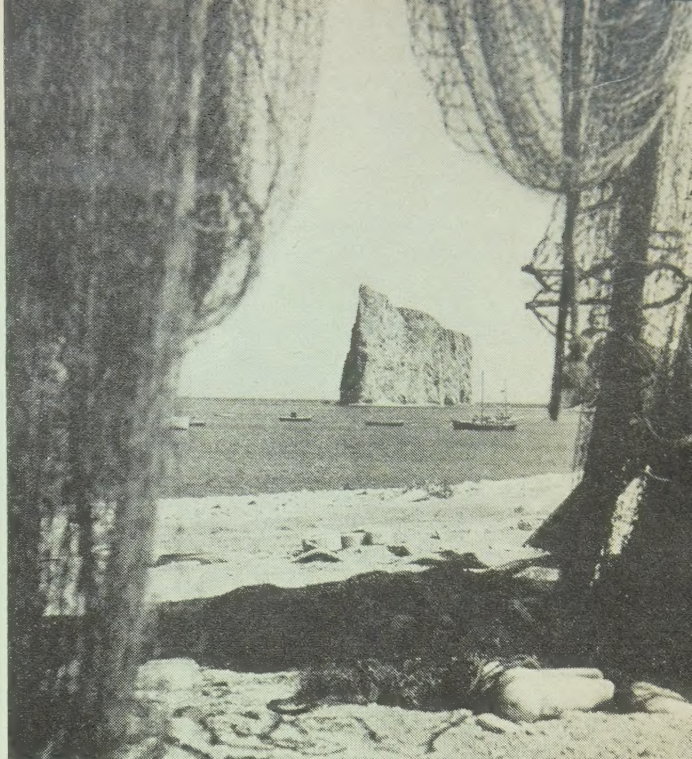
(4) the Pacific coast of British Columbia, a lumbering-fishing-manufacturing community, separated from the plains by a day's train travel through the barrier of the Cordilleran mountain ranges; and

(5) the hinterland, a vast arctic, subarctic and mountain area, comprising the Canadian shield, the Mackenzie and Yukon valleys, the northern extensions of the Cordilleras and the Arctic archipelago. Virtually unpopulated, its main resources are minerals, pulpwood and hydroelectric power, much of it undeveloped.

The Atlantic Seaboard

The corrugated rows of the low Appalachian mountains underline the isolation of the Atlantic provinces. This area of hard crystalline rock, heavily glaciated and eroded to a level of 3,000 or 4,000 ft., makes transportation so costly that one of the two major railways linking the region with central Canada shuns it by travelling through the U.S. All the same, the rounded hills and tattered coastline have given this Atlantic land a rugged beauty that is one of its chief attractions. The Gaspé, with its great 4,000,000-ton rock of Percé, punctured by an enormous needle's eye; the breath-taking Cabot trail that encircles the lovely island of Cape Breton; the picturesque and paintable fishing harbours such as Peggy's Cove, N.S.—all these have become tourist meccas. The deep-sea tuna fishing

TRAWLER FISHING off the Grand Bank, Nfd.



PERCÉ ROCK, Gaspé peninsula, Quebec

off Wedgeport, N.S., and such salmon-stocked rivers as the Restigouche and Miramichi, draw wealthy sportsmen from all over the world. By contrast, the verdant crescent of Prince Edward Island lies in the gulf like a green jewel, "the fairest land that may possibly be seen" as Jacques Cartier, the discoverer of the St. Lawrence, called it more than four centuries ago.

The isolation of the Atlantic provinces from the core of the political unit has helped accentuate a series of distressing problems that have made them the great "have-not" region of Canada. By the time of confederation, the British colonies of Nova Scotia and New Brunswick had reached a golden age of prosperity based on the fruit of forest and sea. The first was a vast fishing port, drawing its wealth from exports of salt cod to the protected markets of the British West Indies. The second was a great lumber camp, building fleets of wooden sailing ships and providing ready-cut cargoes for them. This delicately balanced economy could not long survive a changing world. When Britain abandoned its closed mercantile system for free trade, it opened the West Indies to the cod fishermen of New England, seriously disturbing Nova Scotia's prosperity. At the same time steel and steam worked a revolution in shipping. As wooden sailing ships had been worth more than all other exports put together, New Brunswick suffered. Confederation with Canada failed to give the provinces new markets, for they were too far away: Nova Scotia's coal couldn't compete with coal from Pennsylvania, for example, and the accessible markets for manufactured goods, in neighbouring New England, were barred by tariff walls. These are some of the reasons why the four Atlantic provinces (Newfoundland joined Canada in 1948) have more than 11% of the population of Canada but share in only 4% of the manufacturing and enjoy only 7% of the total personal income of the country.

Generally speaking, these provinces have benefited least from the postwar Canadian boom. But there are some signs that their economic position may improve. The most promising indicators are the new mineral discoveries of New Brunswick and Newfoundland. Three spectacular base metal finds have been made in New Brunswick since 1952, with a proved tonnage of 53,000,000. Mining operations and related chemical-metal industries which could result from these new strikes would help



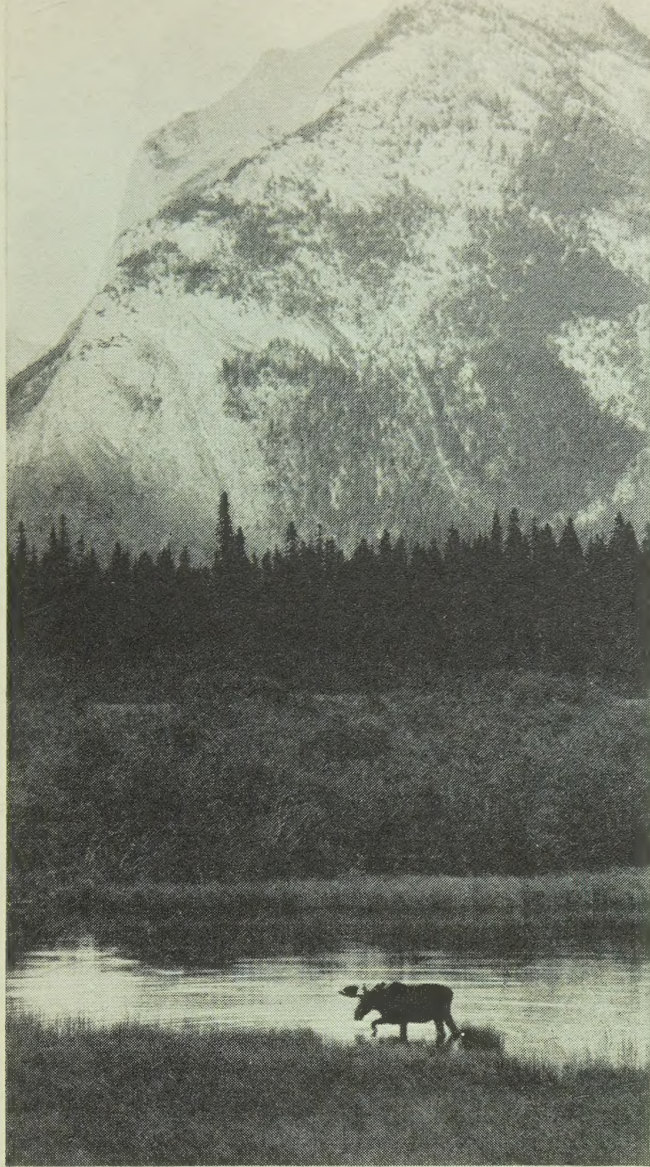
THE LAND, a series of photographs showing the diversity of the Canadian landscape, from the rocky coast of the east, across the broad prairies of the west to the rugged mountains along the Pacific coast; from the barren north to the fertile south

Above: Great Lakes freighter in Toronto, Ont., harbour at dusk

Right: Aerial view of the Mackenzie river delta in the far northwest

Below: The trans-Canada highway cutting through the flat wheat prairies of Saskatchewan





Above: Moose in a stream beneath a mountainside near Banff, Alta.

Below: Waterfall of a glacial river in the Purcell mountain range near Golden, B.C.



Above: Skiing in the Laurentian mountains near Valcartier, Que.

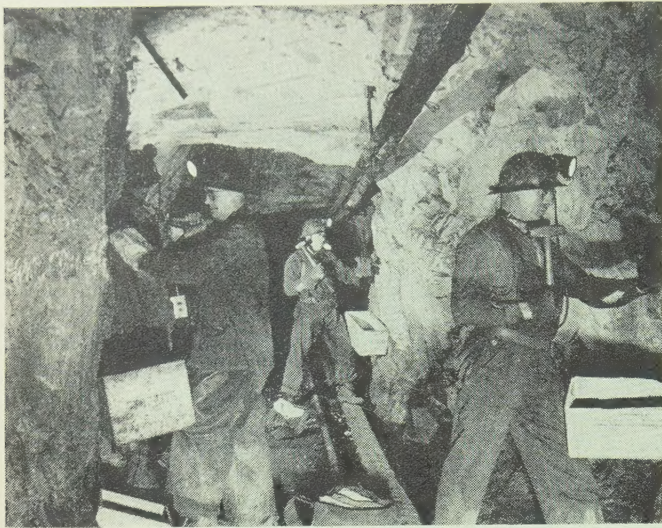
Below: Ship anchored at Gaultois on the south coast of Newfoundland



Below: Farmer and his son plowing on a slope above the St. Lawrence river valley at Baie Saint Paul, Que.



CANADA: The Land and the People



CHIPPING ORE SAMPLES at the copper and gold mines of Noranda, Quebec

diversify the province's economy, still based largely on lumber, whose products in 1954 totalled more than half the gross value of all major industries. Newfoundland stands to benefit chiefly from the great iron ore development in Labrador, which forms part of the province. In addition, a bold program has been launched to expand and modernize existing iron and pulp and paper developments on Newfoundland island proper, to assist European manufacturers to start new industries and to overhaul the fishing industry. The latter program, involving radical changes in fish processing, may change the lives of many Newfoundlanders, even to the extent of replacing their tiny villages by larger industrial communities.

The St. Lawrence Lowlands

One of Canada's great problems is the lack of economic balance between its outlying regions and its industrial heartland. Squeezed between the bony ridges of the Appalachians on the southeast and the hard crust of the shield on the northwest is a 600-mi. strip of low country where the wealth of Canada is concentrated. These lowlands consist of the St. Lawrence valley and the Niagara peninsula (a fertile wedge of land bounded on three sides by the lakes and on the north by the shield). It is historic country. Near one end, in the huge industrial city of Montreal, stands the statue of Samuel de Champlain, French Canada's greatest explorer, who first invaded this favoured land. At the other end, not far from Niagara falls, unnumbered honeymooners have stared up at the effigy of General Isaac Brock, whose defense of Queenston heights in 1812 turned the tide of the last American advance into Canada. In between, among the lakes and meadows of the old Indian domain of Huronia, hundreds of thousands of summer campers have paused at the shrine that commemorates the martyrdom of two Jesuit priests among the Iroquois.

Rich in story, central Canada is richer in material wealth. The nation's industrial development began closer to its geographical centre than did that of the U.S., partly because of the water highway, partly because of Niagara falls and its hydroelectric power, partly because of the mineral resources of the nearby shield. The greatest concentration of population is in this area. Six of the country's ten largest cities are jammed into the narrow St. Lawrence strip. The western section, between Oshawa, Ont., and Niagara falls, has a concentration of 185 people to the square mile—equal to that of some of the eastern states of the United States.

The economic life of the strip revolves around two urban centres: Toronto and Montreal. Both have flourished for quite

different reasons. Montreal, the older city, depends on a transcontinental economy. It is a great seaport, the anchor point for the transcontinental railways, the headquarters of the banks and financial institutions, and a centre for heavy industry such as the manufacture of rolling stock, cement and steel, the refining of copper and the milling of flour. Toronto's wealth springs directly from the minerals of the shield. Most Canadian mining corporations have their headquarters in the city, which has become one of the world's leading financial centres.

Ontario's industry is the more diversified: half of Quebec's total output comes from Montreal; two-thirds of Ontario's comes from smaller centres outside Toronto. Factories are springing up so quickly in the Niagara fruit belt that apple, cherry and peach orchards are rapidly being destroyed. Indeed, the industrial expansion of central Canada has transformed both provinces, and its implications are having far-reaching effects on the social and political life of the nation.

The Western Plains

One of the world's principal granaries lies between the Canadian shield on the east and the continental spine on the west. Ten per cent of the world's wheat comes from there. Although only one-fifth of Manitoba, Saskatchewan and Alberta is taken up by the plains (the rest is timber, muskeg, rock, lake and mountain), they are known throughout Canada as the prairie provinces, for the prairies have sustained them. The land stretches off to the horizon, green in the spring, golden in the fall, dead white in the winter, flat and unending under the great bowl of the sky, cut geometrically by dusty roads and speckled with tiny pinpoints of settlement—often no more than a huddle of frame buildings, a few trees and a wind pump. Only three prairie cities have a population of more than 100,000, but there are scores of smaller communities strung along the railway lines like beads on a string. In the 24 hr. that it takes to cross these prairies by train, the traveller is seldom far from the sight of waving wheat.

On the eastern fringes of the plains lie the gnarled rocks, stunted timber and sphagnum mosses of the shield. At the western end the brown foothills of the Alberta ranch country rise up toward the white-plumed Rockies with their twin tourist playgrounds of Banff and Jasper. In between, only a few wooded valleys and hills break the flat monotony. Of these the sinuous, purple-shadowed valley of the Qu'Appelle, angling across half the province of Saskatchewan, is the most beautiful, and the Cypress hills, on the southern border of Alberta and Saskatchewan, the most startling, with their scorpions, vipers and yucca grass.

The Canadian prairies form the bottom of the ancient seas that invaded the continent in prehistoric times. Over these old sea bottoms has been laid a blanket of rich alluvial silt, pushed down from the north by the ice caps of the glacial ages. The silt stores moisture under the snow all winter. The continental climate keeps the plains bathed in sunshine all summer. As a result of these ideal conditions, Canada produces the world's finest hard wheat, and because of mechanization, produces it with surprisingly little man power. Many farmers now live in town houses and move to the wheat fields only for the summer. Saskatchewan, the great wheat province, has been losing population steadily since 1931, although the yield continues to increase.

Traditionally, wheat has been the chief product of the prairies. The annual yield varies from a minimum of 250,000,000 bu. to a maximum of 688,000,000 bu. (a record established in 1952). An average crop is 350,000,000 bu. Because the plains export two-thirds of their wheat the area is more sensitive to the shrinking of foreign markets than any other part of Canada.

CANADA: The Land and the People

The breakdown of the international trading machine in the depression of the 1930s wreaked havoc on the prairies—a havoc made immeasurably worse by the coincidence of history's worst drought. Because it is essentially a one-crop province, Saskatchewan is the most sensitive of all to external forces. Even as late as 1939 one-third of its farmers were on relief. In the two other provinces there has been more diversification. Manitoba is, in some ways, an extension of central Canada, with the large manufacturing and rail centre of Winnipeg and the resources of the Canadian shield. Alberta has always had a healthy ranching and mixed farming income. It also has 47,800,000,000 tons of coal reserves, but the production of this fuel has declined because of the distance from the markets.

This distance has helped make the prairies the other "have-not" region of Canada. In boom times they have enjoyed astonishing prosperity; in bad times the wealthier sections have had to aid them. But now, chiefly because of the oil discoveries since World War II, the prairie economy is undergoing a remarkable transformation. A hint of this came in 1954 when the plains suffered the worst wheat crop in 17 years, coupled with a drop in foreign demands and a lowering in prices. In prewar times this blow would have been little short of catastrophic. In 1954 it resulted only in a minor recession.

Ninety per cent of Canada's oil comes from Alberta. But even in Saskatchewan, which produces only 7%, oil is bringing about a marked change in the economy. In this province of 100,000 farms, petroleum products have recently surpassed wheat flour as the leading manufacture. And although four-fifths of the province's farm income still comes from agriculture, the oil production is increasing rapidly: annual production, which was 2,800,000 bbl. in 1953, jumped to 5,400,000 bbl. in 1954 and was expected to reach 17,400,000 bbl. by 1957. In addition, the province stands to benefit from the uranium discoveries on Athabasca lake, where in late 1955 several large mines were about to come into production. The output was expected to reach an annual \$40,000,000 by 1957, representing 40% of the total Canadian uranium production.

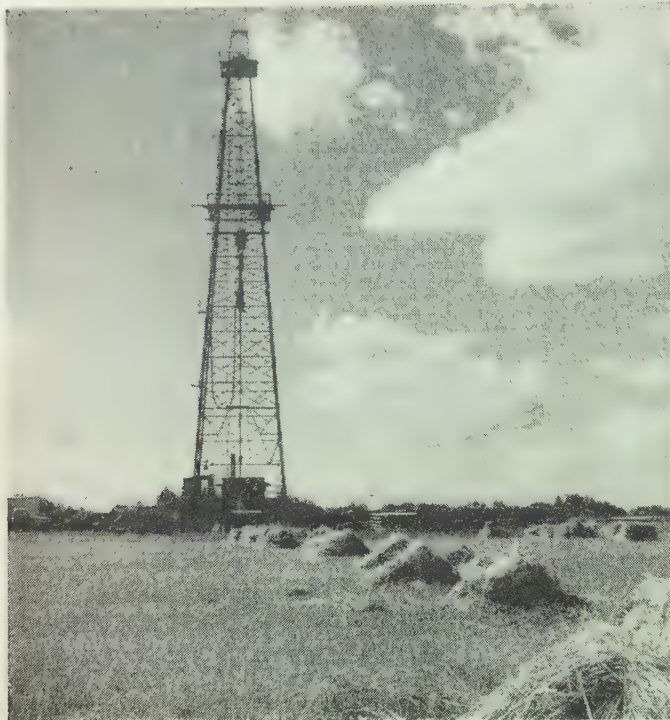
These changes are minor compared with the oil development in neighbouring Alberta, whose Leduc field, discovered in 1947, touched off a tremendous exploration and development program. In 1955 oil companies were spending more than \$1,000,000 a day in a search for oil, and the value of construction directly resulting from the new industry exceeded \$300,000,000.

Twenty years ago, Alberta was considered the poorest investment risk in the British Commonwealth. Today it is the only technically debt-free province in Canada. (At the end of 1954 the provincial debt totalled \$91,000,000; cash reserves \$235,000,000.) This is because the province has retained the mineral rights to most of the oil country, so that the public benefits from oil royalties, rather than private individuals. The gross value of Alberta production has quadrupled since 1939 and the income from oil is now two-fifths of the income from farm products. All this has been accomplished in less than a decade. In 1947 Alberta had 500,000,000 bbl. of proved oil reserves. By 1954 the most conservative figure set the reserves at 2,000,000,000 bbl. The longest pipeline in the world connects the province to the markets of central Canada; another links it to the Pacific. By 1953 oil had replaced gold as the most important mineral in Canada and the nation was ranking seventh among the world's oil producing countries.

The oil industry is still in its infancy. It took the U.S. 42 years to develop its production to Canada's present level. Geologists believe that Canada can eventually expect to produce



CANADA: The Land and the People



OIL DERRICK in a wheat field near Devon, Alta., well 17 of the Leduc oil fields

about half as much oil as its neighbour. The recent discovery of a new field at Pembina, Alta., has brought forth some rosy predictions. The Pembina reserves are not yet calculated but the field is thought to be larger than the two other major fields combined. It was predicted in 1955 that Canadian oil production would more than double in five years to reach 1,000,000 bbl. a day.

None of this takes into account the presence of the strange Athabasca tar sands in northern Alberta. These sands cover 30,000 sq.mi., and the estimates of their oil reserves run from 100,000,000,000 bbl. (45 times that of Canada's present proved liquid reserves) to 300,000,000,000, or almost double the entire liquid reserves of the world. It is believed that this represents the largest remaining source of crude oil—enough to supply the world for a century. But each globule of oil is wrapped around a grain of sand and thus far no economical separation process has been devised. The tar sands remain an undeveloped resource that could some day make Canada the world's greatest oil producer.

The Pacific Coast

Tucked away behind three of the continent's most spectacular mountain ranges lies a temperate corner of civilization caressed by the tepid waters of the Japanese current and protected from Pacific gales by the shielding bulk of Vancouver Island. The greater part of the population of British Columbia, Canada's third largest province, lives there, within 30 mi. of the mouth of the Fraser river. One-third of the people live in the area of Vancouver alone, making it Canada's third largest city. The remainder are on the big island, or scattered thinly through the slender, fertile valleys wedged between the mountain ranges that cover 90% of the province.

The three ranges run diagonally up the length of British Columbia. On the east are the sedimentary crags of the Rockies, world famous for their scenic beauty and luxurious tourist resorts. In the centre lie the Columbian mountains—the Selkirks and the Monashees and farther north the Cariboos and Cassiars. This is an older range, 200 mi. wide, sculptured from

the ancient molten masses that welled from the bowels of the earth. Between it and the Rockies lies the Rocky Mountain Trench, an enormous natural ditch 1,000 mi. long. To the west, so close to the ocean that they often drop sheer to the water's edge, are the granite peaks of the Coastal mountains, also 200 mi. wide and split by fiords dug out ages ago by the glaciers squeezing toward the sea. They have made British Columbia a tourist paradise and given Vancouver one of the loveliest settings on the continent.

British Columbia's structure has made it a province of extremes. Roses bloom on Christmas day in Victoria, which occupies the same climatic zone as New Mexico. But in the mountainous interior, winter temperatures sometimes drop to -70° F. Zeballos, on the west coast of Vancouver Island, has a tropical rainfall of 200 in. a year. But in the arid interior, near Kamloops, where cactus, rattlesnakes and tumbleweed thrive, the annual precipitation is less than 10 in.

The mountains, forest and sea feed the populated corner of the province, making it the wealthiest and most productive section of Canada on a per capita basis. But, although it has enjoyed the greatest population increase of any province (42% in the census decade of 1941-51), it is still largely undeveloped. British Columbia stands third as a Canadian manufacturing province, but lags far behind Ontario and Quebec, producing only 7.8% of the total for the country. It also stands third in mineral production (13%), thanks to the coal of the Rockies, the lead and zinc of the Selkirks, and the gold of the Coastal mountains. The great Sullivan mine, operated by the Consolidated Mining and Smelting company in the Kootenay district, is the largest lead-zinc producer in the world and these metals make up half of the annual \$160,000,000 general output. British Columbia's commercial fisheries, chiefly salmon and halibut, earn the province \$60,000,000 annually and sport fishing is one of its chief tourist attractions. The mountains have given it the second largest hydroelectric potential in Canada, next to Quebec, and most of the power is still unexploited. The most spectacular new project has been that of the Aluminum Company of Canada Limited at Kitimat on the northern coast. By 1970 the settlement, which did not exist in 1953, is expected to reach a population of 50,000. A second power development, harnessing the waters of the upper Yukon, may see another new town of perhaps 15,000 persons north of Kitimat at the head of Taku inlet, where a \$270,000,000 metallurgical industry is envisaged.

But 60% of British Columbia's income still comes from timber. Ninety per cent of the province is suitable for little else. It is these dripping rain forests, thick and almost impenetrable, with their tall stands of Douglas fir, Sitka spruce, red cedar and hemlock, so beautifully captured on canvas by the province's great woman painter, Emily Carr, that have given the Pacific coast its character. Nowhere else in Canada is the growth so lush, and to understand this the tourist has only to drive along the scenic Malahat highway of Vancouver Island near Victoria or plunge deep into the dark heart of Stanley park, a 1,000-ac. stand of original timber within rifle shot of the Vancouver business area.

Only recently has British Columbia realized that its timber can be a vanishing resource. The province is so far from world markets that any drop in quality is likely to bring a slump in sales and profits. Twenty million of its 75,000,000 acres have been logged out or burned over without reforestation. A province-wide conservation plan is now in full swing so that the trees will be harvested on a continuing basis, like the prairie wheat.



CANADA: The Land and the People

The Hinterland

A unique feature of Canada is that its most settled areas are never more than a few hours' drive from the primeval forest or the forlorn frontier. A man can stand on Dufferin terrace above ancient Quebec, or among the Gothic towers of Parliament hill, Ottawa, or on the panorama roof of the Hotel Vancouver and, in Robert W. Service's words, "gaze on naked grandeur." Here is the secret of the country's wealth: the mines of the shield that boomed Toronto, the forests of British Columbia that built Vancouver, the swift rivers of Quebec that enriched Montreal. Here too lies the clue to the small population. In spite of its leagues of golden wheat, Canada contains only half as much arable acreage as France. The untillable hinterland occupies some four-fifths of the nation.

Only the fringe of the hinterland has been developed. The mines of the shield are almost all around its edges. The north remains an unknown quantity, large areas of it scarcely travelled by white men. Much of it will probably stay that way for years to come.

The north is a country of contrasts and extremes. Here, above the 60th parallel of latitude, the temperature can go as high as 103° F., as it has at Fort Smith, N.W. Terr., on the Slave river, or as low as -83° F., as it has at Snag, Yukon, on the Alaska highway. The matted shrubbery of the Klondike is almost tropical in the summer, but the century-old birch trees of the tundra are only a few inches tall. The lake-speckled rockland of the Pre-Cambrian wilderness, the twisted Torngat mountains of Labrador, the bald whalebacks of the Arctic islands, the great web of the Mackenzie delta, the green serpentine lakes of the southern Yukon—all these are part of the hinterland, yet each belongs to a separate world. The conti-

nent's most massive mountains, the Mackenzies, and its tallest mountains, the St. Elias range, and its deepest canyons, on the South Nahanni river, all form part of the Canadian north. This is breath-taking tourist country, but most of it is beyond the finances and energies of the average sight-seer. One of the great scenic drives in North America is the 1,523-mi. motor trip northwest along the Alaska highway from Dawson Creek, B.C., to Fairbanks, Alsk. It crosses 5 mountain ranges, 129 rivers and 8,000 mountain streams. Other northern attractions include the steamboat journey down the Yukon river from Whitehorse to Dawson City and the fishing in northern Saskatchewan where the lake trout run 30 lb. in size. But transportation is the great problem of the hinterland and most visitors are content to visit the southern reaches of the shield, the protected wilderness parks of Ontario, Algonquin, Temagami and Quetico, or the famous ski resorts of the Gatineau and Laurentian hills of Quebec.

There is neither railway nor paved road in the entire Northwest Territories of Canada. North of the 60th parallel goods must be carried by air, or, during the short summer season, by Mackenzie river tugboat. Mineral finds must be spectacular to be profitable. Vast deposits of copper are known to exist along the Arctic coast but they are too far from the markets. One of the world's great lead-zinc deposits lies along the southern shore of Great Slave lake, but, although this has been known for half a century, it has yet to be exploited. The various base metals of the southern Yukon have hardly been charted, let alone mined. Oil is being discovered in increasingly large quantities along the Mackenzie and Liard basins. During World War II there were 61 producing wells near Fort Norman supplying the Canol pipeline that was built at huge expense through the Mackenzie mountains. But peacetime oil production is too costly in the north. As of 1955, Norman Wells was down to one-fifth

MONTREAL, QUE., from a nearby hillside. The wilderness of the hinterland, occupying four-fifths of Canada, is never far from the cities



CANADA: The Land and the People



PADDLE-WHEEL STEAMBOAT in the Yukon

of its former production, supplying only the immediate area. Similarly, the arable land of these two valleys—at least 1,000,000 ac.—has hardly been touched because export costs make large-scale farming prohibitive.

The main resources of the hinterland have been tapped along the lines of the railways and in those sections of the interior where minerals, such as gold and uranium, are extraordinarily rich or easily milled and transported. The storied Klondike has produced upward of \$300,000,000 in placer gold since 1896. It still yields between \$2,000,000 and \$3,000,000 a year. The biggest single source of Canadian silver is nearby, at Keno, Yukon, also a large producer of lead and zinc. Yellowknife, N.W. Terr., on Great Slave lake, the scene of two gold booms in 1938 and 1944-45, has three operating mines including Giant Yellowknife, Canada's third largest. But most gold mining takes place along the railway lines in the Pre-Cambrian hinterland of Quebec and Ontario. The Quebec section of the shield also contains the largest single body of titanium ore in the world.

Four other hinterland resources, iron, uranium, hydroelectric power and pulpwood, have contributed heavily to Canada's postwar prosperity.

Of these pulpwood production is by far the greatest. The gaunt trees that rise from the rocks and muskegs of the shield have given Canada its greatest industry. Pulp and paper production runs to \$1,200,000,000 a year, accounts for 5% of the gross national product, and makes up one-quarter of all exports. The larger part of it is concentrated along the Quebec frontier. It represents that province's leading industry, providing jobs for 42,000 workers. Sixty-five per cent of the wood pulp goes into newsprint to make Canada the world's largest newsprint producer.

The future of the hinterland lies in the development of hydroelectric power. The swift rapids that link the ragged lakes, the spectacular mountain torrents, and the enormous northern rivers are capable of producing 66,000,000 h.p. Next to Norway, Canadians use more electric power per capita than people of any other nation, and they get it cheaper than any other. And although Canada produces more power than any country except the U.S., only one-fifth of the total potential has been developed. However, the nation's installed capacity has been increasing at the rate of 885,000 h.p. a year (1,758,450 h.p. in 1954 alone). Outside of the St. Lawrence seaway development and Niagara falls, where a new generating station was producing an

additional 1,260,000 h.p., these were the major hydro developments of the hinterland as of 1955:

(1) In the Yukon, Northwest Power Industries Ltd. was surveying the potential of the upper Yukon river. Initial plans called for a production of 880,000 h.p. Ultimately as much as 4,300,000 h.p. might be developed by reversing the flow of the famous river and spilling it back over the mountains through tunnels to penstocks near the Pacific coast.

(2) In Labrador, the British-Newfoundland Development company, which had leased a vast acreage for timber, mineral and hydro exploration, was surveying the potential of the Hamilton river, whose Grand falls, almost twice the height of Niagara, were believed capable of producing 3,500,000 h.p.

(3) In northern British Columbia, at Kitimat, the Aluminum Company of Canada had developed 450,000 h.p. by tunneling through the Coastal mountains and tapping the river and lake storage of the interior plateau. Ultimately the company expected to develop 2,000,000 h.p. in this way.

(4) In Quebec, the harnessing of the Bersimis river was expected to produce 450,000 h.p. by 1956 and 1,200,000 h.p. ultimately.

The two most newsworthy postwar developments on the shield have been those of iron and uranium. In 1953, Canada displaced the U.S. as the world's second largest producer of uranium. By 1956 the government expects uranium production to be eight times greater than it was in 1945; by 1957, 12 times greater. By then, the gross annual output should reach \$100,000,000. One mine alone, Algom Uranium, at Blind River, Ont., the scene of the most recent strike, is expected to turn out half of all the uranium produced. The other main mines are at Athabasca lake in northern Saskatchewan and at Great Bear lake on the Arctic circle, the original mine that helped make possible the first atomic bomb.

The postwar iron developments at Steep Rock, Ont., near the northern shore of Lake Superior, and along the Labrador iron trough, are expected to greatly affect the Canadian economy in the coming decades. Canada produced practically no iron before World War II. By the end of 1956, total annual production is expected to reach nearly 18,000,000 tons, and between 30,000,000 and 40,000,000 tons by 1965. This would

TUNNEL THROUGH PORTAL MOUNTAIN, Kitimat, B.C., a project of the Aluminum Company of Canada which would eventually produce 2,000,000 h.p. of hydroelectric energy





SPIRAL TUNNEL of the Canadian Pacific railway near Field, B.C.

rank Canada among the first three or four iron producers in the world and probably make the country the largest iron exporter.

The Railways

The peculiarities of Canadian geography make transportation an integral part of the national fabric. Canada has been called, with some truth, a railway in search of a state, and as one political scientist, Alexander Brady, has pointed out, the unity of the country has depended on railway lines no less than the Roman empire depended on roads. Canada has more miles of railroad per capita than any other country in the world, and its largest railroad, the government-owned Canadian National railways, is the nation's largest corporation and greatest single employer.

To a large extent, the story of Canada over the past century has been a story of railway construction. The country's strengths as well as its weaknesses both spring from this same source. In Canada, railway builders, such as the flamboyant Sir William Van Horne, the U.S.-born architect of the Canadian Pacific railway, have become history-book figures. On the prairies, the railway station with its chalet roof has become as distinctive a piece of architecture as the grain elevator. (The two are invariably found together.) More than half the population lives within sound of a train whistle and this haunting cry, drifting across the land, is a fundamental piece of Canadian music. The two great transcontinental railways enter deeply into the life of the country, for they operate steamships, air lines, freight services, trucks, telegraph stations, real estate firms, meat packing plants, fruit farms, mines, luxury resorts and the best hotels in the nation, so that in towns as small as Saskatoon, Sask., it is possible to order such delicacies as *galantine de capon* from a Lausanne-trained chef.

It was the railways that helped bring about the confederation, and it was the railways that stitched the new nation together. The promise of a railway to the Atlantic coast—the Intercolonial—helped bring the maritime provinces into the union. The promise of a railway to the Pacific—the Canadian

Pacific—secured British Columbia and kept the west from slipping into U.S. hands.

It was only through the building of these and other railways that the nation's resources were disclosed. In 1876, workers on the Intercolonial discovered asbestos on the south shore of the St. Lawrence. Canada became the world's top producer of asbestos. In 1883, workers on the Canadian Pacific discovered nickel on the north shore of Lake Superior, and Canada became the world's top nickel producer. In 1903, workers on the present Ontario Northland railway uncovered the world's richest silver vein at Cobalt and touched off a mining boom that has never been equalled. In the decade that followed, Cobalt produced \$1,000,000,000 worth of silver. The silver mines sparked new discoveries all along the railroad line, including the immensely rich gold camps of Porcupine and Kirkland lake. These provided the capital and experience for all future developments in northern Quebec and Ontario, along the edge of the shield from Labrador to Great Bear lake. The iron mines of Labrador were financed and developed by the Timmins family, whose fortune was made in the Porcupine gold camp 40 years before. The first uranium mine on Great Bear lake was discovered by Gilbert LaBine, who gained his first mining experience in Cobalt.

It was the railways that opened the plains and, in a single decade, 1901-11, settled them with more than a million European immigrants. In that period of unprecedented prosperity, optimism ran so high that the railway builders overextended themselves and left the country a legacy of debt with which it is still saddled. Between 1901 and 1914 railway mileage in Canada jumped from 18,000 to 30,000 mi. By then the government had given the railways \$600,000,000 in subsidy and 32,000,000 ac. of land. Three transcontinental lines spanned the nation and two of them ran side by side through the Rockies. Only a continued boom could support such extravagance; instead, depression came in 1913, followed by war which cut off immigration.

Thus were sown the seeds of Canada's perennial railway dilemma. The bankrupt lines had to be taken over by the government. In the end they all became part of the Canadian

CANADA: The Land and the People

National railway system. They had never made money and, partly because of heavy interest charges on the early debts, they do not make money today. In 1954 every Canadian paid \$2 a year to make up the losses of the Canadian National railways. There have been years when the cost was more than double that amount. The country has long grown used to supporting railroads that cannot show a profit (the Canadian Pacific does show a profit, partly because of extensive land grants originally given it by the government, and partly because it controls other more profitable enterprises such as the Consolidated Mining and Smelting company, the nation's largest producer of lead, zinc, silver and commercial fertilizer).

The railway policy, like the tariff, is maintained in the interests of national unity. Interest charges on debts are only one reason why the lines do not make money; the other reason is the freight rate structure, controlled by the government through its board of transport commissioners. Canadian freight charges bear little relation to mileages travelled or tonnages carried. Raw materials, such as grain, ore and pulpwood, are carried cheaply at the expense of manufactured products. It has been estimated that half of all freight carried is moved at less than cost. Grain, for example, is carried at one-third the actual cost of transportation. The reasons for the policy are self-evident: most raw materials must be transported thousands of miles to ocean ports if interior resources are to be developed; without low freight rates, the transcontinental economy would suffer, for Canada is an export nation and its produce must be sold on world markets at competitive prices.

World Trade

Here, then, is another significant feature of the economy. Because of the small population, Canada can sell only a fraction of its produce domestically. It depends, far more than the U.S., on its export trade. Almost a quarter of the national income comes from exports. With the possible exception of New Zealand, Canada is the greatest trading nation of the world, on a per capita basis.

The dependence on foreign markets is not quite so acute as it was a generation ago. In the late 1920s, 30% of the gross national product was exported. By 1955, because of the rise in

THETFORD ASBESTOS MINES, Quebec, centre of the Canadian industry, largest in the world



CRATED AUTOMOBILE ready for shipment overseas from Saint John, N.B.

population and domestic purchasing power, the figure stood at 23%. (The population rose from 14,000,000 to 15,500,000 between 1951 and 1955.) All the same, a drop in export trade in 1954, due mainly to smaller wheat shipments, was sufficient to cause a minor business recession; and the fact that trade increased again to a record high in the early months of 1955 was taken as an accurate thermometer of improved domestic conditions.

A perennial weakness in Canada's trading system is that its imports have almost always exceeded its exports in value. Another is its dependence on a single large customer, the United States. Traditionally, Britain has been Canada's major market, but this situation has been reversed in recent years as the nation has been drawn more tightly into the dollar orbit. As late as 1947, nearly two-thirds of its exports went overseas, but by 1954 the U.S. was taking 60% of the total and the United Kingdom only 16.7%. In addition, imports from the U.K. were down to 9.6%, while imports from the U.S. had risen to 72% of the total. Canada and its neighbour have become the greatest mutual exchangers of goods and services in the world. The U.S. sends four times as much of its total exports to Canada as it does to its second ranking market. It imports three times as much from Canada as it does from its second ranking supplier. But Canada's trade rests on a precariously narrow base.

Because of Canada's dependence on world trade, it is extraordinarily sensitive to and dependent upon shifts in the international economy. A depression anywhere hits Canada. The world depression of the 1930s struck it a staggering blow, especially in the wheat belt. This is one reason why Canadian statesmen are internationalist in outlook and why Canada has taken such a strong position in various international organizations such as the North Atlantic Treaty alliance. The country needs an integrated international system of trade and finance. A closed system of eco-





CANADA: The Land and the People

conomic communities working around a British or American orbit—or any other orbit—can hurt it badly. Traditionally, Canada has always acted as arbiter between British and U.S. interests, a man-in-the-middle, attempting to reconcile international differences, taking the U.S. side with Britain, the British side with the U.S. Canada's history and geography make this possible; and the restraint that this role imposes on the national temperament has had a considerable effect on the character of its people.

THE PEOPLE

When Sir Wilfrid Laurier, a great Canadian prime minister, remarked half a century ago that Canada as a nation "was the most anomalous that ever existed," the phrase could have applied to the people equally as well as to the land. For Canadians, who seem so uncomplicated to the outsider, are in reality among the world's most complex people. The search for the Canadian character and the Canadian soul has been going on for half a century and is the subject of countless plays, radio talks, novels, magazine articles and weighty books (including one by the present governor general, Vincent Massey), yet it still remains something that almost defies proper definition. One of the reasons is that Canada is a new country, less than a century old politically; until very recently there has not been one Canadian soul, but several. Canadians are only beginning to find themselves as "Canadians" rather than as British, Scottish, French or Ukrainian, and it may well be that future social historians will point to the postwar decades as the era in which Canada finally attained maturity as a nation.

The Pressures of Europe and America

No two Canadians can seem to agree exactly on what a Canadian is, but all agree on what he isn't: a Canadian is not an American. It is this single fact, more than any other, that has determined what kind of people Canadians are. It is a unique situation, this juxtaposition of two enormous nations, with a common tongue, one immensely larger in population and more highly developed than the other. No other nation in the world is subjected to the pressures that the U.S. exerts on Canada. The result has been that Canadians themselves are a unique people.

A second pressure on Canada has been that of the mother country. This, too, has been considerable. It is less than two generations, after all, since Britain was dictating Canada's foreign policies and British ministers were signing treaties and agreements in Canada's name. Thus Canadians find themselves caught between two pincers, one geographical and economic, the other historical and sentimental. The result has not been subjugation but quite the opposite. Canada has managed to keep the U.S. at arm's length politically while slowly prying itself loose from British control.

The story of Canada, then, is the story of a people struggling to be themselves. Three Canadian elections have been fought on this theme. In the 19th century U.S. cries of "manifest destiny" brought from Sir John A. Macdonald, the canny Scot who was Canada's first prime minister, the vote-winning slogan of: "A British subject I was born, a British subject I will die!" In 1911, Sir Wilfrid Laurier, the silver-tongued idol of the nation, went to the country with a plan offering trade reciprocity with the U.S. Reciprocal trade agreements would have certainly raised the Canadians' standard of living, but in Canada the removal of the preferential tariff means for practical purposes the removal of the border. Laurier's political opponents swept him out of office with another slogan: "No



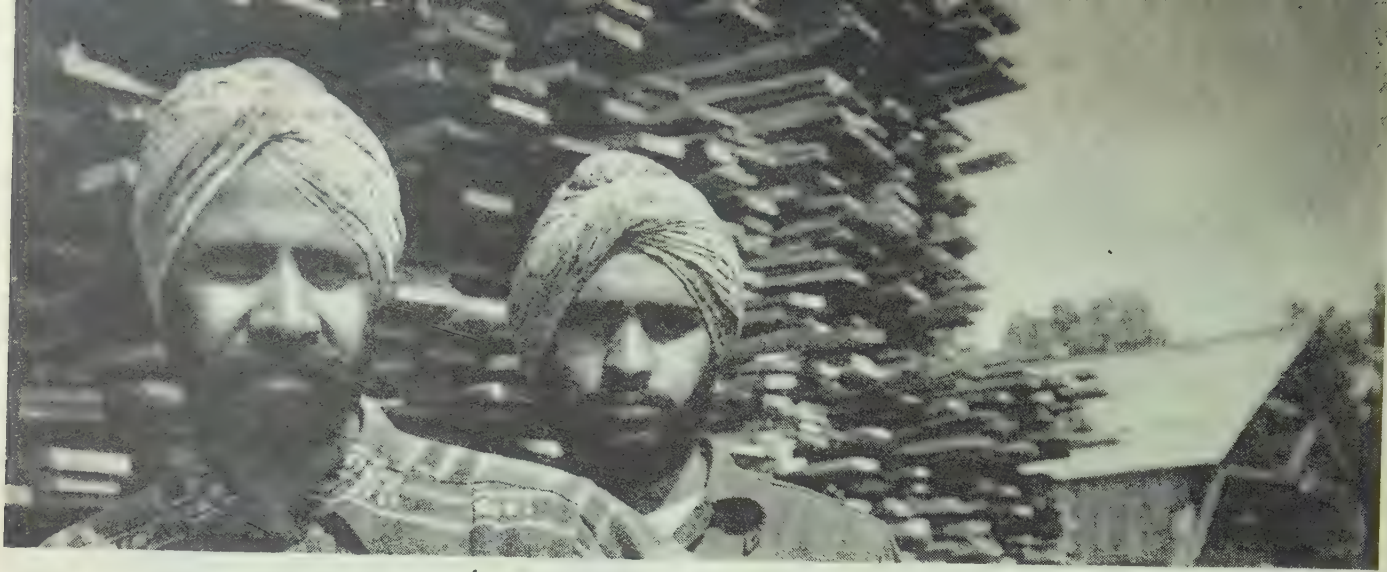
THE AMERICAN LOOK, neon signs at the National exhibition, Toronto, Ont.

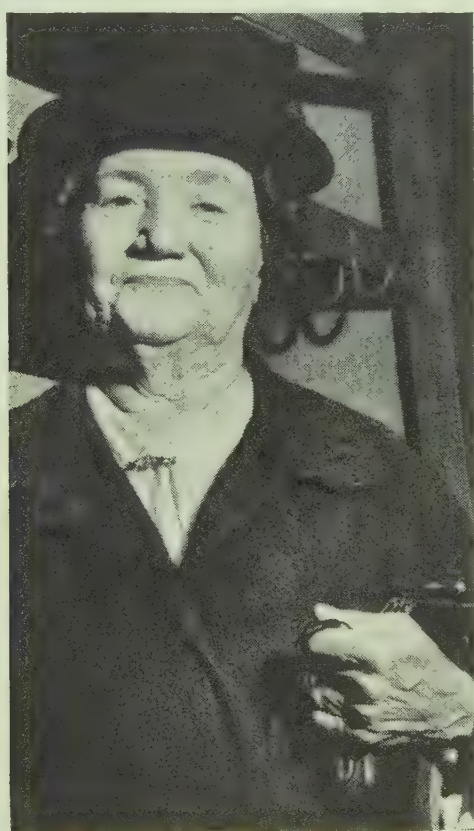
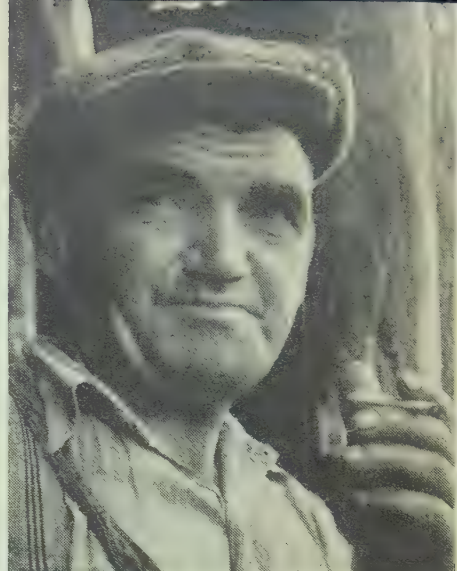
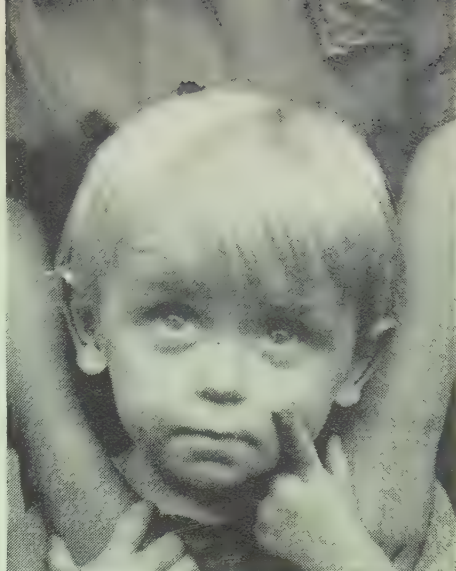
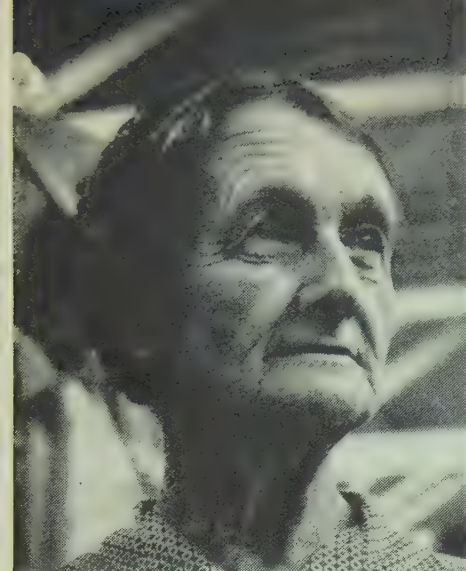
truck nor trade with the Yankees." In 1926, the Liberal party, under William Lyon Mackenzie King, the canniest of all Canadian statesmen, was tottering under the worst graft scandal in a generation. But it won an overwhelming vote because King was able to divert public attention from that issue by convincing the electorate that a British-appointed governor general had tried to interfere in Canadian domestic politics. This was the other side of the coin of independence.

The influence of both worlds is to be seen throughout the nation. To a visiting American, the country has a European look. There is hardly a town in English-speaking Canada that does not seem to have its King and Princess streets, its Queen's hotel, its Royal café and its Rex or Imperial theatre. The sovereign's picture hangs everywhere and stares out from the stamps, coins and currency. The mail is Royal and so are the army, navy and air force. The courts are the Queen's courts, the main arteries are King's highways and all public land is Crown land. Large numbers of Canadians speak with English accents, drink tea, watch soccer games, wear British tweeds and woollens and refer to the United Kingdom as "the Old Country." "Chap" is a not uncommon word, and when a Canadian raises a glass of Canadian ale he is apt to use the English expression "Cheers!" British history occupies a more important place in the school curriculum than United States history.

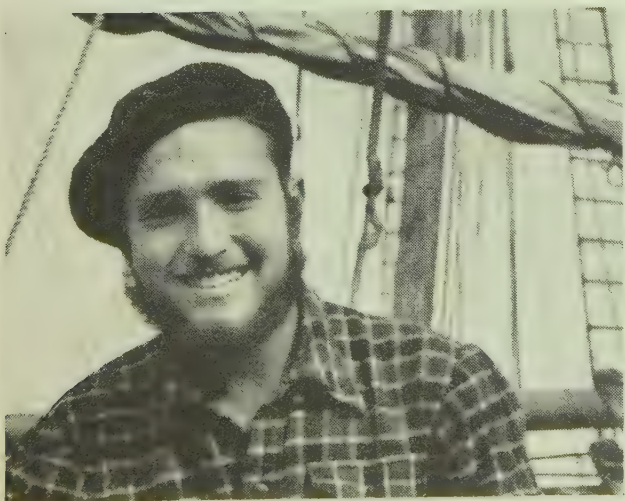
To a visiting European, on the other hand, Canada looks decidedly American. To the unaccustomed ear, the Canadian accent sounds very much like the Yankee twang. Canadians eat with their forks in their right hands, put the salad course before the entree, play baseball on the sandlot and watch the world's series on television. In 1955, Davy Crockett was as much a Canadian hero as an American one. Ma Perkins, Ed Sullivan, Macy's, Joe Palooka, Lucky Strikes, Ted Williams and Pabst Blue Ribbon are all household words in Canada. In fact Canadians know so much about the U.S. that they are often surprised and aggrieved to find that Americans know so much less about Canada.

But Canadians are not Americans any more than they are British. They are separated emotionally from their neighbours by what one historian has called "the mental gulf of revolution." Of all the western hemisphere nations, Canada is the only one that has not cut the European tie. Two invasions from the south have only strengthened the people of the northern half of the continent in their resolve to maintain a slender link with the old world. It was partly fear of United States aggrandizement that forced the provinces of British North





THE PEOPLE, close-ups of the faces of Canada as seen by the outstanding portrait photographer Yousuf Karsh of Ottawa. The pictures on these two pages, as well as several others in this article—notably the three which appear as full pages—were taken by Karsh during a recent tour of Canada. These photographs are a coast-to-coast cross section of what Karsh saw—the bearded Portuguese fisherman of Newfoundland, women and children of St. John, N.B., a Scottish curler of Winnipeg, Man., an oil worker of Alberta, Sikh lumbermen of British Columbia



CANADA: The Land and the People

America to confederate. It was the same fear that spurred the national railway policy. The Canadian Pacific railway was built so close to the border that no U.S. railway could profitably exploit the Canadian west. For the same reason, the easy grade of Yellowhead pass, near Edmonton, Alta., was rejected in favour of a steeper pass closer to the border. Canadians have not balked at paying extra for the privilege of being themselves, and there is little doubt that their standard of living is slightly lower because of high tariffs imposed on such U.S. commodities as electrical appliances and cotton goods (on which the tariff can be as much as 37.5% of sale price).

The Canadian is always conscious of the presence of his powerful neighbour. Most of the movies he sees are made in Hollywood for U.S. audiences, and this includes movies about his own country. Most of the magazines he reads come from the U.S. There are 142,000,000 copies of U.S. consumer magazines sold each year in Canada, against 42,000,000 Canadian consumer magazines. Forty-four per cent of all the programs he sees on the government-owned television service originate in the U.S. Most of his world news comes to him through the eyes of the correspondents of Associated press, which has a reciprocal agreement with the co-operatively owned Canadian press. He is more likely to buy an American book than a Canadian one, and thanks to his radio set, he is often more conscious of the Fourth of July than his own Dominion day, which falls three days earlier. (Canadians make relatively little fuss about Dominion day and, significantly, reserve their fireworks for May 24, a holiday that still marks Queen Victoria's birthday.) The chances are that the food he eats, the car he drives and perhaps even the clothes he wears are U.S. products, produced in Canada by branch factories to escape the tariff wall. Half of all U.S. money directed to manufacturing abroad is invested in Canada, and Canadian firms with U.S. parents account for one-third of the total capital investment in Canadian industry. More than 3,000 Canadian companies are controlled in the U.S. By 1954 the total U.S. investment in Canada was estimated at \$9,500,000,000—representing three-quarters of all foreign capital invested in the country.

If the Canadian sees the U.S. as an enormous, albeit friendly, Goliath, pressing down upon him, he also tends to regard it as a Svengali whose hypnotic attraction is sometimes hard to resist. A perennial Canadian talking point is the "bloodletting" of the nation's most talented men and women, who quit Canada each year for greener economic pastures south of the border. The seriousness of this problem is brought home by the immigration and emigration figures. Between 1848 and 1948, a total of 7,000,000 people came to Canada. In the same period 6,500,000 people left Canada for the U.S. In 1950 there were almost 1,000,000 Canadian-born persons in the U.S., and each year about 30,000 leave Canada to cross the border permanently. Canada has thus become a way point, a stopover on the route between Europe and the U.S. Inevitably it is the working man who arrives; the university graduate who departs. (John W. Dafoe, a Canadian editor, once calculated that 13% of the country's university graduates were in the U.S.) This drain on the country's finest human resources has had its effect on the Canadian character.

In the face of continuing pulls and pressures from the U.S., the Canadian has maintained his individuality only through a singular effort of will. It has required an exertion of a different kind—but one no less stubborn—to effect the peaceable transition, in a single century, from British colony to autonomous nation. (The word "autonomy" is to the Canadian historian what "independence" is to his U.S. colleague.) Canada has had its revolution, but it has been an amicable one. To



CHAMBERS OF THE LEGISLATIVE ASSEMBLY, Victoria, B.C.

achieve self-government and yet remain within the British family, Canada has taken the leading part in shaping the free association of nations known as the British Commonwealth. It has been the chief architect of the commonwealth, whose growth pattern closely parallels Canada's own awkward movements towards self-government.

In Canada, then, the old world is reconciled with the new. Perhaps the best example is the Canadian political system, which is both British and American in structure and concept. The British system of responsible government is to be found in the control of parliament by the cabinet. It is the cabinet in effect, that runs the country. The cabinet is responsible to parliament, which is responsible to the people. The U.S. division between the executive and legislative branches of government is foreign to Canadian politics, where cabinet members are drawn from elected representatives. The prime minister holds such absolute control over the party members that a Canadian political party has been rightly called "a leader with a bunch of followers." It would be unthinkable in Canada for a politician to defy his party chief. But Canada, being a continental nation, has also adopted the federal structure of the U.S., so that a large number of powers (such as those affecting education and roads) are reserved for the ten provinces, each of which has its own parliament. This mingling of American and British principles has brought some curious results. The major Canadian parties carry the traditional British names of Liberal and Conservative (technically, Progressive-Conservative). These titles give little indication of their policies, for, as in the U.S., the parties depend for their support on a coalition of regional groups. On the other hand, the two parliamentary houses seem patterned on U.S. lines: a lower house elected on a population basis, and a senate chosen on a geographical basis. The system, however, is really British: the senators are appointed for life by the party in power and the upper house has no more real power than does the house of lords in Britain. Superimposed upon the whole is the representative of the crown, the governor general, whose duties are now entirely symbolic. Each province has a similar royal representative known as a lieutenant governor.

Few Canadians, however, would discard this royal appendage. Although only 47.7% of the population is British in origin (it was 60% at the time of confederation), the vast proportion of English-speaking Canadians feel some sort of emotional bond with the United Kingdom. They do not feel the same emotion toward the United States—but they like Americans and as a rule feel more comfortable with them. Many also envy Ameri-

CANADA: The Land and the People

cans, but not to the extent of wanting to join them under the same political roof. No government has dared to change the original policy on which the nation was constructed, the policy of an east-west flow of population and commerce, subsidized when necessary by the taxpayer.

Temperamentally a conservative people, Canadians have accepted with few qualms government action in a wide variety of fields which in some quarters of the U.S. would be thought of as radical and socialistic. Though few Canadians think of them in this way, Canada does have a socialized railway system, a socialized air line, a socialized film studio, a socialized central bank, socialized radio and television networks, and a variety of socialized public utilities of which Ontario's Hydro-Electric Power commission is the most outstanding. None of these has been established for doctrinaire reasons. In most instances the government has had to step into the field in the interests of national unity.

The Canadian Broadcasting corporation, for example, with its one French and two English radio networks, was established as a direct counter to the stream of U.S. radio programs pouring across the border. The radio networks and the government-owned television stations, broadcasting programs of a distinctively Canadian nature, are as necessary to the development of the nation as the tariffs and the railways. The Ontario Hydro-Electric Power commission came into being for somewhat similar reasons. Small industries disliked the insecurity of being dependent on U.S. coal, while the general public became alarmed at the thought of private U.S. interests exploiting Niagara falls. Some government enterprises, such as the Canadian Broadcasting corporation, are still matters of controversy in Canada. Others, such as the Hydro, have ceased to be. It is doubtful, however, if any political party would venture to test national sentiment by advocating the abolition of any. A controversial subject in 1955 was the proposed construction of the first natural gas pipeline from Alberta to central Canada over an all-Canadian route. This would mean taking the line for hundreds of unprofitable miles over the Canadian shield, and it would probably require government aid. One of the staunchest advocates of the all-Canadian route was the Hon. C. D. Howe, the U.S.-born minister of trade and commerce. "I'm all for free enterprise," Howe said, "but you can't go without things just because private enterprise won't build it." This fairly sums up the general Canadian attitude. Late in the year it was decided that the pipeline would be built entirely within the Canadian borders, and that the section across northern Ontario would be built by a crown corporation.

French Canada

The insistence on retaining an identity separate from that of either Britain or the U.S., which is a Canadian quality, is even more especially a French Canadian quality, and it is this "French fact of Canada" that contributes to the complexity of the national character. French Canada is a social, cultural and religious island in North America. Far more than their compatriots, *les Canadiens* insist on preserving their own group personality. It is this that has made Canada unlike any other country in the world. It is this that has produced what Arthur Lower, a respected Canadian historian, calls "the bitter agony of Canada."

And agony it is. To the foreign tourist, rural Quebec is all quaintness and charm. The wayside shrines, the twin-spired Lou's Quinze churches with their white and gold interiors, the black- and brown-robed nuns and priests padding silently down the narrow cobbled streets, the ancient seigneuries, the habitant homes, the strip farms, each with its slender ration of river frontage—all these contribute to a sense of the mediaeval that

is unique in North America. But these same scenes serve to remind the English Canadian of the racial and religious schism that has had such a profound effect on the country. More than a century ago, Lord Durham, British governor general and lord high commissioner in Canada, 1838, reported that he was shocked to find "two nations warring in the bosom of a single state." The remark still has truth. French Canada's virile nationalism is apparent to the most casual observer: Quebec has its own plays and novels, its own school of painting, its own movies and magazines—all tinged by its own religion and all couched in its own language which is understood by only 3% of English Canadians. Just as English Canada strives against engulfment by its giant American neighbour, so French Canada strives against a similar engulfment. But because the threat to French Canada is twofold—because it comes from English Canada as well as from the U.S.—the reaction has been far sturdier. This in turn has posed grave problems in Canadian national unity. The nation has as yet no distinctive flag of its own, for example. Canadians of two races have not been able to agree on its design. But Quebec has its own flag.

The key to French Canada is the church, for Quebec is a virtual Roman Catholic theocracy. Long ago the *Canadien* recognized that religion was the mortar which could hold the racial structure together. Thus there is little anticlericalism in the province and almost everybody attends church. The Catholicism of Quebec is peculiarly North American in its char-

CHATEAU FRONTENAC, Quebec city





NARROW STREET of the old town, Quebec city

acter, for it has been heavily laced with the disciplines and the puritanism of the frontier. It places such a stress on modesty that one soap advertisement showing a naked infant bathing had to be retouched to add a bathing suit. U.S. magazines considered suggestive have been confiscated by the police. Films that offend the church have been banned from public and private showings. Street corner preachers who attack the Roman Catholic religion have been jailed and fined for creating a disturbance.

The church enters into almost every phase of life, from the administration of relief to the formation of labour unions. The livelihood and careers of hundreds of thousands of people depend on it, for it controls the hospitals, social services, schools and colleges. But the church exerts its strongest hold on the people through the traditional black-robed figure of the village curé around whom each rural community revolves. He is "father" to his people in fact as well as appellation, and his

advice can be very close to a command.

The emphasis on the spiritual rather than the material is a distinguishing mark of the *Canadien* character. Where the English Canadian tends to put greater emphasis on progress, his French-speaking compatriot lays greater stress on order and stability. Indeed, he tends to regard the aggressiveness of North American commercial life with a certain disdain. Partly because of the church's stress on authority and discipline, labour in Quebec has been traditionally low paid and uncomplaining, and the province, until very recently, has been regarded as an employer's paradise. The Protestant concept of individualism is of course foreign to the *Canadien*. Any change from the familiar disturbs him and thus he tends, far more than the English Canadians, to stay within the confines of his own province, whose English-speaking population has steadily declined. Historically, he has been tied to the soil, the community and the family, which is the most important unit in Quebec social life. The church's emphasis on family and its opposition to birth

CANADA: The Land and the People

control has made for a prolific race. In 1763 when Quebec became British, there were only 60,000 *Canadiens*; today there are 5,000,000 in North America. In spite of heavy immigration by other European races, the proportion of French-speaking Canadians to the rest of Canada is just about what it was at confederation.

Their way of life tends to turn educated *Canadiens* into lawyers, writers, politicians, farmers, priests or scholars rather than scientists, engineers or businessmen. Quebec is overloaded with professional men but very short on technicians. With 30% of the country's population, the *Canadiens* turn out only 2.5% of the chemists and 5% of the civil engineers. Their education simply does not prepare them for these vocations. The intellectuals of French Canada are produced by the 55 classical colleges that enrol 18,000 students each year. These colleges form the link between elementary school and university but there the parallel with North American high schools ends. The course takes eight years and is clerically controlled. All subjects are compulsory and there are no options. The chief subjects are French, English, Latin, Greek, history, geography and philosophy (after St. Thomas Aquinas). There is only minor emphasis on science and mathematics. The literature of Racine and Corneille is studied, but post-revolutionary French authors such as Voltaire and Rousseau get no official sanction. The colleges are not coeducational. Two thousand women attend their own similar institutions.

This helps explain why almost 90% of Quebec industry and manufacturing is owned or controlled by Anglo-Saxons (with a heavy preponderance of Scottish merchants whose traditions go back to the fur trade). It is an unhealthy situation and one the *Canadiens* feel keenly. They see themselves as "hewers of wood and drawers of water" in their own province—a phrase, significantly, also used by English-speaking Canadian leaders when referring to U.S. exploitation of Canadian natural resources.

Quebec's nationalism feeds from many roots, but three of them go deep. These are:

The Conquest by the British: Although it is almost two

centuries since the battle of the plains of Abraham settled the future of the continent, and although they have been allowed to retain (not without some opposition) their own language, culture and religion, the *Canadiens* cannot forget that they are a conquered people—nor can their English-speaking compatriots. This emotional background, producing as it does a persecution and inferiority complex, lies at the root of the differences between the two races.

The Execution of Louis Riel: This high-principled, brilliant but erratic leader of the prairie *métis* (half-French, half-Indian), mounted two rebellions against Canada, in 1869 and 1885, in order to gain recognition for his people. He briefly set up his own government and executed an opponent, Thomas Scott. As a result he was eventually hanged for murder, although there was doubt as to his sanity. The issue was immensely complicated by the fact that Scott, an Ulsterman, was a member of the Catholic-baiting Orange lodge. Protestant Ontario cried for Riel's blood, and the resultant breach with Quebec, where Riel is considered a martyr, has never quite healed.

The Issue of Conscription: The emotional ties that bind the rest of Canada to Europe are absent in Quebec and as a result the province has always been isolationist in its thinking. French Canada's attitude, expressed by the newspaper *La Presse*, at the time of the Boer War, has only modified slightly: "We French Canadians belong to one country: Canada; Canada is for us the whole world; but the English Canadians have two countries, one here and one across the sea." In three wars this sentiment has wracked the nation. The imposition of conscription in 1917 brought French Canada close to open revolt. Statistically, it was a failure. In World War II the government brought in conscription for overseas service in limited form only in the final months of the war. The racial fires thus generated on both sides in periods of high emotion have left their scars.

Yet Canada continues to be British at least partly because of the French whose muskets turned back two invasions from south of the border in 1775 and 1812. The *Canadiens* would

CATHOLIC PRIEST and four members of his congregation standing before the church of Santa Barbara, Uranium City, Sask.



CANADA: The Land and the People

have it no other way, for they are the first to realize that in a United States of North America they would represent only 2% of the population and face inevitable extinction. A century ago, the *Canadien* nationalist, Sir Etienne Pascal Taché, declared that "the last cannon shot for the maintenance of English rule in America will be fired by a French-Canadian hand." It is safe to say that the *Canadiens* trust the English to preserve their traditional rights more than they trust their compatriots. This is why they have never agreed to the severing of the last legal tie with Great Britain: the Canadian constitution as far as it affects provincial powers can still be amended only by the British parliament. With modern France, Quebec has little emotional bond. "It is we, the French of France, and not the English, who are foreigners to them," wrote André Siegfried, a Frenchman and long-time observer of Canada. *Canadiens* feel that they were abandoned by the mother country after the conquest. The break was made complete by the French Revolution.

The deep-seated turmoils of the industrial revolution are only now being felt in Quebec, but there is little question that they will bring changes. The province, two-thirds rural in 1891, still likes to think of itself as an agricultural community, but today it draws two-thirds of its income from manufacturing. In the teeming cities, the church cannot exert the influence to the extent that it does in the small communities. Women are assuming a changing role. The age at which they marry has risen to 25 and the birth rate is starting to drop. There is a steady pressure on the universities and colleges to teach more

science and technology and this pressure has brought results. Labour unrest, once unknown, is on the increase. The Catholic syndicates, formed with the help of Jesuit priests to prevent U.S. unions from organizing Quebec workers, by 1955 claimed 100,000 members.

In recent years Quebec has been the scene of some of the bitterest industrial disputes on the continent.

In one sense, then, Quebec is a province in transition. In a larger sense, however, it has scarcely changed in the 40 yr. since Louis Hémon wrote his classical novel of Quebec farm life, *Maria Chapdelaine*, in which these words appear:

"Concerning ourselves and our destiny, but one duty have we clearly understood: that we should hold fast, should endure. And we have held fast, so that, it may be, many centuries hence the world will look upon us and say: These people are the race that knows not how to perish."

The Canadian Temperament

It is Quebec with its 75 out of 265 seats in parliament that holds the balance of power in Canadian politics. Only on three occasions in the past half century has a political party been able to gain a majority without substantial Quebec support. It has thrown its support to the Liberal party for 60 yr.—and the Liberal party has been in power for all but 15. Thus, as a Canadian historian, W. A. MacIntosh, told an audience in Carnegie hall, New York city, "Every Canadian politician, if he has survived, has learned lessons in moderation. Each political group has learned that there are questions in Canadian

ESKIMO FAMILY of the Northwest Territories





LUMBERJACK SWEEPING LOGS along the Tamacine river, 150 mi. north of Ottawa, a typical spring scene in northern Ontario and Quebec as timber is floated down to pulp mills near the Canadian capital

politics which must be compromised." In Canada, political parties are really coalitions; and the cabinet is always selected on a regional, racial and religious basis. A Canadian prime minister has been described as a man on a tightrope, trying to maintain the delicate balance required of him by the various regional and racial pulls—of which Quebec is the chief but not the only one.

Moderation is thus of necessity a Canadian quality, and this is true in foreign policy as well as domestic affairs. Traditionally, Canada has found itself balanced between the extremes of continentalism and colonialism: its role has always been one of both mediation and interpretation between the U.S. and Britain. (This was especially true in the years between World Wars I and II when, in the absence of the U.S., Canada spoke for North America in the League of Nations.)

If Canadians are a restrained and sober people, these are two of the reasons for it. It is a subject on which they are notably self-conscious and the critical examination of the Canadian group personality has become a leading Canadian pastime. Canadians, says Bruce Hutchison, the journalist, are "the world's unequalled deadpans." Canadians, says Hugh MacLennan, the novelist, "live under the tyranny of the Sunday suit." Canadians, says Arthur Lower, the historian, "are a sober people, uncommunicative and reticent." Canadians, says George Brown, the history professor, "have a genius for indirection." Canadians, says Judith Robinson, the political columnist, "are so busy proving to the English that they are not Yankees and to the Yankees that they are not English that they have no time to be themselves."

Certainly Canadians are known as a relatively unemotional and conservative people, though there have been a regiment of exceptions. Their character has been influenced by their history as well as their geography. They lack the emotional and violent

background of full-scale revolution and civil war that is the heritage of their neighbours. There was no Canadian wild west. The Hudson's Bay company, the British militia, and finally the Northwest Mounted Police kept the peace from Rupert's House to Fort Whoop-up. Moreover, the barrier of the shield kept the prairies from being settled until the American west had filled up and the plains Indians were subdued. Thanks to the Mounties, the Klondike gold rush passed off with hardly a homicide. Men, in fact, were fined for chopping wood in Dawson City on the Sabbath. Placed next to the glowing preamble of the Declaration of Independence, the Canadian constitution is a cold and lifeless document. And the Canadian, when he pays any attention to his national heroes, tends to regard them pretty realistically. John A. Macdonald, the Canadian George Washington, is well known, and none the less admired, as a man who mixed whisky with his drinking water on the public platform and whose administration was tainted with a ruinous public scandal that smacked of bribery.

The racial make-up of the people is another factor tending toward conservatism. The older parts of Canada were settled and influenced by thousands of Tory aristocrats who remained loyal to Britain during the American Revolution and fled north. With these were mingled the Scots who to this day control the financial and banking institutions. Canadians, who have been called with some reason "the Scots of Canada," are a canny breed. Their rate of savings is the highest in the world and most of their money goes into bank deposits and insurance. Canada's 11 chartered banks are Gibaltars of financial solidity. Failures are virtually unknown, but venture capital for new and speculative enterprises is far more difficult to get than in the U.S. Canadians have been accused of failing to exploit their



POTATO FARM, Prince Edward Island

own natural resources and allowing foreigners to do the gambling. (The U.S. oil industry has invested \$780,000,000 in Canada; the Canadian oil industry \$650,000,000.) But it is only fair to point out that a small population cannot always raise the vast sums of money necessary for such huge developments as the Labrador iron mines—an imaginative and hazardous undertaking launched and conceived by Canadians, but about 50% underwritten by United States steel companies and insurance firms.

In assessing the Canadian temperament, the mystic appeal of the hinterland cannot be neglected. The cottage by the lake, the week-end fishing trip, the winter's skiing—all these are part of normal Canadian life. If this has made Canadians less sophisticated than their U.S. neighbours, it has also bestowed upon them what one U.S. observer, William Henry Chamberlin, has called "a sensation of tranquillity." No Canadian can fail to be conscious of his country's northland, hanging like an immense backdrop behind a narrow stage. It is, in the words of André Siegfried, "a window out onto the infinite" and it has given the Canadian some of the serenity of the frontiersman and the pioneer. Arthur Irwin, a Canadian editor and diplomat, expressed the feeling of his countrymen when he said: "Nearly every Canadian at some time in his life has felt the shiver of awe and loneliness which comes to man when he stands alone in the face of untamed nature; and that is one reason why we are a sober and essentially religious people."

The restraint inherent in the Canadian character is noticeable in many walks of the national life: in the singular dullness of Canada's infrequent political conventions; in the reasoned and dispassionate voices of the radio and television news announcers; in the almost total absence of political demagogues; in the strict refusal of the courts to allow "trial by

newspaper"; in the reluctance of public men to be interviewed; and in a general lack of flamboyance in everyday business life.

Regional Disparities

A policy of personal and national moderation is inevitable in a country whose racial makeup and regional structure is as complex as Canada's. For if the U.S. is a melting pot, Canada is a mosaic. Its racial and cultural groups have not yet fused, partly for historical reasons and partly for geographical ones. Once again the presence of the U.S. is a factor here. To each ethnic group, assimilation into the whole has meant conformity with North American, *i.e.* U.S., standards; individuality has been preserved by clinging to old country cultures. If a Nova Scotian Scot holds to his Gaelic tongue or a Manitoba Ukrainian farmwife to her *babushka*, it is to demonstrate their non-Americanism.

And always, of course, the presence of the French-speaking island acts as an example to smaller ethnic bodies. Fortunately for Canada, the geographic divisions do not entirely correspond to the cultural, religious and racial divisions, otherwise any sort of national unity would be impossible.

The Atlantic Provinces

Among Canadians, the maritime peoples—the most British of all (78.8% are of Anglo-Saxon origin)—have rested least easily in confederation. The decline of the Atlantic economy, coinciding as it did with the formation of the new nation, has led the Nova Scotians and their neighbours to blame their ills upon "Upper Canada." Many feel that confederation was thrust upon



CANADA: The Land and the People

them and the idea would almost certainly have been defeated in 1867 if put to a vote. (The union was finally enacted by British statute without final reference back to the colonies.) The Maritimers have always felt that the central provinces cheated them out of their rightful and promised share of the internal commerce of the country.

The insular and peninsular position of the four provinces, reinforced by their age, has helped make the population a cohesive group that often tends to think of itself as maritime before it thinks of itself as Canadian. Nova Scotia, for example, has a far longer history as a British province than as a Canadian one. Talk of secession is still heard along the eastern coast. Indeed, in 1955, the premier of Newfoundland was threatening secession. Newfoundlanders, who joined Canada in 1948 by a vote of 78,000 to 71,000, still talk of Canada as if it were a foreign land. They are an ancient people, their blood undiluted by any recent immigration, their accent distinctive—going back a century or more to Ireland and even longer to Elizabethan days. They live largely in 1,300 fishing villages or “outports” with picturesque names like Bread and Cheese, and White Handkerchief cove, scattered around the 6,000 mi. of deeply indented coastline. They sing sea chanteys and sad ballads of disaster that are said to go back to the 16th century. There are still men among them who never handled money until they reached middle age, for until recent times trade was carried out on the barter system, with codfish the medium of exchange.

The other island province, Prince Edward Island, is an enormous kitchen garden, 85% of it arable land, its people Scottish and English farmers whose pre-revolutionary ancestors were British officers in the American colonies. The character of the Islanders may be gleaned from Lord Dufferin's remark in 1871 that “the islanders have entered Confederation gladly under the impression that the Dominion has been annexed to Prince Edward Island.” Something more can be learned from the words of L. M. Montgomery, whose famous novel *Anne of Green Gables* is set on Prince Edward Island: “We are not hidebound or overly conservative,” she wrote, “but we do not rush madly after new fads and fashions just because they are new. We wait calmly until other parts have tried them out for us and then, if they have stood the test, we adopt them.”

Across Northumberland strait from the little island lie the peninsulas of New Brunswick and Nova Scotia. The former is a province of ancient prides, formed from two stubborn racial groups who have managed to retain their identity in the face of heavy odds. The first group is formed of French-speaking

Acadians, scattered by the British two centuries ago (thus inspiring Longfellow's poem *Evangeline*). With great tenacity they made their way back to their homeland and through *la revanche des berceaux* (“the revenge of the cradles”) have made New Brunswick 38.8% French. The increase has been so rapid that the Acadians may be in the majority by 1975. The other group is formed of descendants of United Empire Loyalists—the Tories who refused to fight in the Revolution and were driven to these harsh shores in 1783. They founded British North America's first incorporated city, Saint John, and helped to give the maritime peoples their basic attitudes of conservatism, respect for law and order, and reverence for Great Britain. The effect of the Loyalists on Canada in general is far out of proportion to their original number.

The Nova Scotians are a mixed group, but the main strain in the province is Scottish. The eastern third, including the island of Cape Breton, is one of the world's great strongholds of Gaelic. Twenty thousand Nova Scotians have a working knowledge of the tongue, names like Antigonish and Pictou abound, and the sound of bagpipes is not uncommon. More fundamental is the Highlanders' fierce belief in the value of education. Five Canadian universities have been founded by Scots and a large number of college presidents in Canada and the U.S. come from Nova Scotia, including the presidents of Canada's two largest universities. Indeed, the sad fact is, as a Nova Scotian supreme court justice has said, “we have always given our children the finest education in Canada, and have never been able to find profitable things for them to do with it at home.” It has been said that Nova Scotia's greatest export is brains. There are as many Nova Scotians living today in New England as there are in their home province. This steady exodus is characteristic of the maritimes. Almost one-eighth of those born on the harsh Atlantic coast have left it for other parts of Canada.

Ontario

The character of Ontario has been largely shaped by two human influences, both of them sternly Puritan in outlook. One was the Orange lodge, the other the Methodist Church. Together, they have given the people of Ontario in general and Toronto in particular the reputation of being stiff-necked, sober, grim and humorless. But Ontario has changed so much in recent years—half of all postwar immigrants have settled there—that the reputation is now largely undeserved.

The Irish poured into Canada by the starving thousands following the potato famine of the 1840s, so that today they comprise the fourth largest racial group in Canada (next to the French, English and Scots). The Ulstermen settled in Ontario where entire counties are almost entirely Northern Irish in make-up. For a century the Orange lodge has been a powerful political pressure group in the province, and much of the bitterness between the races stems from its unrelenting opposition to the Roman Catholic Church. Until recently, city politics in Toronto have been under Orange control, but this influence has waned. As late as 1954, however, the mayor was an Orangeman. It is a measure of Toronto's metamorphosis that in 1955 the mayor was a Jew.

The Methodists (now part of the United Church of Canada) have been an equally potent force both in Ontario and in Canada. The movement spread from the U.S. in the late 18th century but soon broke away from the parent body and by virtue of its rugged individualism and its strong opposition to the Church of England became a potent force in fostering Canadian nationalism. The Methodist circuit riders converted the Loyalist settlers along the southern fringes of the country to their dynamic creed—a mixture of frontier puritanism and social radicalism that forbade smoking, card playing, dancing

MONTREAL, QUE., TAVERN



CANADA: The Land and the People



UKRAINIAN CATHOLIC CHURCH, Edmonton, Alta.

and theatre but stressed Christian reform.

Largely as a result of these Ontario influences, English-speaking Canada remains a puritan country today. All stores and places of entertainment are closed on Sundays and men have been fined for buying a package of cigarettes on the Sabbath (though this technical crime is generally winked at). Liquor laws have recently been relaxed in certain provinces, but they are still strict in comparison with most states of the United States—a direct result of the Methodist temperance movement in the last century. The town of Saskatoon, Sask., is an example of a community founded by Methodists as a temperance colony, just as Salt Lake City, Utah, was founded by Mormons. It is now possible to buy liquor by the glass in parts of Quebec, Ontario and British Columbia, but across vast stretches of Canada it can only be purchased with a permit in government stores. Foreigners find it inexplicable that in a boom town such as Edmonton, Alta., a man may buy a glass of beer in a tavern, but cannot sit with his wife to drink it.

It is the puritan background that has given Toronto, English-speaking Canada's largest city, the sobriquet of "Toronto the Good." The tall spires of Church street, the drawn blinds of Eaton's department store windows on Sundays (the founder was a Methodist), the attacks on "booze" in the *Toronto Star* (whose founder was a Methodist too)—all these seem to confirm the impression. Toronto, the richest city, has long been sneered at by the rest of Canada as the stuffiest. Non-Torontonians like to remark that the city boasts the largest hotel, the tallest skyscraper and the duller Sunday in the British empire. One of the most successful radio plays on the Canadian Broadcasting corporation was a satire entitled "We All Hate Toronto." The governor general, Vincent Massey, himself the scion of a Toronto Methodist family, likes to tell the story of a man who won

a prize in a raffle. First prize was a week in Toronto; second prize was two weeks in Toronto. But Toronto has become a cosmopolitan city and long since outgrown its reputation. On Queen street and Spadina avenue most of the tongues of Europe can now be heard. Cocktail bars are studded about the downtown area (except on Temperance street where, by a Methodist's legacy, no bars may ever be built). And at a recent plebiscite, Torontonians surprised the nation by voting to allow commercial sports on Sunday.

The Prairies

If eastern Canadians seem to be hidebound, starchy, conservative and narrow, the prairie people appear just the opposite. There the streets are wide and so are the horizons. The population is a polyglot. Only 45% are British in background. There are almost 300,000 Germans, 260,000 Ukrainians, 173,000 French, 164,000 Scandinavians, 100,000 Dutch and 92,000 Poles. The minarets of a Mohammedan mosque rise in Edmonton and the stark architecture of a Mormon temple dominates the town of Cardston, Alta. The twin towers of the Greek and Ukrainian orthodox churches are familiar silhouettes on the prairie landscape. Those tightly knit religious groups, the Hutterites, Mennonites and Doukhobors, still band together on community farms. All this is a legacy from the great immigration boom of 1901-1911 when the government set out to stock the empty plains with "men in sheepskin coats."

But the prairie farmer is no European peasant. Instead of the stable mixed farming of the old country he depends on a single boom-and-bust crop: wheat. And unlike his U.S. neighbour to the south, he cannot sell the bulk of his produce on the domestic market. Because his acreage is enormous, his farming is done largely by machines and this has given him an open mind to change. He is a semiradical and a low-tariff man who harbours a distrust of the banks, big business and the eastern industrialists whom he sees as fattening off his labours. This has produced another cleavage in Canada: the split between the agrarian west and the industrial east.

In this context, the unorthodox politics of the plains is un-

SASKATCHEWAN WHEAT FARMER



CANADA: The Land and the People

derstandable. The two old-line national parties have not had a strong foothold in the west since 1921, when the farmers, angered by the collapse of the postwar price level, formed a national Progressive party which was, for a time, the second largest in the federal parliament. At the same time, farmers' governments took over provincially in Alberta and Manitoba. These movements have died away to be replaced by others. Alberta has been governed since 1935 by a Social Credit government which, in doctrine but no longer in practice, is pledged to a program of monetary reform that plays on the farmers' engrained distrust of the banks and "hard" money. In Saskatchewan, the Co-operative Commonwealth Federation, Canada's socialist party, has been in power since 1944. It also forms the opposition party in Manitoba.

The Co-operative Commonwealth Federation party is the application, in the political sphere, of the prairie farmer's deep-seated principle of economic co-operation. The wheat producers have always thrived on co-operatives. Seven out of ten Saskatchewan adults belong to one or more; there are 500 co-operative groceries alone in the province. The Saskatchewan wheat pool, a giant co-operative, is the world's greatest wheat collecting organization; it has 125,000 members, owns 1,200 elevators and ships 150,000,000 bu. of grain annually. In such an atmosphere, the Co-operative Commonwealth Federation flourishes. The party was formed on the prairies in 1932 out of a coalition of agrarian dissenters, former Progressives, Methodist social reformers, left-wing intellectuals, labour union members, Fabians and a smattering of Marxists. Its strength has declined federally, but it is still strong in Saskatchewan although, like the Social Credit party (which started as a radical movement and now campaigns as a defender of individual enterprise against socialism), it has greatly modified its principles.

British Columbia

Although British Columbia is a "have" province, its people also tend to mistrust central Canada. When a British Colum-

bian speaks of "the East," the words carry the same sinister connotation that "Upper Canada" does to a Nova Scotian. There have been occasional threats in British Columbia of secession from the nation, especially in Vancouver Island, which is far bigger than Prince Edward Island; and the question of railway freight rates continues to be a sore point on the Pacific coast, whose residents must pay higher prices for manufactured goods. British Columbians suffer from no sense of inferiority, however—quite the reverse. The magnificent scenery, the clement climate and the abundance of natural resources have convinced them that theirs is the finest habitat in Canada. The population figures tend to bear this out. Almost one-third of British Columbia's population is made up of Canadians who were born elsewhere—250,000 of them came from the prairies alone. Like California, British Columbia has a large proportion of older and retired people. It also has a heavy British element, for the climate is European rather than continental. Indeed, it has a larger proportion of British than Ontario has. But unlike the eastern provinces, whose British strain goes back several generations, the population of British Columbia is made up to a great extent of newcomers from the old country.

For British Columbia is a very new province. Vancouver was only a clearing in the forest at the turn of the century. Now it is Canada's third largest city. The towns have a new look to them. The architecture is contemporary and sometimes startling. Heavily urban in its make-up, the province has some of the most advanced social legislation in Canada. The local pride, the eagerness for sudden change and the distrust of the east have all but wrecked the two old-line parties in British Columbia. The Co-operative Commonwealth Federation has been the official opposition in the legislature for 15 years and only a coalition of the older parties has kept it from taking office. But the old parties were dismembered when the Social Credit movement, hitherto an inconsequential factor in British

HYDROELECTRIC PROJECT IN BRITISH COLUMBIA



CANADA: The Land and the People

Columbia politics, was swept into power in 1952. Actually the Social Credit government follows none of the unorthodox monetary doctrines that gave it a foothold in Alberta during the depression. It is really a conservative regime and many of its members, including the premier and party leader in 1955, W. A. C. Bennett, are former members of the Conservative party. It is perhaps one key to British Columbia's outlook that it prefers a new name for an old principle.

The Years Ahead

In its climb toward economic maturity, Canada is about 30 years behind the U.S. (Manufacturing exceeded agriculture in value in the U.S. in 1890; in Canada in 1920.) In the development of an integrated community it is much farther behind. It seems likely, however, on the basis of postwar expansion, that the speed of both economic exploitation and political integration will accelerate sharply in the next quarter century.

Such enormous resources as the Athabasca tar sands and the Alberta coal fields are still economic question marks that could change the economy drastically. More immediately predictable is the harnessing of water power and the resultant growth of electrochemical and electrometallurgical industries around the fringe of the hinterland.

Vast sections of Canada will never support a large population, but the next 25 years will almost certainly see the frontier inching northward, with two important bulges: one in the vicinity of the northern Ontario clay belt, an arable area south of James bay, the other north of Edmonton in the direction of the Peace river and the fertile Mackenzie and Liard valleys. For practical purposes Canada will remain a linear country, with the bulk of the population strung out along the border.

By 1955, the most cautious bankers and government statisticians were predicting a population of 23,500,000 in two decades, and a gross national product of \$55,000,000,000—more than double that of 1955. This would mean a higher standard of living and a better balanced economy for Canadians—a greater consumption of agricultural products domestically, an increase in the proportion of secondary industry and a proportionate increase in exports and imports. (If the gross national product rises 100%, it is expected that exports will increase by 65% and imports by 50%.)

Thus, barring unforeseen alarms, the material promise of the nation seems well on the way to fulfilment. Canadians themselves take this for granted. The more thoughtful among them are more concerned with the future of the national soul. Are Canadians developing a sense of identity—a common character that distinguishes them from others? This is a question that any Canadian will find difficult to answer, though some have attempted to answer it. Vincent Massey, the first native Canadian governor general, has written with pride that it was possible to distinguish Canadian soldiers during the war by their bearing alone. Lister Sinclair, a Canadian playwright, poet and critic, feels there is a distinguishable Canadian idiom to be found in the work of the newer novelists and poets. These are



CHILDREN OF ST. JOHN'S, NFD.

personal impressions, but the fact that they are widely discussed in Canada is significant. There are other straws in the wind: the national pride engendered by the nation's wartime effort and postwar boom, the swiftness of transcontinental travel that has tied the regions more closely together, the gypsy-like shifting about that is having its effect on ethnic disparities, the industrial revolution that is changing the face of Quebec. But perhaps the greatest influence on the Canadian character is time itself—the slow simmering of the various ingredients in the Canadian broth over the decades. Canada is less than 90 years old, but already it seems to be on the threshold of that destiny which a great Canadian statesman, Edward Blake, saw for it when in 1892 he wrote these words to Sir Wilfrid Laurier:

"It has seemed to me that, by the courses which of late years Canadian politics have taken, we have been drifting nearer to political union with the States. . . .

"The great Republic stands today in the front rank among the nations . . . and to join them on fair and equal terms would be for any Province of this Dependency no ignoble lot.

"Nevertheless this is not the goal at which I aim. I cling to the hope of a higher though more arduous destiny for the great Dominion. I look for the regeneration of my own country. I cling to the hope that—sooner or later, and rather soon than late—there may be born into the world an independent Canadian Commonwealth; nerving itself to solve, after its own fashion, the many racial and religious, moral and political, economic and material problems which confront us; united by enduring links of kinship and sympathy, hope and admiration, with three of the leading nations of the world; advancing, more effectively than now, our own varied interests as well as the true welfare of the old land, the proud mother of free nations as well as free parliaments; and enjoying under arrangements which a wise and liberal statesmanship on both sides of the Line and the Atlantic may mature, bright prospects of unbroken peace and absolute security, together with the fullest freedom of trade and the wide measure of intercourse compatible with the provisions of our revenue and the preservation of our autonomy.

"May these things be!"



Dawn of the Space Age

By **ROBERT C. TRUAX**, *Commander, U.S.N.*

Introduction by **WILLY LEY**

WHEN, some three decades ago, the first public debates about the technology of rocket research and the problems of space travel took place, all the emphasis was on what are now proved points. The pioneers of the new sciences had to assure their audiences that recoil would work in airless space and that there was no conceivable reason why liquid fuel rockets could not be large in size, in fact that there was no theoretical upper size limit to a liquid fuel rocket.

In regard to the second point, the idea of 10- and 15-ton rocket missiles is commonplace by now and if an announcement about 50- or 80-ton rockets were to come over the wire services nobody would be greatly surprised. And after a 50-ton rocket has become commonplace a 500-ton rocket would not be much of a surprise.

In regard to the first point, all one has to do now is to quote the famous "Bumper" shot of 1949 in which a WAC Corporal rocket lifted itself out of the nose of a V-2 rocket to climb to a maximum height of 250 mi. The point is that the WAC Corporal freed itself from its carrier 20 mi. above the take-off site and at that height more than 98% of the total mass of the atmosphere was already below. The rocket began burning in what was to all intents and purposes empty space and it finished its climb at a height where there are fewer air molecules per cubic foot than in a vacuum tube on the ground. It is, in general, not very well realized how close we are to "space," how

tenuous the atmospheric layer really is. At sea level there are 760 millimeters of mercury of air pressure, while one and a quarter miles up the pressure drops to 596 mm. At twice that height it is down to 460 mm., at five miles to 267 mm. and at ten miles to less than 90 mm. And at 100 miles above the earth even the largest rocket finds less air resistance than is encountered by a pack of cigarettes falling off a desk.

A very similar picture presents itself when we consider the velocities needed to reach such high altitudes. A rocket climbing with a velocity of six-tenths of a mile per second at the instant its fuel supply is exhausted will ultimately reach an altitude of about 30 mi. above this so-called cutoff point. Doubling the velocity will not just double the altitude but will result in its reaching a peak altitude of 126 mi. Doubling the velocity again will lift it to more than 500 mi. The latter height has not been actually reached so far, but could be reached any day somebody in authority decides that it should be done.

But while the new science of space travel has in only three decades made strides which would once have been considered fantastic, it has also acquired an extraordinary complexity. Almost all the other sciences, from astronomy to zoology, are somehow involved, especially mathematics, metallurgy, mechanical engineering and medicine. It is because of this complexity that a simple or short explanation of rocketry and space travel is no longer possible. But it is also due to this complexity that a further rapid growth and great accomplishments can be readily predicted.

DAWN OF THE SPACE AGE*

THE 20th century has been noteworthy for many great achievements in the field of physical science. The first half saw, to name only a few of the more spectacular developments, the beginning of mechanical flight, the revolutionary theory of relativity and the large-scale release of energy from within the atomic nucleus.

There are indications that the second half of the century might see the realization of a dream almost as old as that of flight through the air—that is, flight through the reaches of airless space. The accelerating pace of technology seems to assure that within this period there might be at least one-way flights to the moon by unmanned rockets. The trend of events in the next few years may determine the rate of progress toward further achievements in this direction.

Space Flight an Old Dream

The dream of flight to the sun, moon and planets began

*The opinions contained in this article are those of the author and do not necessarily represent those of the U.S. Department of the Navy or the naval service at large.

almost as soon as men realized that these objects were reasonably large material bodies, rather than mere spots of light affixed to the dome of the sky. One of the earliest stories on record is that of Daedalus and Icarus, of early Greek mythology. The pair fashioned for themselves wings of wax and feathers. Icarus, disobeying the instructions of his father, Daedalus, flew too close to the sun, which melted the wax, and Icarus was pitched headlong into the Aegean sea.

COMMANDER TRUAX is a graduate of the U.S. Naval Academy, class of 1939. During most of his naval career he has been connected, in one capacity or another, with the development and design of rockets and guided missiles. In 1951 he advocated formation within the American Rocket Society of a Space Flight Committee, which later submitted recommendations to the National Science Foundation that were instrumental in bringing about the project to launch satellites to circle the earth.

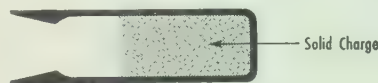
MR. LEY is well known as an author and lecturer on scientific subjects, especially rockets and space travel. He has been a research rocket engineer, science editor, and consultant adviser on television, notably for Walt Disney's "Land of Tomorrow" program.

WHAT IS A ROCKET?

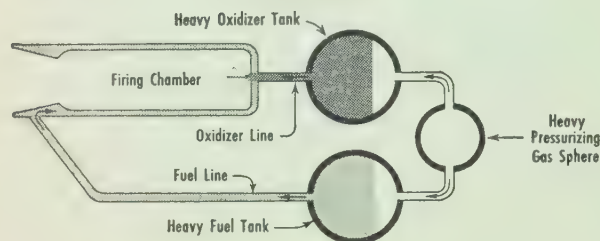
All propulsive devices must accelerate some mass in order to operate. A rocket is a propulsive device which carries along with it the entire mass to be accelerated. It differs in this respect from the ramjet and the turbojet, and from the more familiar internal-combustion engine of an automobile, for these suck in atmospheric air to mix with their fuel.

There are two main types of rockets—those which use solid propellants, and those which use liquid propellants. The liquid-propellant type may be further divided into the pump-fed and the pressure-fed systems, depending on the means used to force the propellants from the storage tanks into the combustion chamber. The three rocket propulsion systems are shown below.

SOLID PROPELLANT ENGINE



LIQUID PROPELLANT ENGINE PRESSURIZED SYSTEM



LIQUID PROPELLANT ENGINE TURBOPUMP SYSTEM

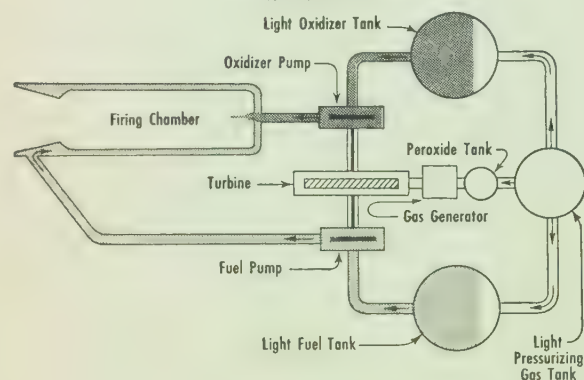


Fig. 1.—Types of rocket propulsion systems

Such stories of flying from the earth to the heavenly bodies were fairly common as long as men did not realize that the atmosphere does not extend throughout the entire intervening distance. It was not until the days of Galileo and Kepler that a true appreciation was gained of the enormous distances involved. At approximately the same time it became known that most of the distance to be travelled lies through an almost perfect vacuum. Thereafter, tellers of interplanetary adventure stories were somewhat handicapped by the lack of a suitable means to transport their travellers through the vacuum of space. It was not until the early 1900s that it was demonstrated that the rocket, a device known since the 13th century, was at least theoretically capable of operating in the absence of any surrounding medium. It was shown that the rocket could not only operate in a vacuum, but that it could also conceivably attain the enormous speeds required to traverse the vast celestial distances in reasonable periods of time.

This growing realization that interplanetary flight might be within the realm of possibility fired the imaginations of many

men. Societies for the promotion of space travel were formed in several countries. The problems were discussed publicly by serious scientists. An entire new body of fiction grew up around the idea. The impetus given rocket development by military demands of World War II brought a new sense of imminence to this old dream.

Today there is an international organization devoted to the promotion of space travel, and space flight societies exist in 23 nations of the world. In Dec. 1954 the American Rocket society requested the National Science foundation to undertake a study of the utility of a vehicle revolving endlessly about the earth, high above the atmosphere, as an artificial satellite.

On July 29, 1955, an announcement was made from the White House that the United States would undertake to create a small satellite of this type. The announcement was made jointly by the National Academy of Sciences and the National Science foundation.

The purpose of the satellite would be to obtain scientific data in connection with the International Geophysical Year 1957-58. The satellite would probably be about the size and shape of a basketball. It would be placed in its orbit in 1957. The exact size and design of the satellite had not been determined at the time of the announcement. The possibility existed that more than one of these devices would be fired out into space. It seemed certain from the official disclosure that a serious attempt would be made to place in the orbiting body instruments capable of measuring various types of radiation and transmitting these measurements by radio to the ground.

It was disclosed in October that development of the rockets for placing the satellite in its orbit would be supervised by the U.S. navy. The vehicles were to be assembled by the Glenn L. Martin Co. with the assistance of several other contractors.

Regardless of the exact size or degree of instrumentation of the satellite, it became clear in 1955 that both the feasibility and utility of such a device had been established. The initial step in the conquest of space was about to be taken.

The time would seem ripe for a look at the past, to see what progress has been made, in theory and experiment, toward the conquest of space, and then to hazard a prediction as to possible future developments.

Newton Lays the Foundation

Sir Isaac Newton, in his *Principia*, published in 1687, formulated all the laws necessary for an understanding of both the propulsion and navigation problems of space flight. He also provided the mathematical tools by which these laws could be applied to obtain quantitative answers. More than 200 years elapsed, however, before these laws and tools were applied specifically to the problems of interplanetary travel. Even today many false notions are commonly held regarding rocket propulsion and space flight. Among these are the widespread beliefs that the rocket operates by "pushing against the air," and that it is possible to lift something high enough to be "beyond the pull of gravity."

If we consider the laws of motion expressed by Newton, we quickly see that the presence or absence of a surrounding medium can have only a secondary effect on the ability of a rocket to propel itself. The basic law of propulsion is Newton's second law of motion, which may be expressed by the equation:

$$F = \frac{d(MC)}{dt}$$

which merely says that if a force, F , is applied to any body, it will produce in that body a change of momentum, $d(MC)$, which is proportional to the length of time the force acts. Or, stated conversely, whenever there is produced a change of

Dawn of the Space Age

momentum, a force must have been applied to do so. Since momentum is defined as the product of mass, M , times velocity, C , we see that the second law of Newton requires that whenever the velocity of a given mass is changed, there must be a definite force acting for the duration of the change of velocity.

Newton's third law of motion states that for any *action*, there is an equal and opposite *reaction*. This is equivalent to saying that forces always act in pairs. If there is one force changing the momentum of a mass, there must be another equal force, acting in the opposite direction (which is changing the momentum of another mass).

These are the two basic laws of rocket motion. While the rocket is operating, a certain mass of propellant each second, initially at rest with respect to the rocket, is being changed into a gas and expelled out of the nozzle at high velocity. A force is required to effect this change of velocity, and a reactive force is required to act against the rocket. It further follows that the force acting against the rocket will produce a change in velocity of the rocket, opposite in direction to that produced in the rocket's exhaust.

The explanation of why a rocket operates may also be expressed in terms of familiar everyday experiences. Since "force" and "pressure" are more familiar concepts than abstractions like "rate of change of momentum," the following explanation might have more meaning to many readers. Visualize (Fig. 2) a container, holding a gas under pressure which is greater than the pressure of the air outside it. This gas pressure is exerted against the container equally in all directions. If, however, one side of the container is suddenly punctured, with a hole having an area "A," then the force which acted on that area will disappear. During the interval required for the internal pressure to drop to that existing outside, the pressure acting on an equivalent area at the opposite side of the container will constitute an unbalanced force, in the direction indicated.

It may be seen that the presence or absence of an outside medium affects the situation only as it controls the length of time required for the container pressure to reach that existing outside. If this outside pressure very nearly equals the inside pressure, equilibrium will obviously be reached very quickly, whereas if there is a complete vacuum outside, the process will take longer. This is the principal effect of an external medium on the thrust of a rocket. The *nature* of the medium has no effect. The effect of its *pressure*, however, is such that the lower the pressure, the *greater* the propelling force or thrust.

Thus, the rocket actually operates somewhat better in a perfect vacuum than it does in the air, under atmospheric pressure, rather than the reverse. For rockets of contemporary design, this improvement is in the neighbourhood of 15%.

It is sometimes difficult to visualize the rocket exhaust as possessing any significant mass. A high-performance rocket is more than half propellant, however, and all this material is expelled through the exhaust during the burning period. For the German V-2 rocket of World War II this amounted to nearly 300 lb. *per second*, and the velocity of this mass was changed from rest to more than 6,000 ft. per second.

To navigate through space it is necessary to have an engine that will operate in a vacuum, and the rocket is the only propulsive device that will meet this requirement. We have seen that in order to produce a propulsive force, it is necessary to effect a change in momentum of some mass. In space, the only mass available is part of the vehicle to be propelled. If we expel some of this mass, we have, by definition, a rocket.

The fact that a rocket will work in a vacuum, however, does not automatically solve the propulsion problem for travel to the moon or planets. Newton, who gave us the principles by which we might conceivably propel ourselves into space, also enunciated the law which prevents us from going where we please among the heavenly bodies. This is, of course, the law of gravitation. By this law, every bit of matter in the universe attracts every other bit of matter in the universe with a force which is proportional to the product of the masses involved and inversely proportional to the square of the distance between their centres of mass. Expressed mathematically for two masses, m_1 and m_2 , separated by a distance, S , the force is:

$$F = k \frac{m_1 m_2}{S^2}$$

where k is a universal gravitational constant.

From this formula we see the fallacy involved in attempting to get "above" the pull of gravity. The force of gravity, F , never becomes zero as long as m_1 or m_2 is not zero, or S is not infinite. It simply decreases, rapidly at first, then more and more slowly, becoming very small at only comparatively short distances from the earth. For example, at a height of 36,000 mi., or less than one-sixth of the distance to the moon, the force of the earth's gravity has dropped to 1% of its sea level value. (Fig. 3 on following page.)

Although the gravitational force exerted by one body upon another never entirely disappears, no matter how far apart the bodies may be, the amount of *energy* required to separate them completely and forever is finite and may easily be calculated. This fact is of interest in the problem of escape from the earth by rocket, for once we have stored this required amount of relative kinetic energy in any vehicle by giving it a certain amount of speed upward, it can continue to coast away from the earth forever. It would be, in fact, much more economical to free a spaceship from the pull of gravity by this method than to impart some lower initial velocity and then continuously to supply just enough thrust to maintain this speed against the pull of the earth. For this reason, all departures from the earth are likely to begin with a comparatively rapid acceleration to maximum speed, followed by a long coasting period. The "velocity of escape" required to project a spaceship to infinity amounts to about 7 mi. a second, or about 25,000 mi. per hour. To escape from bodies other than the earth, different velocities are required. Table I lists the calculated velocities of escape for several bodies of interest.

If there is imparted to a rocket a velocity less than that required to escape from the earth's gravity, it will travel in an ellipse, with the centre of the earth at one focus. If the flight

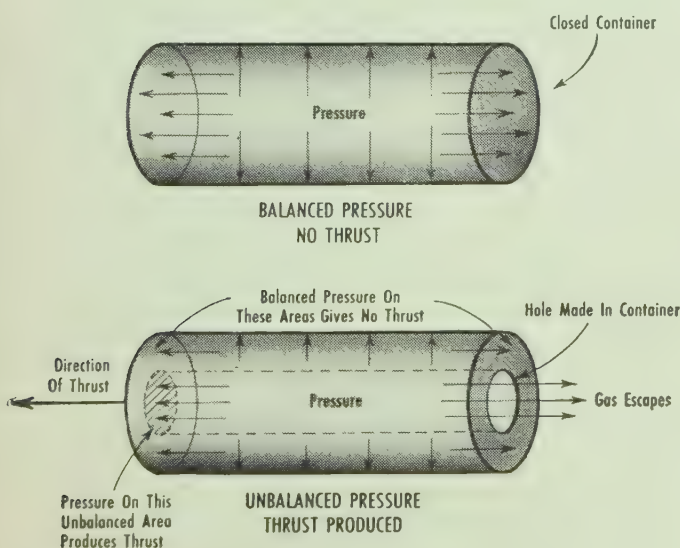


Fig. 2.—Diagram illustrating the forces operating in a rocket

Dawn of the Space Age

Table I.—Velocities of Escape for Various Bodies

Body	Velocity of escape	
	mi. per hr.	ft. per sec.
Earth	25,100	36,900
Moon	5,280	7,750
Mars	11,200	16,360
Venus	22,700	33,200
Jupiter	133,000	195,000

path, at the instant propulsion ceases, makes an angle with the earth's surface, the rocket may strike the earth on its return trip, as in path A of Figure 4. If, however, the path is parallel to the earth's surface at the instant of burnout, and if the velocity exceeds a certain minimum value, the rocket on its return trip will pass through the point where burnout took place. It will be headed in the same direction and travelling with the same speed that it had in the beginning, as shown in path B. Neglecting disturbances caused by the moon, sun or other bodies, and assuming that the point where burnout took place is well above the atmosphere, it will continue in this orbit forever.

If the rocket, projected tangentially as in the foregoing example, has a particular velocity at burnout, which depends on its height at that instant, it will describe an orbit around the earth which is a special case of an ellipse, namely, a circle. This circular velocity is that velocity at which the centrifugal force exerted on the rocket, as a result of the curvature of its orbit, just counterbalances the rocket's weight. Fig. 5 shows how the required velocity varies with the altitude of the orbit. Also shown are the corresponding periods of revolution. These circular orbits are of special importance, as will be shown later.

It is apparent that the velocity required for even the rather modest space voyage, circumnavigation of the globe, is very large compared with that of the fastest aeroplane. It is very high compared with that of a rifle bullet. Even though we have

discovered that a rocket will produce thrust in a vacuum, what is the basis for believing that these enormous speeds are really attainable?

How Fast Can a Rocket Go?

In order to understand the answer to this question, it is necessary to examine the basic equation of motion of a rocket. If we ignore the effect of gravity, at least for the moment, and assume the exhaust velocity of the gases to be a constant, we can develop the very simple equation for the velocity attained by a rocket:

$$v = C \log_e \frac{M_0}{M}$$

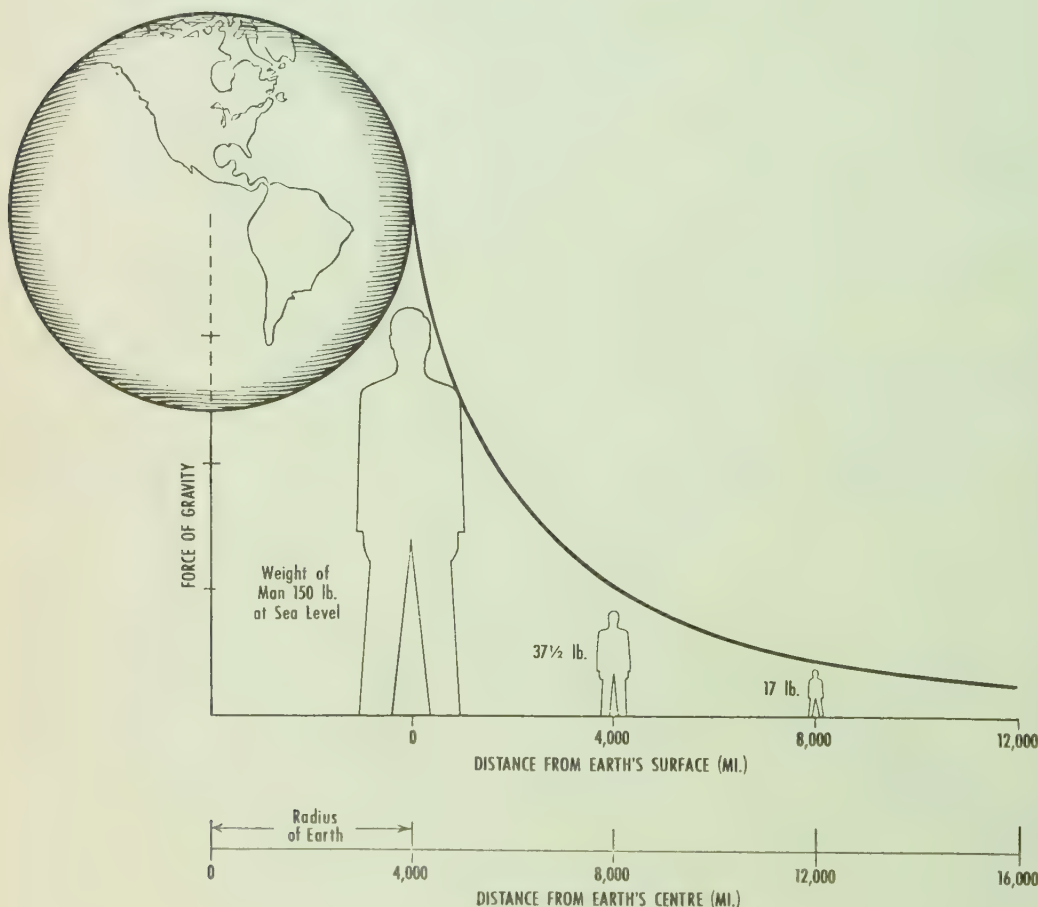
where v is the velocity at burnout, C the exhaust velocity relative to the rocket, and M_0 and M are the initial and final masses of the rocket respectively. \log_e signifies the natural logarithm. This equation is derived directly from Newton's second and third laws of motion by taking into account the varying mass of the rocket during the burning period. Expressed in words, the equation says that the velocity attained by a rocket is equal to the velocity of the rocket exhaust multiplied by the natural logarithm of the ratio of the starting mass to the final mass.

For any desired rocket velocity the ratio of initial to final weights required may be calculated, if the value of C is known. Fortunately, the exhaust velocity can be determined rather easily from thermochemical and thermodynamic considerations. The calculations are somewhat too involved to be discussed here, but several generalizations may be drawn from the formulas. The primary factors tending to increase the exhaust velocity are: low molecular weight of the gases comprising the jet, high initial gas temperature (*i.e.*, very energetic propellants) and a large ratio of initial to final pressure. Table II

shows a listing of the exhaust velocities obtainable with several representative propellant combinations. Also listed are the combustion temperatures, and the specific gravities for the particular ratio of oxidizer to fuel indicated.

Examination of the table shows that the highest exhaust velocity of all is obtained with liquid fluorine and liquid hydrogen. The inclination to specify this combination for our space flight endeavours is certainly very great. It may also be seen, however, that the specific gravity of this combination is very low. The tanks to contain a given weight of fluorine and hydrogen would have to be more than twice as large as those to contain the same weight of liquid oxygen and alcohol. As a result the tanks would undoubtedly be considerably heavier. Therefore, much of what is gained in increased jet velocity is lost in decreased mass ratio. Another drawback is that liquid fluorine and liquid hydrogen have very low boiling points.

Fig. 3.—Variation of the force of gravity with distance from the earth



Dawn of the Space Age

Table II.—Properties of Various Possible Rocket Engine Propellant Combinations

Propellant combination	Mixture ratio oxidizer to fuel	Exhaust velocity (ft. per sec.)	Combustion temp. °F.	Specific gravity
Oxygen-alcohol	1.5	7,800	5297	.97
Oxygen-gasoline	2.26	8,100	5660	.995
Oxygen-hydrazine . . . . .	.83	8,460	5382	1.065
Oxygen-hydrogen	2.89	11,100	3886	.23
Fluorine-hydrogen	9.42	11,900	8072	.457
Fluorine-hydrazine	1.98	9,560	7692	1.07
Nitric acid-gasoline	4.56	7,460	5005	1.26
Nitric acid-aniline	3.00	7,150	5067	1.39
Nitric acid-hydrazine	1.16	7,800	4728	1.25
Hydrogen peroxide-gasoline	5.10	7,400	4095	1.20
Hydrogen peroxide-hydrazine	1.69	7,700	4200	1.22
Hydrogen peroxide-nitromethane . . . . .	.42	7,500	4719	1.20

NOTE: Table II is based on expansion from a combustion chamber pressure of 300 lb. per square inch absolute to 14.7 lb. per square inch.

Liquid hydrogen boils at -423° F. and liquid fluorine at -306° F. Add to the low temperature problems the facts that fluorine is extremely corrosive and that hydrogen is very inflammable, and you have powerful deterrents to their use as propellants. Furthermore, because of the very high combustion temperatures, some engine efficiency would have to be sacrificed to attain proper engine cooling.

It is difficult to find a really happy choice of propellants, for each step down the performance ladder brings partial compensation in terms of density, handling qualities, lower cost or other advantages. The final choice would have to be made on the basis of expediency.

Let us assume, to make the problem concrete, that we decide to use liquid oxygen and hydrazine as propellants, and that we obtain the full theoretical exhaust velocity shown, 8,460 ft. per second. Disregarding the velocity loss due to gravity during the burning period, we find that to attain enough speed for a low altitude orbit (200 mi.), the required mass ratio is about 20. That is, the loaded rocket at the instant of take-off must weigh about 20 times as much as it does at burnout; i.e., 95% of the rocket must be fuel, and only 5% is available for pay load, structure and all other items.

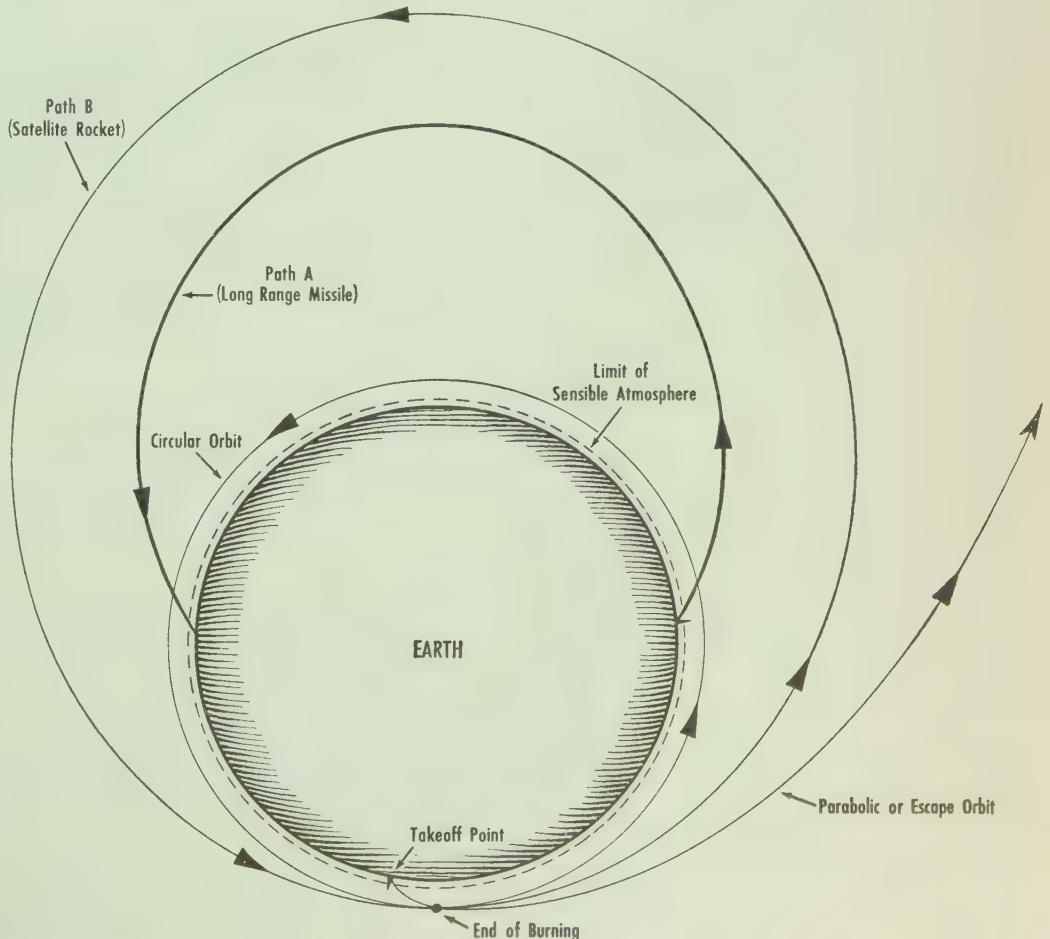
Suppose now that we wish to escape from the earth completely, what mass ratio will be required? Remembering that for this end the rocket must attain a speed of nearly 37,000 ft. per second, we find that a mass ratio of 76 is needed. This means that only 1.3% of the gross weight of the rocket is available for pay load and structure, an obvious impossibility. In fact, it is also very probably impossible to build a rocket having the mass ratio of 20 required for a circular orbit. What then is the source of the engineer's optimism that this obstacle can be overcome?

The answer lies in what is known as the step-rocket principle. If, for example, it is

found that a rocket can be built which will carry a pay load equal to 10% of its gross weight, for an over-all mass ratio of five, such a rocket will attain a speed, calculating as before, equal to 1.6 times the speed of its exhaust. For the exhaust velocity assumed, this would be 13,500 ft. per second. Now suppose that as a pay load for this rocket, another smaller rocket is used, having the same mass ratio and exhaust velocity. Suppose further that this combination, or two-step rocket, is set to fire in such a way that at the instant the larger stage burns out, the smaller stage is ignited. The velocities will then be additive, and the smaller rocket, at burnout, will be travelling at twice 13,500, or 27,000 ft. per second. Already more than enough speed has been attained to establish a permanent orbit. If a larger rocket of similar proportions were added to the two-stage combination, to carry the first two rockets as pay load, the final velocity would be three times 13,500 or 40,500 ft. per second. Comparing this latter speed with that required to escape from the earth, it is obviously more than adequate. When we make a deduction for air resistance, and the fact that the rocket must support its own weight during the propulsion period, the velocity attained would be reduced to approximately the 37,000 ft. per second required.

To summarize up to this point, it may be said that the essence of the problem of space flight is the attainment of very high velocities. In order to get such high speeds, it is evident that the jet (or exhaust) velocity must be as high as possible, and the mass ratio must be made very great, probably through the use of the step-rocket principle. Before we proceed to examine where rocket development stands at the present time, and to attain these tremendous speeds in practice, it will be instructive to examine some of the experimental stepping stones which have laid the foundation for our present technology.

Fig. 4.—Rocket trajectories: (A) a long-range missile, (B) a satellite rocket



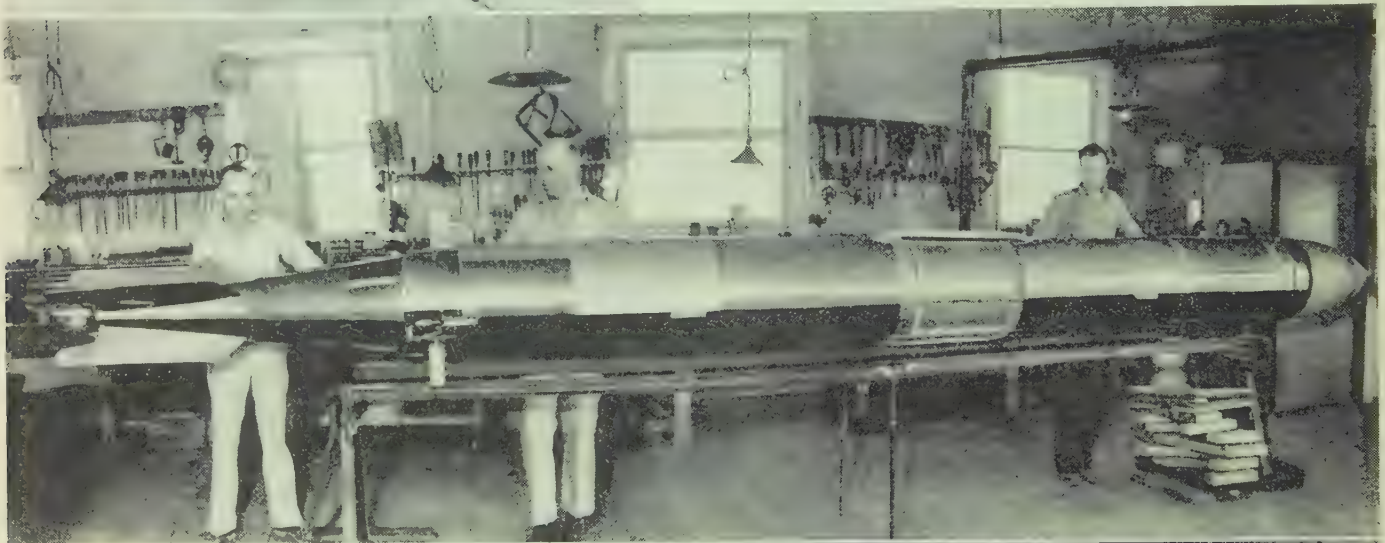
Dawn of the Space Age



ROBERT H. GODDARD, 1882-1945

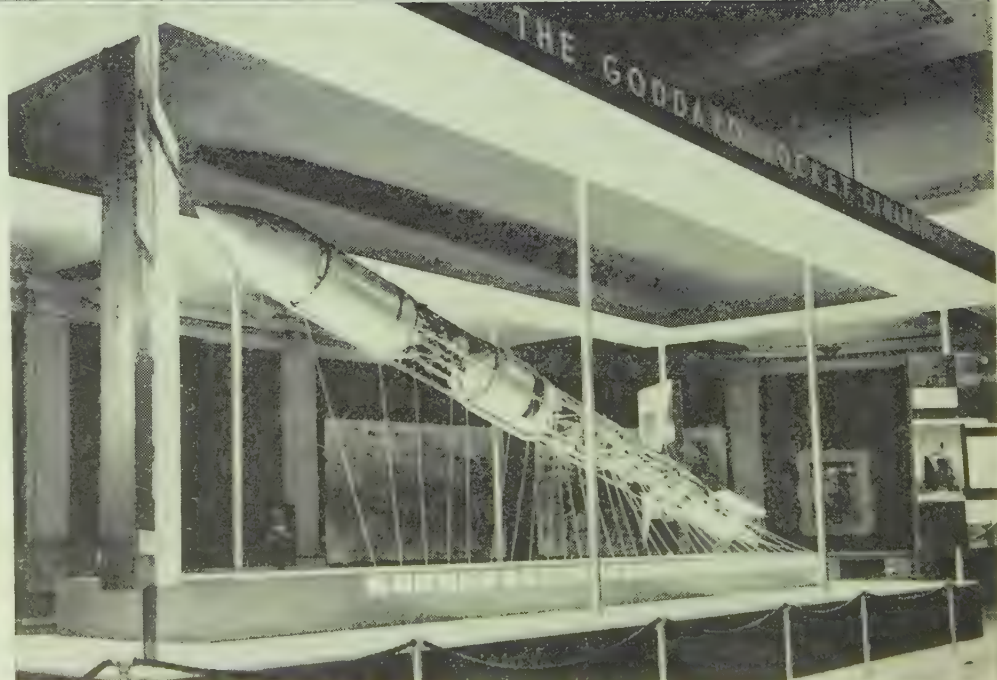
Above: Goddard with his rocket in his shop at Roswell, N.M., about 1938

Left: The first liquid-propellant rocket, developed by Goddard. Shown in its launching frame, the liquid oxygen-gasoline rocket was fired March 16, 1926, at Auburn, Mass.



Above: Complete rocket in Goddard's Roswell laboratory, Feb. 1940. The picture was made from two photographs placed in juxtaposition to show the rocket's entire length of 21-22 ft.

Right: The Goddard rocket of 1940-41, with covering removed to show interior mechanisms. This rocket is now in the Smithsonian institution, Washington, D.C.



Early Rocket History

Heron (or Hero) of Alexandria, a Greek geometer and writer who is believed to have lived some time between 150 B.C. and 250 A.D., described in a book entitled *Pneumatica* a toy which utilized the rocket principle. This device consisted of a hollow metal sphere, supported on tubular pivots. Attached to opposite sides of the sphere were bent tubes. Steam from a water boiler located underneath the sphere was led into the sphere through the pivots. The steam, escaping through the bent tubes, caused the sphere to rotate in much the same manner as does the common rotary garden sprinkler. Although this device simply went around and around, it was truly an application of the rocket principle. (Fig. 6.)

The Chinese first invented gunpowder, and by 1225 A.D. they had applied it to rocket propulsion. History records the use of rockets against the Mongols in the siege of Kai-feng in 1232. Knowledge of the rocket and of its application to warfare soon spread to the western world.

In 1805, Sir William Congreve equipped the black powder rocket with an iron case, which improved its performance considerably. For many years thereafter, the rocket gave strong competition to the cannon for military bombardment, but by 1850 its use had been almost completely abandoned because of improvements in artillery. From 1850 until World War II the rocket was used almost exclusively for pyrotechnics, although a type was made for throwing lines to vessels in distress.

Goddard Ushers in the Modern Era

Beginning in 1908, Robert H. Goddard, at Worcester (Mass.) Polytechnic institute, began experiments destined greatly to improve the performance of the rocket. Prior to this time, the exhaust velocity of the powder rocket was only about 1,000 ft. per second, and its reliability very poor.

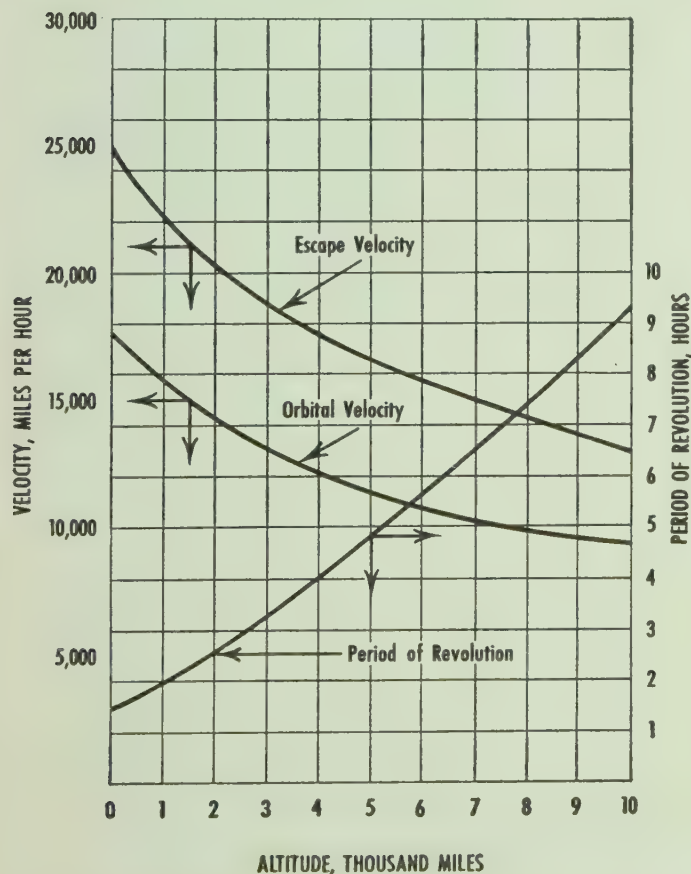


Fig. 5.—Variation of circular velocity with altitude of orbit; also the corresponding periods of revolution

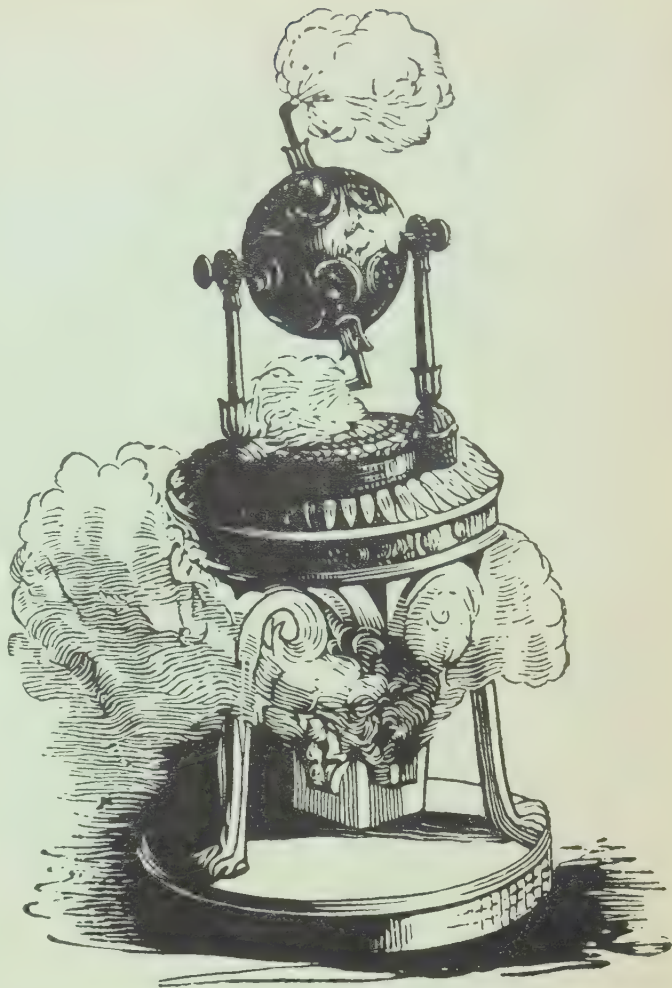


Fig. 6.—Hero's engine (from *Encyclopædia Britannica*, 8th ed., 1853-1860)

In 1918 and 1919, Goddard conducted experiments with smokeless powder rockets. In these tests, in which he used very strong steel chambers, he obtained exhaust velocities up to 8,000 ft. per second. However, the great weight of the chambers and the small amount of powder that could be contained in them led him to investigate a reloading device. Such a mechanism would permit the bulk of the propellant to be carried in a lightweight container, reserving the heavy steel chamber for that portion of the propellant actually undergoing combustion.

The solid propellant reloading mechanism proved too heavy and clumsy, however, and consequently it was not long before Goddard abandoned solid propellants in favour of liquid propellants, which could be transferred from lightweight, lower pressure tanks to the high pressure combustion chamber by means of simple centrifugal pumps. The requirement for high mass ratios has led space flight enthusiasts to consider the liquid propellant rocket almost exclusively as the prime power plant for their purpose. It is with this particular type of rocket that most of the remainder of the discussion will deal. In 1926, Goddard flew the world's first liquid propellant rocket. It travelled a distance of 184 ft. and reached a speed of 60 mi. per hour. Operating under successive grants from the Smithsonian institution and the Guggenheim foundation, Goddard constantly improved his rockets, until in 1935 one of them attained an altitude of 7,500 ft. and a speed of more than 700 mi. an hour.

The theoretical calculations of Hermann Oberth sparked the formation, in 1927, of the German Society for Space Flight.

This society began to experiment with liquid fuel rockets. After a considerable number of test stand firings and a few flights of indifferent success, the German army became interested in liquid propellant rockets, and then began the vast program which was to lead to the production of the V-2 rocket.

In the United States, the American Interplanetary society (later to be known as the American Rocket society) began an experimental program in 1931. In 1933 the society fired its first free flight rocket. This rocket reached an altitude of 250 ft. before the oxygen tank exploded. A second rocket was flown in 1934. Because of the difficulties encountered in the operation of these rockets, it was decided that a more elaborate program of ground testing was necessary before further flights should be attempted. These tests attracted the interest of the United States navy. They led to the formation of a private concern, Reaction Motors, Inc., which carried out liquid propellant rocket development during World War II for the navy.

Two other organizations for serious experimentation with liquid propellant rockets were in existence prior to the entry of the United States into World War II. One was formed by several enthusiasts at the California Institute of Technology, Pasadena. This group formed the nucleus of the C.I.T. Jet Propulsion laboratory, which was initially sponsored by the U.S. army air corps and later jointly by the air corps and the ordnance department of the army. The other team was sponsored by the U.S. navy bureau of aeronautics. It was located at the U.S. Naval Engineering Experiment station at Annapolis, Md.

Solid Propellant Rockets

It should not be overlooked that great advances have been made in the field of solid propellant rockets. During World War II, hundreds of thousands of rockets of this type were manufactured. They were in general rather small, short burning time rockets used in free flight for area bombardment. Types were developed for use against tanks, and for firing from aeroplanes, where their lack of recoil proved an important asset. The development of solid propellant rockets and their application to many military purposes is a story in itself which can only be mentioned here.

World War II Developments

With the four groups—Reaction Motors, Inc., Pompton Plains, N.J.; the Jet Propulsion laboratory of the California Institute of Technology; Goddard's group; and an all-navy project working at Annapolis—the United States began its war-time efforts to develop liquid propellant rockets for military

uses. To permit greater flexibility of operation, a private company, the Aerojet Engineering corporation, was formed by some of the Jet Propulsion laboratory pioneers in 1942. The Jet Propulsion laboratory, however, continued as an effective force in the development of rocket devices, and in fundamental research.

The initial program in the United States was devoted almost exclusively to the development of rockets to assist the take-off of heavily loaded aeroplanes. This work formed a major portion of the liquid propellant rocket effort throughout the war.

Numerous Jato (jet-assisted take-off) projects were completed with technical success. The first was the application of rocket assist to the Douglas A-20 aeroplane. This work was done by the Jet Propulsion laboratory. An improved version was ordered in small quantity by the air corps from the Aerojet Engineering corporation. This version was also successfully flight tested.

The first liquid rocket to be successfully applied to a sea-plane in the United States was developed by the navy project at Annapolis. This was a jettisonable rocket, designed to be dropped by parachute, recovered and reused. Aerojet later designed and built about 75 refined units for the same application.

Reaction Motors, Inc., developed a large (for the time) rocket employing liquid oxygen, water and gasoline as propellants. This rocket power plant was installed in a navy sea-plane as a permanent piece of equipment, and was successfully tested.

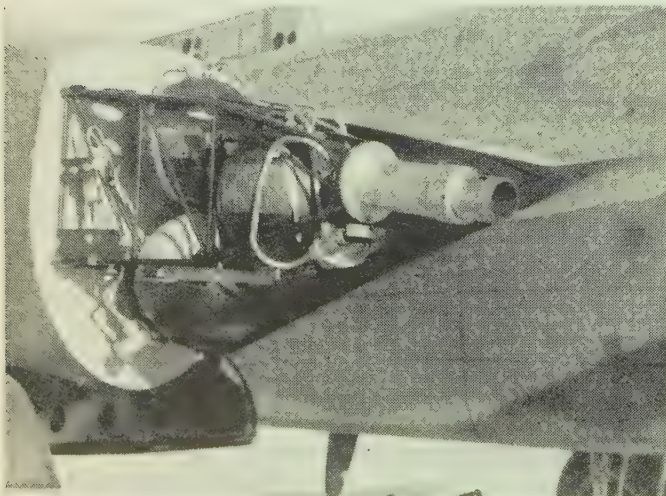
It was early recognized that one of the primary advantages of the liquid propellant rocket, light weight, could only be realized with equipment which used pumps. Most early efforts used gas pressure for forcing the propellants into the combustion chamber. This procedure required very strong tanks and a large gas storage bottle, both heavy items for high performance rockets. One of the first attempts to use pumps was made by Aerojet in a Jato unit designed for a large navy flying boat. This power plant used a small gasoline engine to drive the pumps. Control difficulties prevented successful completion of this project, but many problems relating to pump development were solved in the course of the work.

While the major effort in the United States during the first few years of the war was in the field of assisted take-off, one project contemplated rocket propulsion for an interceptor aeroplane. A small test aeroplane was flown using a pressurized rocket power plant, but it was recognized that for the longer flight times expected of the operational aeroplane, a pumping system would be required.

An ingenious scheme was proposed for driving the pumps. The name for this interceptor engine was the "Rotojet." In it, the driving rocket combustion chambers, four in number, were mounted on a rotatable shaft, and set at a slight skew angle with the axis of the shaft. The entire motor assembly then revolved under the rotational component of the thrust produced by the skewing of the motors. The propellant pumps were geared to the rotating shaft.

Ingenious though the Rotojet was, the idea was beset by practical difficulties. The problem of transferring the propellants from the pumps to the rotating motor assembly was never successfully solved. Under the centrifugal force set up by rotation of the motors, it was difficult to get the injected propellants to mix properly, and efficiency suffered badly. The rotation also introduced starting and control problems. On the day of its final demonstration to the air corps, the engine exploded on the test stand and the entire project was cancelled.

The first really successful attempt in the United States to use a turbine to drive the propellant pumps was made by the Aerojet Engineering corporation under an air corps contract.



WING-MOUNTED Aerojet Assisted Take-Off (Jato) unit shown installed on an A-20 attack bomber

Dawn of the Space Age

While supervising navy contracts at Aerojet, R. C. Truax began experiments with a small gas generator, designed to produce relatively cool gases from rocket propellants, gases sufficiently cool to be put through a turbine without damaging the blading. This work was followed up by Aerojet and an engine was built and successfully ground tested at a thrust of 6,000 lb.

R. H. Goddard was an early exponent of turbine-driven propellant pumps. After considerable experimenting with oxygen and nitrogen evaporators, with bellows-type pumps, and with a pulsometer type of pump, Goddard decided that turbine-driven centrifugal pumps offered the greatest promise for reducing the weight of rockets. His first experiments with centrifugal pumps began in 1934. By 1940 he had flown a rocket that was a complete prototype of the modern turbo-rocket missile, complete with pumps, turbines, gas generator for driving the turbine, gyroscopic controls, etc. Another flight with a similar rocket was made in May 1941.

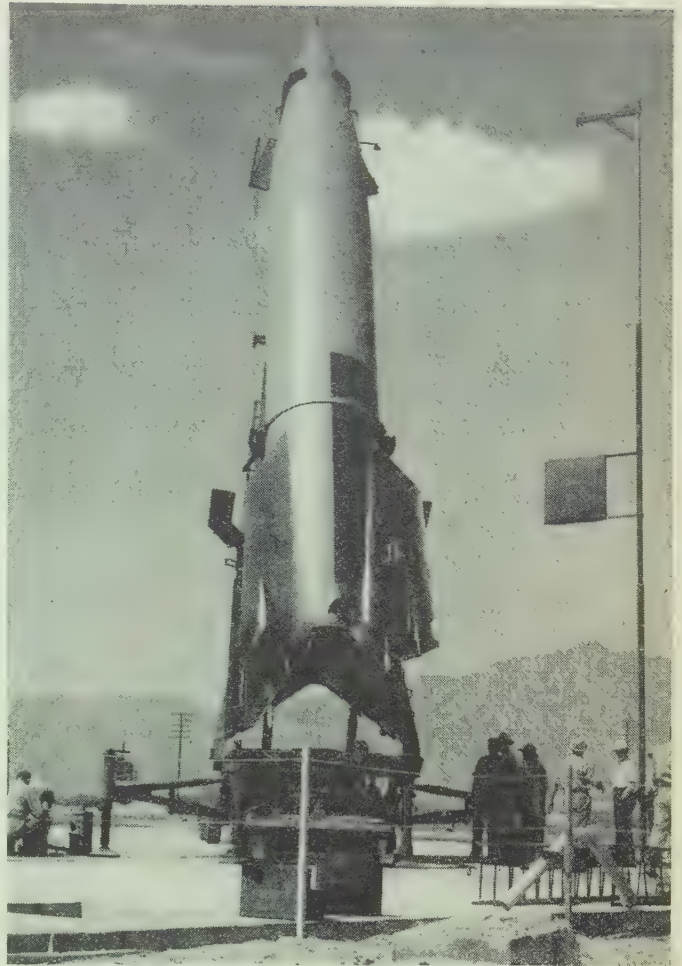
In almost every phase of rocket development, there seemed to be no path that had not previously been trod by Goddard in his far-ranging experiments. The great difficulty in assigning his specific items of equipment a proper place in the history of rocket development may be ascribed to the fact that he did not wait to perfect one component before proceeding to add a new one. As a result his experiments met with one heartbreaking failure after another. The two or three monumental successes that marked his work are testimony to his determination and optimism. His vision in recognizing, in great detail, what had to be done earned him his title as the father of modern rocketry, but no major component developed for any of his rockets ever attained a state of reliability where it would be considered satisfactory for other than experimental use. Indeed, from the vantage point of later years, it is obvious that Goddard was attempting, almost singlehandedly, to solve all of the problems that were later to absorb the efforts of thousands of men and millions upon millions of dollars.

Vergeltungswaffe Zwei — the V-2 Rocket

The preoccupation of the U.S. rocket industry and the armed forces with Jato and other short-range applications for liquid propellant rockets came to an end in Sept. 1944, when the first V-2 rocket crashed down on London from its launching site nearly 200 mi. away. The vast disparity between the rocket program of the United States and that of Germany was revealed with a shock. In the V-2, the Germans had an operational guided missile capable of speeds of more than 3,500 mi. an hour, able to carry a ton of pay load for a distance of almost 200 mi. This was at a time when experts in the United States were just beginning to wonder whether this new form of power might be usable in some kind of controlled missile.

The development of the V-2 goes back to 1932, and ranks with the Manhattan Project, which produced the atomic bomb in the United States, as one of the greatest engineering accomplishments of all time.

The story began when the activities of the German Society for Space Flight attracted the interest of the German Army Weapons group. The society had begun amateur experiments with liquid propellant rockets in 1929, much in the same manner as did the American Rocket society somewhat later. Rockets were built without adequate ground testing of components and as a result flights were uniformly unsuccessful. In 1932 several of the experimenters were taken under the wing of the German army. Nourished by a gradually increasing flow of government funds, the program grew steadily. By 1934, the first liquid propellant rockets built under the army program were fired. They were designated A-2. Two flew successfully. One reached an altitude of 7,400 ft.



GERMAN V-2 ROCKET, first to be fired in the U.S. after World War II, being erected on its firing table at White Sands, N.M., proving ground

By 1936, an all-out effort was authorized, and a vast and costly development station was constructed at Peenemünde on the Baltic. Complete facilities were constructed for every phase of rocket development—motors, pumps, controls, aerodynamic studies, etc. Even before the facilities had been completed, rockets were being fired.

By the end of 1939, design of the A-4, which later became known as the V-2, was well under way, and smaller test rockets, designated A-5, were being fired more than five miles high from the Greifswalder Oie near Peenemünde.

The first V-2, fired in the spring of 1942, failed after rising a few thousand feet, as did the second, but in early Oct. 1942, a third rocket was launched. This flight was a complete success. It may be regarded as an experimental milestone on the road to space. Whereas prior rockets had ascended only a few miles, the V-2 rose more than 50 mi. above the earth, travelled nearly 200 mi. over its surface, and attained a speed more than twice that of a rifle bullet. Less than six minutes were required for the missile to reach a target at maximum range. In comparison with all previous rockets, the V-2 was a huge affair, standing more than five stories tall on its launching platform. Its weight on take-off was nearly 14 tons.

The propellants used were liquid oxygen and a water-alcohol mixture. These propellants were contained in two lightweight, low-pressure tanks, and were delivered to the combustion chamber by two pumps. These pumps were mounted on a common shaft with a two-stage turbine. The turbine was driven by the products of decomposition of highly concentrated hydrogen peroxide. After reaching the pump from the fuel tank, the alcohol, under a pressure of more than 320 lb. per square inch, was

forced into a cooling jacket surrounding the combustion chamber and nozzle. From the cooling jacket, the alcohol passed through the main fuel valve, and then into the combustion chamber through a multiplicity of spray orifices.

The liquid oxygen was forced by the oxygen pump to the combustion chamber through the main oxygen valve and a set of brass shower-head type injection orifices.

Ignition of the alcohol and oxygen was by means of a pyrotechnic squib inserted through the exhaust nozzle. At full power, the rocket engine delivered a thrust of more than 55,000 lb. The firing duration was approximately 60 sec.

The entire propulsion system was enclosed in a thin steel shell which gave the rocket a streamlined shape. This shell was capped by an instrument and guidance compartment. In the extreme nose was a warhead of high explosive weighing somewhat more than a ton. To provide aerodynamic stability, four large fins were provided at the after end of the rocket.

The V-2 solved the problem of directional control that plagued all previous rockets by use of a complete gyro-controlled automatic pilot. Two free gyroscopes sensed motion of the rocket in roll, pitch and yaw. The measurements were transmitted to a computer which compared the measured values with the values desired. The difference, or error signal, was transmitted to powerful servomotors which operated controls to bring the rocket back to the desired attitude.

Two types of control surfaces were provided. Aerodynamic surfaces, somewhat similar to the rudder and elevators of an aeroplane, were located on the four fins. These surfaces helped steer the rocket whenever there was sufficient dynamic air pressure to give a useful reaction. The rocket, however, was fired from a small table, and accelerated rather slowly from a standing start. During this early part of the flight, the air rudders could have but little effect, while side winds would tend to weathercock the rocket into the wind. In order to provide means for correcting the rocket's flight during this interval, graphite vanes were installed in the jet blast. These vanes, operating in response to signals from the computer, deflected the exhaust gases to provide a steering moment.

The tremendous step over prior technology represented by the V-2 cannot be overemphasized. In the short span of roughly five years, the liquid propellant rocket had grown from an erratic, uncontrollable experimental gadget to a huge, complex vehicle for assaulting the boundaries of space. The performance potential inherent in that first V-2 rocket fired in 1942 has yet to be exceeded in all respects. It appears that no really fundamental changes or innovations are required to proceed from the V-2 to the true spaceship.

Other German Developments

Although the development of the V-2 completely overshadowed all other rocket developments of the period, it should not be allowed to eclipse the latter entirely. Other facets of the German rocket program contributed many important techniques on which future designers of other rockets could draw. Table III summarizes the more important German programs in the rocket field.

While the A-4 was based on the use of liquid oxygen as an oxidizer, it was the only major German project to do so. Either hydrogen peroxide of very high strength or concentrated nitric acid was used as an oxidant in all the other programs.

The use of hydrogen peroxide was championed most vigorously by the Helmuth Walter works at Kiel. This firm developed many propulsive devices using peroxide, including rockets for aeroplanes and missiles, and engines for submarines. Pure hydrogen peroxide, H_2O_2 , not only yields nearly 50% oxygen available for combustion, but, when exposed to a suitable cat-



WAC CORPORAL, rocket developed by U.S. army ordnance

alyst, it also decomposes vigorously with copious evolution of heat. On decomposing, free oxygen and water are formed. The heat released by concentrated solutions (in excess of 64.7%) is sufficient to raise the decomposition products to temperatures in excess of the boiling point of the water formed. Not only does this heat serve to compensate in part for the lower oxidizing potential when compared with liquid oxygen, but it makes hydrogen peroxide a useful rocket propellant even when used without a fuel. Although the jet velocity attainable with pure hydrogen peroxide alone is only about 4,700 ft. per second, the comparatively low temperatures involved and the ease with which decomposition can be controlled have led to the use of peroxide for many purposes where high performance is not so important as these other factors.

When used with a fuel, hydrogen peroxide gives performance only about 10% lower than does liquid oxygen with the same fuel.

As may be seen from the table, the German scientists applied the hydrogen peroxide rocket to two piloted aeroplanes, the Me 163 and the Natter. The engine used for both of these aircraft was the "hot" type, using a mixture of hydrazine hydrate and alcohol as fuel. Turbine-driven pumps were used to provide propellant pressure. Thrust could be varied at will from about 650 lb. to 3,800 lb. These aeroplanes exhibited phenomenal speed and rate of climb.

Nitric acid as an oxidant was exploited by the Bavarian Motor works (B.M.W.), by the Automobile institute (D.V.K.) and also by the Peenemünde organization. A wide variety of missile and aircraft power plants were developed, which added to the general fund of technological information. One of the largest rocket power plants to use nitric acid was Peenemünde's Wasserfall. This missile was a large anti-aircraft device weighing nearly 8,000 lb. It was capable of engaging bomber aeroplanes at altitudes up to 60,000 ft. and ranges up to 15 mi.

Nitric acid possesses two advantages over liquid oxygen as an oxidizer: first, it is a liquid at ordinary temperatures; sec-

Dawn of the Space Age

Table III.—German Wartime Rocket Developments Using Liquid Propellant Power Plants

Type	Description
Piloted aeroplanes	
Me 163	Interceptor aeroplane, 560 m.p.h. speed. Hydrogen peroxide-hydrazine hydrate propellants. Turbo-pump engine. Used operationally.
Natter	Vertical take-off interceptor, 620 m.p.h. speed. Same engine as Me 163. Experimental only.
Me 262	Experimental version used BMW rocket engine in addition to turbojet. Nitric acid-amine propellants. Engine-driven pump system.
Surface-to-surface missiles	
V-2	Ballistic missile, 3,500 m.p.h. speed, 190-mi. range, one-ton warhead. Liquid oxygen-alcohol propellants. Turbo-pump engine. Used operationally.
A-4b	V-2 fitted with wings for gliding. Experimental only.
A-9	Missile similar to A-4b. Design stage only.
A-9/A-10	Two-stage glide rocket, 3,000-mi. range. Design stage only.
Surface-to-air missiles	
Wasserfall	Single-stage rocket with small cruciform wings. Maximum speed 2,400 ft. per second, 15-mi. range, 8,000 lb. weight, 670-lb. warhead. Late development stage. High production planned. Nitric acid-amine propellants, compressed gas propellant feed system.
Enzian	Two-stage winged rocket, 4,300 lb. weight, 1,000-lb. warhead, high subsonic speed. Late development stage. Nitric acid-amine propellants, pressure system.
Rheintochter III	Two-stage winged rocket, 3,400 lb. weight, 351-lb. warhead, high subsonic speed. Early development stage. Nitric acid-amine propellants. Pressure system.
Air-to-air missiles	
X-4	Single-stage rocket with cruciform wings. 132 lb. weight, 44-lb. warhead. Speed, 560 m.p.h. Range, 3,100 yd. Nitric acid xylene propellants. Pressure system. Late development stage.
Air-to-surface missiles	
HS 293	Glide bomb with rocket booster. Hydrogen peroxide propellant. Operational use.

ond, it ignites on contact with a number of high performance fuels. This last feature eliminates the necessity for a separate ignition system, a simplification particularly important for applications where successive restarting is desired. The performance of nitric acid with a given fuel is comparable to that given by hydrogen peroxide with the same fuel.

Postwar Developments in the United States

By the end of the war, German rocket development was several years ahead of the U.S. effort. As knowledge of German

activities began to reach the United States, the U.S. program was expanded and accelerated. Many new programs for applying liquid propellant rocket propulsion were initiated. Many of these were begun in the closing days of the war, when money for such work was plentiful, and the romance of the rocket had extended even to the upper echelons of the military establishment. The newness of the field and the shortage of experienced people caused considerable confusion and misdirection. The difficulties involved in developing guided missiles were frequently underestimated. Ambitious programs were initiated, only to be cancelled in a year or two because of administrative impatience at the inevitable slow progress.

Out of the welter of projects, however, some survived sufficiently long to make significant contributions to the rocket art, and hence possibly to the ultimate conquest of space.

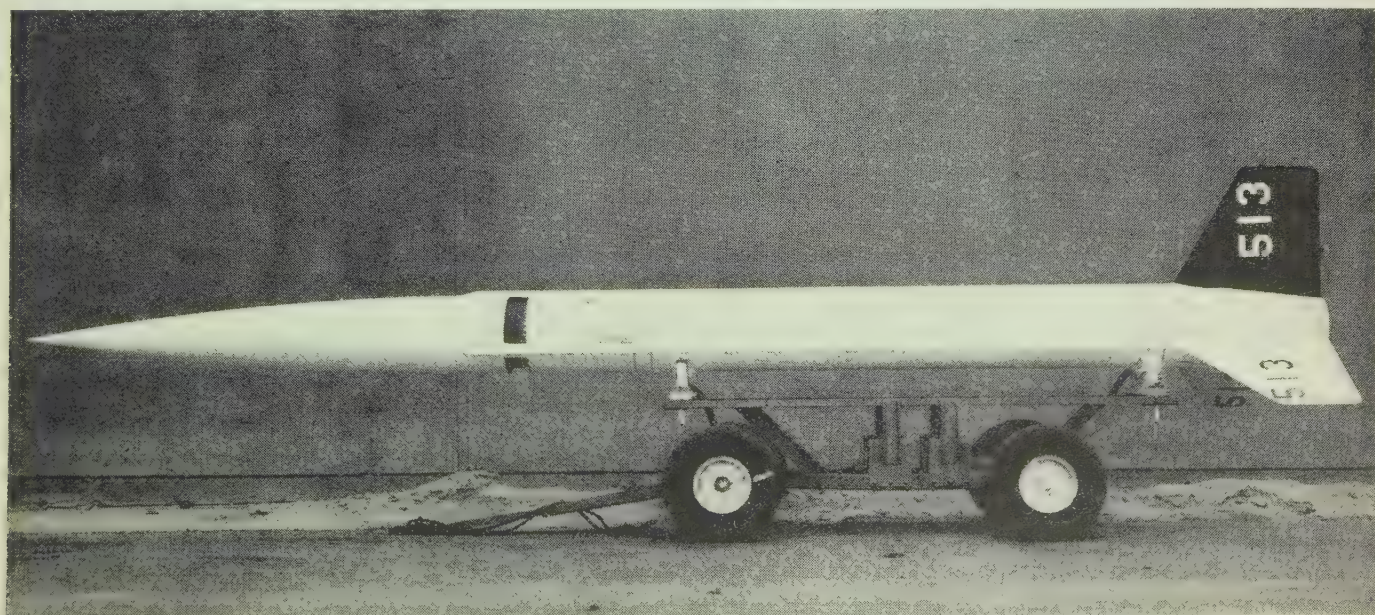
The first attempt by the U.S. government to build a rocket for high altitude exploration resulted in the WAC Corporal. The WAC Corporal was a small, gas-pressurized nitric acid-aniline rocket weighing about 750 lb. fully loaded. In some degree it served as a small-scale prototype for the larger Corporal surface-to-surface guided missile which followed. The WAC Corporal used a solid propellant booster rocket to impart an initial high acceleration. This extra kick gave the WAC Corporal sufficient velocity by the time it reached the top of its launching tower that the effect of side-winds was minimized. The rocket would then continue to rise substantially straight up without the aid of gyroscopic steering mechanisms.

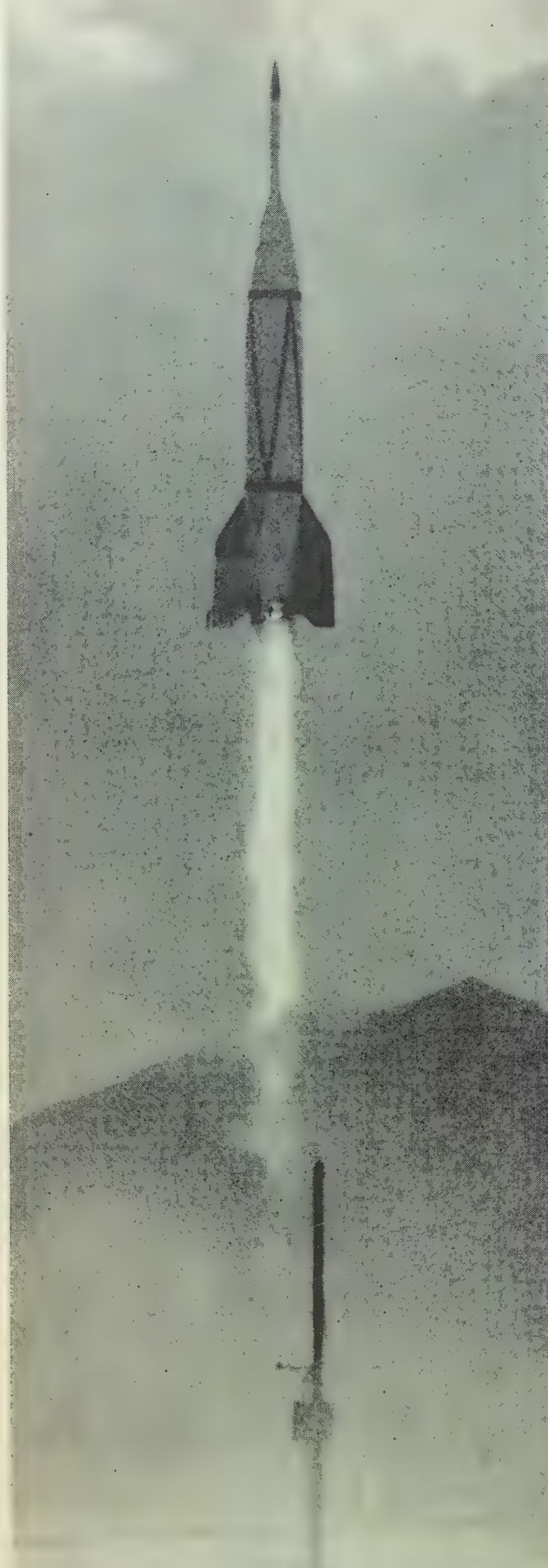
The WAC Corporal was developed by the Jet Propulsion laboratory of the California Institute of Technology. Altitudes in excess of 40 mi. were attained by it. The only two-stage liquid propellant rocket ever flown was a combination of a WAC Corporal and a V-2. This missile holds the all-time altitude record of about 250 mi.

A larger, refined version of the WAC Corporal was designed by the Aerojet-General corporation of Azusa, Calif. It has been used extensively for upper atmosphere research. This rocket, known as the Aerobee, is capable of rising more than 80 mi. high, with a pay load of 150 lb. of instruments.

The Corporal missile itself is very similar in general arrangement to the WAC Corporal or Aerobee. It is a nitric acid-aniline, pressure-fed liquid propellant rocket, but is considerably larger than the Aerobee, grossing more than 10,000 lb. at take-off.

AEROBEE ROCKET, a larger version of the WAC Corporal, shown mounted on trailer





Several other guided missiles of the postwar era used liquid propellant rocket propulsion. One of these, the Nike anti-aircraft missile developed by the army, attained operational status in the early 1950s.

Of all the U.S. postwar projects, the Viking is the most representative of best modern practice in the design of high performance rockets. Since it gives the best gauge of the current stage of progress towards the goal of space flight, a rather full discussion of this rocket is warranted.

After the end of the war with Germany, a number of V-2 rockets were brought to the United States, and were fired from the army proving ground at White Sands, N.Mex. The primary objective of the firings was upper atmosphere research. It soon became apparent that, because of the small total number of rockets obtained and the progressive deterioration of certain of their vital components, the research program could not be completed with the rockets available. The Naval Research laboratory, therefore, contracted with the Glenn L. Martin company for fabrication of a number of new rockets designed expressly as research vehicles. These rockets were named Vikings.

In many respects, the Viking is very similar to the V-2. Essentially the same propellant combination is used, liquid oxygen and alcohol. Pumps are used to feed these propellants to the combustion chamber. The pumps, as with the V-2, are driven by a turbine which is in turn operated by the decomposition products of 90% hydrogen peroxide. One difference is that the peroxide is decomposed by a solid catalyst, as was done with the Me 163 power plant, rather than by means of the permanganate solution used in the V-2 engine.

Considerable weight savings were effected through the use of integral propellant tanks and refined power plant compounds. Table IV gives a comparison of the Viking and V-2.

Table IV.—Characteristics of the German V-2 and the U.S. Viking Rockets

	V-2	Viking
Gross weight (lb.)	28,000 (100%)	14,915 (100%)
Empty weight (lb.)	8,800 (31.4%)	3,007 (20.5%)
Pay load (lb.)	2,200 (7.8%)	958 (6.4%)
Propellant	Liquid oxygen 75% alcohol- water mixture	Liquid oxygen 100% ethyl alcohol
Length (ft.)	46	45.7
Maximum body diameter (ft.)	5.4	4½
Engine thrust (lb.) (sea level)	56,500	20,000
Duration of burning (sec.)	60-63	120
Burnout velocity (ft. per sec.)	4,900	6,300

Two rather different versions of the Viking were produced: a long slender design, used on Vikings 1-8, and a fatter, heavier version for subsequent rockets.

One interesting and unique feature of the Viking is the use of a gymballed motor for steering. The V-2 had employed carbon vanes, riding in the exhaust blast, to achieve control at low speeds. These vanes were heavy, constituted a constant source of trouble, gradually eroded during flight, created drag, and did not provide as large a control moment as might be desired. The expedient of swivelling the main thrust motor overcame nearly all of these difficulties. More important, the control forces made available by this system were so great that elimination of all aerodynamic surfaces, including fixed fins, seemed a possibility. Removal of fins from rocket design would undoubtedly result in a very considerable saving in weight. This, however, remained a possibility for the future.

The essential components of the modern liquid propellant rocket may also be noted by reference to the Viking. In the conical or ogival nose is a space reserved for the pay load. In a research rocket such as the Viking, this pay load would consist

TWO-STAGE ROCKET, a WAC Corporal mounted in the nose of a V-2, starting its record flight to a height of 250 mi. on Feb. 24, 1949

of scientific instruments. In a guided missile, the pay load would usually be a high explosive or an atomic or thermonuclear bomb.

In the next compartment are contained the "brains" of the vehicle: the gyroscopic attitude sensing devices, the computers and other devices to determine the position and perhaps the velocity of the rocket. Radio equipment to send information back to earth would probably also be placed in this section. In the Viking this compartment also holds a valve for admitting ram air into the alcohol tank to provide a small positive pressure inside.

Next are the two propellant tanks, the forward one for alcohol, the after one for liquid oxygen. These tanks are very light. They are fabricated of thin sheet aluminum alloy.

The section below the propellant tanks contains the propulsion machinery and the "muscles" for steering the rocket: the hydraulic power supply and the servomotors for changing the direction of the thrust axis.

On the fins are mounted roll jets and roll tabs to prevent the rocket from rotating about its longitudinal axis. The former are small hydrogen peroxide rocket motors which provide corrective torque throughout the flight. The roll tabs are small aerodynamic surfaces which supplement the action of the roll jets during high velocity flight through the atmosphere. The fins also carry the beacon antenna, which is used to assist ground radar in tracking the rocket throughout its flight, and the telemetering antenna, through which scientific data are radioed to the ground.

The turbo-pump installation, for pumping the propellants from the low-pressure supply tanks into the high-pressure combustion chamber, is located in the after compartment.

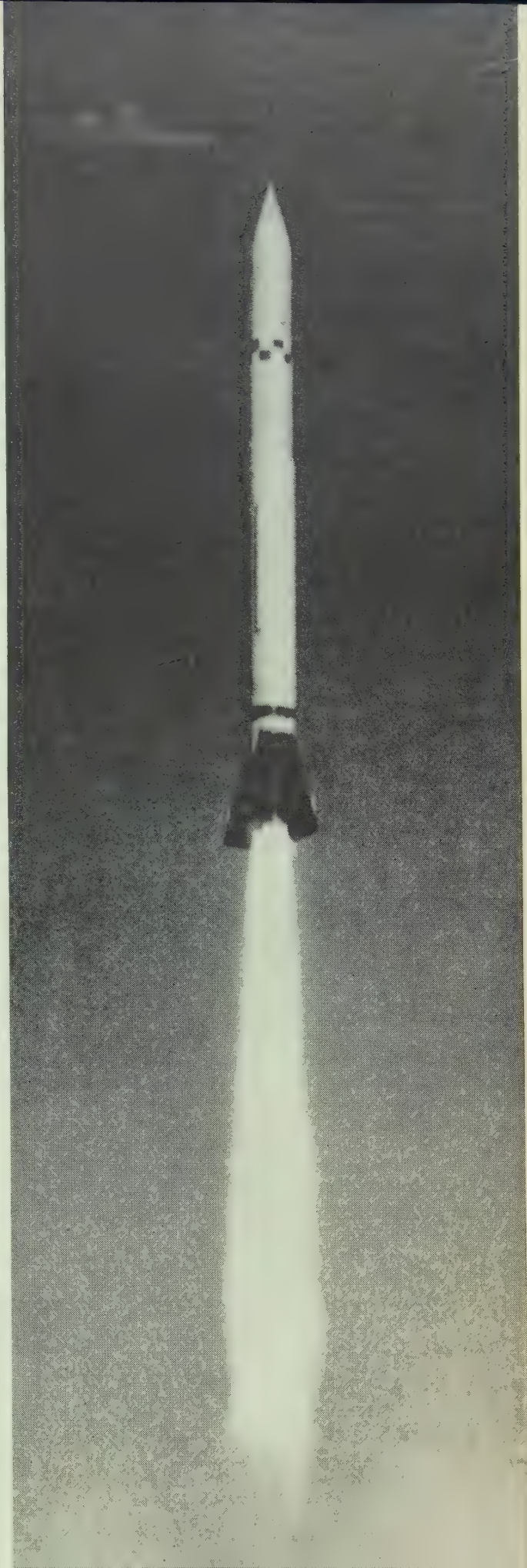
There were many other developments of the immediate post-war period which contributed to the engineering background needed to design space craft. Many propellant combinations were investigated and materials for use with the specialized fluids of rocket propulsion were developed. Testing techniques were improved. New cycles and new engine components were developed, many still cloaked by military security.

One field of application for rocket power has been to man-carrying aeroplanes. Two wartime German efforts in this class have already been mentioned, the Me 163 and the Natter interceptors. In the United States, a power plant was developed for the navy by Reaction Motors, Inc., of Rockaway, N.J. Two versions of this engine were developed. One, a gas-pressurized model, was used in the Bell X-1 built for the air force. This aeroplane was the first piloted craft to exceed the speed of sound in level flight, a feat first performed in Oct. 1947. The second engine used a turbo-pump. This engine was installed in the Navy-Douglas Skyrocket. On Aug. 7, 1951, the Skyrocket established a speed record of 1,243 mi. per hour and reached an altitude of nearly 80,000 ft. The turbo-pump engine was then installed in a revised X-1A. On Dec. 12, 1953, a new record of 1,600 mi. per hour was set by the X-1A, and also a new altitude record considerably in excess of 80,000 ft.

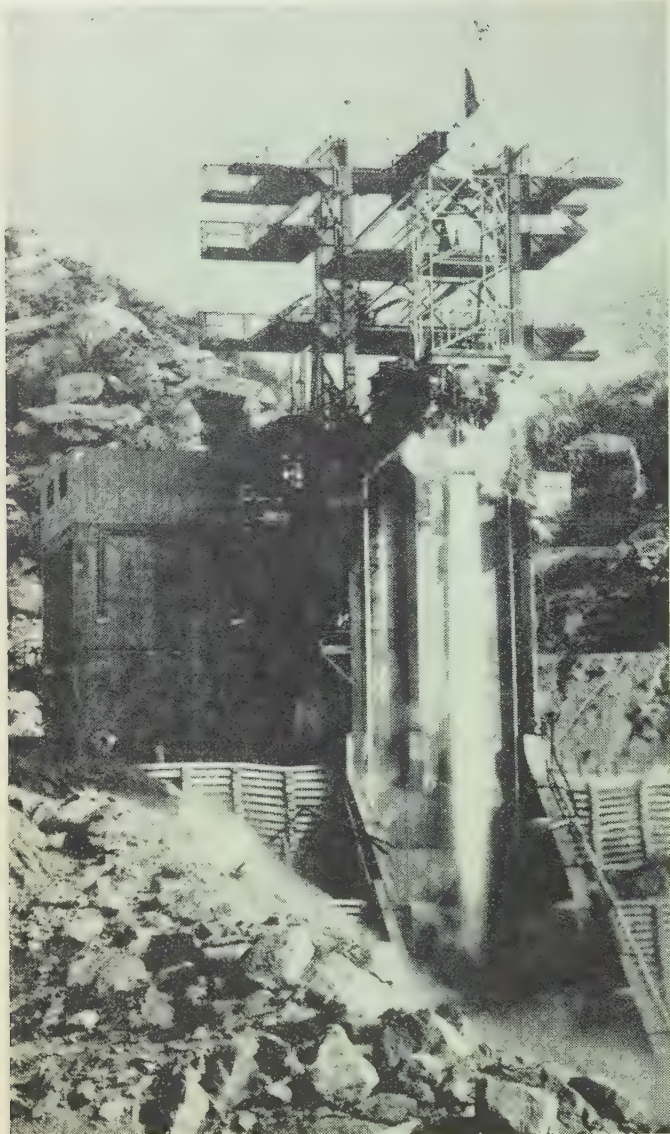
A new rocket propelled research aeroplane, the Bell X-2, has been announced but no information on its performance has been released. It is known to be powered by an engine developed by Curtiss-Wright corporation. It was reported that development of a further improved rocket plane was being started. It was said that this aeroplane would be capable of rising to an altitude of more than 100 mi.

Rocket Developments in Other Countries

Rocket development in most countries of the world is carried out under even stricter secrecy than in the United States. Some



Dawn of the Space Age



STATIC TESTING STAND of North American Aviation's Aerophysics field laboratory in the Santa Susana mountains north of Los Angeles, Calif. A rocket engine is shown being tested

information has been disclosed, which indicates that several other nations have energetic programs under way.

The Swiss were among the first to reveal the development of an anti-aircraft guided missile. This missile was produced by the Oerlikon firm, noted for many years as a manufacturer of guns and other armament. Their anti-aircraft missile is a comparatively small device, about 16 ft. long. It has cruciform wings, and is powered by a nitric acid rocket. The power plant is of the pressure-fed type. The United States government has purchased a number of the Oerlikon missiles for test purposes.

France also is active in the liquid propellant rocket field. The French have developed a sounding rocket somewhat similar to the U.S. Aerobee. It is known as Veronique. This rocket weighs about 2,000 lb. and has ascended as high as 40 mi. The firm of SNCASO produced in 1955 a fighter aeroplane, the S.O. 9,000, which uses a pair of small turbojets and a rocket. The turbojets are mounted on the wing tips, and are used for cruising and landing. The rocket, installed at the rear of the fuselage, provides thrust for high performance. Both of these developments are believed to use nitric acid type rocket engines.

The rocket program of the United Kingdom is probably the third most intensive in the world, following those of the United States and presumably the U.S.S.R. Two hydrogen peroxide

rockets for assisted take-off have been announced by the De-Havilland company. The first is the Sprite. This engine uses catalytically decomposed hydrogen peroxide as a propellant. The propellant is fed by gas pressure.

A new version of the Sprite, known as the Super-Sprite, is a "hot" combustion device, burning kerosene with the hydrogen peroxide oxidizer. This Jato gives 4,000 lb. of thrust for 40 sec.

A liquid oxygen-kerosene rocket engine has been developed by the Armstrong Siddeley firm. This engine, known as the Snarler, is apparently designed for use as an auxiliary power plant on turbojet powered aircraft, for it requires an external source of power to drive its propellant pumps.

Authoritative information on the rocket development program of the U.S.S.R. is lacking. It has been reported that an enlarged version of the V-2 is in quantity production. Considerable evidence also exists that Russia has under development a very large liquid propellant rocket power plant having a thrust of more than 250,000 lb. Such a power plant would be suitable for use in a two-step rocket. With structural design no better than the V-2, the combination of a V-2 and a larger booster stage using the aforementioned engine could achieve ranges in excess of 1,000 mi.

Near the end of World War II, the Russians captured the pilot plant where the German Wasserfall missile was being produced. They are believed to have perfected this missile for anti-aircraft use.

Many reports have appeared of experiments with rockets for auxiliary propulsion of turbojet powered aeroplanes. An improved version of the German Me 163, known as the YAK-21, is said to have been developed, and is reported to be capable of speeds in excess of 900 m.p.h.

A missile-launching site is reported to be in existence at Severnaya Zemlya. Developmental work has been done at Khimki, near Moscow.

The Rocket Industry Grows

From the four little groups of prewar days, rocket technology has spread in the United States until it forms the primary activity for several sizable industrial concerns and is an important phase of the activities of many other organizations.

The Jet Propulsion Laboratory of the California Institute of Technology has grown from a handful of enthusiastic students to a vast professional organization. From one small test stand, on the California Institute of Technology campus, the physical facilities have increased to include dozens of well-instrumented test pits, shops, laboratories and offices totalling thousands of square feet. The entire establishment is now at a separate location, and operates with a considerable degree of independence.

Since its first incorporation in 1942, the Aerojet Engineering corporation (now the Aerojet General corporation) has played an important part in the development of both liquid and solid propellant rockets. The original facilities consisted of one rented former automobile agency in Pasadena, and a sheet iron test stand near Azusa, Calif. Aerojet now operates extensive facilities of its own at Azusa, and a large solid propellant rocket manufacturing plant at Sacramento.

Reaction Motors, Inc. was organized shortly after the United States entered the war in December 1941. With a total capital of \$5,000 and a staff of seven, they began work on a navy contract in the basement at the home of one of the charter members. Their first test site was an abandoned gravel pit, and their first shop a converted garage in Pompton Plains, N.J. Shortly after the war, the company moved into a government-

NIKE GUIDED MISSILES in firing position at a Continental Air Defense command site near Washington, D.C., in 1955

Dawn of the Space Age



Dawn of the Space Age

owned former barracks at Lake Denmark, N.J., and used a test facility supplied nearby by the navy. In 1949, the headquarters of Reaction Motors was moved to Rockaway, N.J., where it now operates.

Aerojet and Reaction Motors still (1955) are the only two private concerns of appreciable size in the United States having rocket development as their primary activity. Many older companies, however, such as North American Aviation, Inc., have taken up rocket engineering as a substantial endeavour.

Other concerns build liquid rocket propelled missiles or aircraft but buy their power plants elsewhere. Among these are the Glenn L. Martin company, the Chrysler corporation, Republic Aviation corporation, Fairchild Engine and Airplane corporation, Consolidated-Vultee Aircraft corporation, Douglas Aircraft company and the Firestone Tire and Rubber company.

The rocket project at Annapolis was the first U.S. government activity to experiment with liquid propellant rockets. Since it was first set up in 1941, many other government owned and operated facilities for testing rocket engines and launching rocket missiles have been created.

In addition to the facilities of industry and the three military services, smaller facilities are operated for research purposes by the National Advisory Committee for Aeronautics and by several universities. The NACA does its work at the engine laboratory in Cleveland, O. Purdue university, Princeton, Ohio State and the University of Michigan, as well as the California Institute of Technology (the Jet Propulsion laboratory) all have facilities for testing rockets available to students. In general, the universities also do research under government contracts.

Summary

How then does man stand, in this year 1955 A.D., on the road to the conquest of space? First, he discovered that the lights

he saw in the sky are material bodies, that, in general, they are very large—larger, on the average, than his own world. He was somewhat dismayed to discover that even the nearest was incredibly far away, and that nearly all of the distance was through a void, a vacuum more complete than that obtainable with the best vacuum pump in his laboratory. He discovered that he stood at the bottom of a deep pit created by the force of gravity. To climb out of this pit and travel the vast distances to the moon and planets seemed utterly impossible.

A few visionaries of scientific bent began, however, to calculate precisely the magnitude of the problem. The calculations soon showed that the rocket, and in particular the type using liquid propellants, seemed, at least in theory, capable of operating in airless space, of actually achieving the tremendous speeds required to hurtle out of the gravitational well, and to traverse the great distances in a reasonable time.

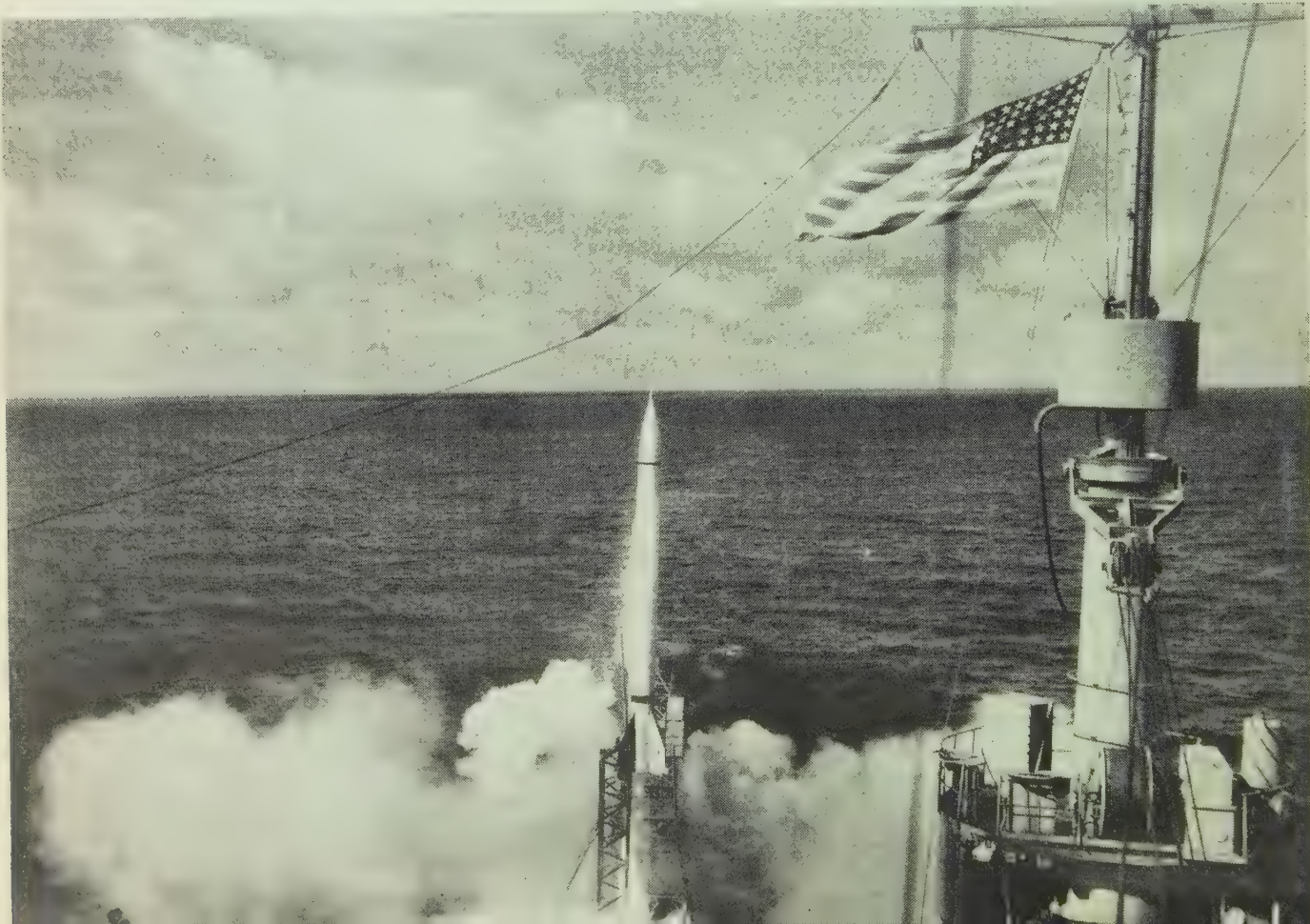
First under the impulse of amateur enthusiasm, then under scientific sponsorship, and finally under the powerful urge of military necessity, the ideas of the dreamers began to be changed into accomplished facts. The calculations were confirmed by test flights. A great organization of scientists and engineers grew and elaborate facilities were erected for the fabrication and testing of large rockets.

ROCKETS AND SPACE FLIGHT

There is now a well developed theory for space flight. The organization and basic technology is in existence.

It is true that in order to reach escape velocity with a three-stage rocket, a considerable improvement over present-day rocket performance is required. Each step would have to provide a speed of about 12,500 ft. per second in order to allow a slight margin of reserve. The best U.S. rocket to date, the Viking, can attain only half that speed. The over-all mass ratio

VERTICAL LAUNCHING of a Viking from aboard ship





TERRIER, a U.S. Navy anti-aircraft guided missile, one of a large family of missiles driven by solid propellant motors. Shown ready for launching from a battleship, it is silhouetted against the booster blast from another Terrier just fired

is adequate, but about 4% of the gross weight of the Viking must, by design improvements, be converted to pay load. In addition to this increase in structural efficiency, an increase in exhaust velocity must be obtained. It has been shown that better propellants offer this possibility. As mentioned in the example, the substitution of hydrazine for alcohol would bring an improvement of the proper order. Gasoline would do almost as well. The fact that the second and third stages would operate almost entirely at zero back pressure would permit a gain of 10% to 15% in exhaust velocity. A final improvement would be the addition of a device to insure the simultaneous exhaustion of both propellants.

These factors and other possible minor improvements indicate that a point has been reached where escape velocity could be achieved with a rocket of only three stages. Such a rocket could be constructed on the basis of existing techniques, without any new discoveries or major new developments.

The Orbital Technique

While the three-stage rocket to achieve escape velocities appears to be within the realm of engineering possibility, there remain certain questions of fabrication feasibility that depend on the absolute size of the rocket.

Suppose, for example, it is desired to send a pay load of 1,000 lb. to the moon. In order to free this pay load from the earth's gravity, using the 10% pay load ratio assumed previously, we see that the total weight of the first step will be ten times 1,000 lb. The first and second steps together will weigh ten times that value, and the starting weight of the three-step rocket will be $1,000 \times 10 \times 10 \times 10$ or 1,000,000 lb. This is a rather large rocket. If its proportions were made similar to those of the German V-2, the rocket would be about three times as long as the latter, or about 140 ft., which would be about 20 ft. shorter than the B-36 bomber. The weight of the

structure of the rocket itself, less fuel, would be 200,000 lb. This is approximately the same as the empty weight of the B-36. Since hundreds of B-36 bombers have been built, it may be seen that actual construction of such a rocket would not present an overwhelming task. It seems rather probable that the cost would approximate that of a modern aircraft on a per-pound basis. Thus a cost in the neighbourhood of \$5,000,000 to \$10,000,000 is indicated.

For the purpose of simply sending a pay load of 1,000 lb. (perhaps a small atomic bomb) to crash against the moon, it might be most practical to build a large rocket and launch it from the surface of the earth. Such a "moon messenger" would not only signify its arrival by a flash of light visible from the earth, but would tell earthly observers much concerning the composition of the moon's surface. If we wish to circumnavigate the moon and return to earth, however, larger pay loads will be required. An additional factor of ten seems a minimum, for reasons that will be seen later.

This factor changes the picture completely. The initial weight of the rocket would increase in substantially the same proportion as the pay load. A structure weighing ten times as much as the B-36 would be completely beyond the limits of the current state of the airframe construction art. Moreover, the rocket would be too large to be moved, except possibly by water. Even more important would be the all-or-nothing nature of the flight. Past experience has shown that many rockets of a given design must be fired before reliable performance can reasonably be expected. For a rocket of the size and complexity of a moon rocket, perhaps 50 would have to be fired before a manned flight could be attempted. Construction of 50 rockets each ten times as big as a B-36 would be a gargantuan task. Development and ground testing of the vehicle would also prove a formidable and expensive job. Fortunately, there is a stratagem which would avoid the necessity for building such very large rockets and bring the problem back into the realm of practical realization.

It has been shown that if a velocity in the neighbourhood of

Dawn of the Space Age

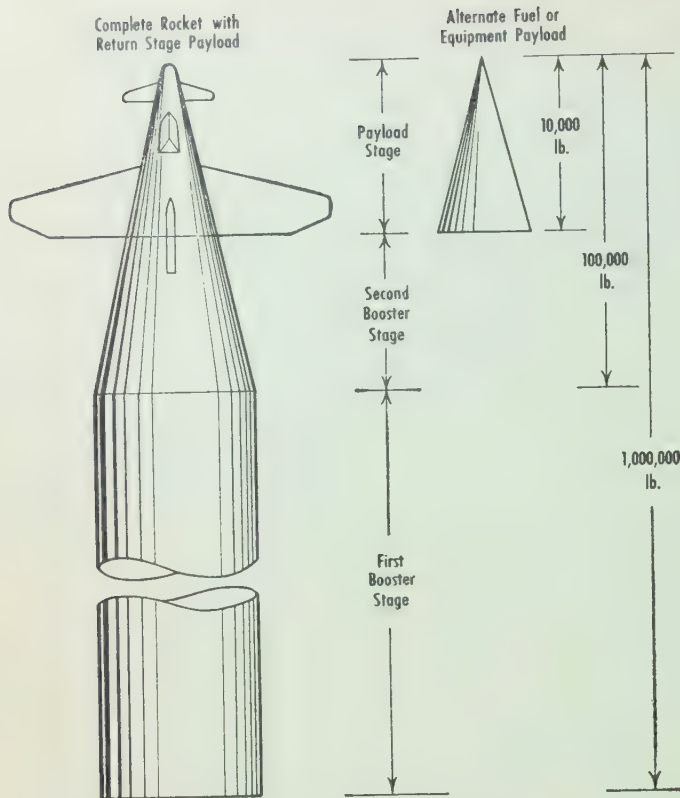


Fig. 7.—Two- and three-stage space rocket

25,000 ft. per second is imparted to an object, it will describe an elliptical path around the earth with the centre of the earth occupying one focus of the ellipse. If the ellipse nowhere intersects the atmosphere, the body will continue to orbit around the earth substantially forever. By properly regulating the trajectory of a rocket during the burning period, the orbit can be made circular.

It has been noted that the velocity required for a body to orbit around the earth at an altitude high enough to be above the sensible atmosphere is about two-thirds that required to escape completely from the pull of the earth's gravity. For the type of rocket used as an example, only two stages would be needed to reach orbital speed. This reduces the initial weight by a factor of ten, and brings the 10,000 lb. payload rocket back down to the size of a B-36. (Fig. 7.)

At first thought, construction of an *orbital* rocket might be considered pointless if the objective was a flight to or around the moon, but this is not so, for the orbital rocket gives us a method of reaching the moon with a comparatively small craft. Suppose a type of rocket is developed which is capable of placing 10,000 lb. of payload in an orbit high above the earth. If, now, we build nine of these rockets and send the first eight into the same orbit at the same point, and if the payload of the eight rockets is composed entirely of propellants, or fuel, we will have established a "gas station" in space with a store of 80,000 lb. of this fuel. This is just the amount required to refill the upper stage of our two-stage rocket. Now let us send up a ninth rocket. The payload of this rocket would be the vehicle which would circumnavigate the moon and return to earth. This ninth rocket could make contact with the cache of propellants, refuel and be on its way on a journey around the moon. The procedure saves no propellants, it requires the same total weight of rocket structure (unless some of the stages can be retrieved and reused), but it has reduced the development and construction difficulties by a large factor.

At this point, the problem of the return voyage should be considered in more detail. If men are to be carried out into

space, provisions must be made for them to return to earth. This is by no means a simple matter. In considering the problem of leaving the earth, it has been shown that it is necessary to acquire a very high velocity. In order to return and land safely, it is necessary to again reduce the speed of our spacecraft to zero. Two ways of accomplishing this appear possible. One is to reverse the rocket and blast its jets in the direction of motion. This is the procedure which must be used to effect a landing on an airless planet.

If this method were used to land on the earth, the same mass ratio would be required for the landing as for the take-off. In each case, the *change* of velocity is the same; *i.e.*, 37,000 ft. per second. Consequently, by Newton's law, the required impulse (the product of thrust and time) will be the same, and the mass ratio required to impart this impulse will likewise be the same, following the same reasoning used to determine the means for imparting the initial velocity. For an orbital rocket, similar to the oxygen-hydrazine rocket previously described, two additional stages would be required. Each would be larger by a factor of ten than the sum of the weights of all the smaller stages. In other words, the round-trip orbital rocket would be 100 times as heavy at take-off as a one-way rocket. Since it is possible to transport only about 1% of the starting weight *into* an orbit, the round trip would be bought at a fantastic price.

It might be thought that the return trip to the earth could be made by parachute, that the tremendous energy contained in an object travelling 25,000 ft. per second might be dissipated in atmospheric turbulence. The difficulty is that when a solid object entered the atmosphere at these tremendous speeds, the air would be greatly compressed. The compression would raise the temperature to unheard-of values. A parachute would be incinerated long before it had slowed the rocket to a reasonable speed.

It should be noted that although traces of air may be found up to very high altitudes, nearly half of all the air is contained in a layer only three miles deep. Rather than visualizing the atmosphere as a deep, soft blanket covering the earth, it should be compared with the skin of an onion, for in relation to the 4,000-mi. radius of the earth, a thickness of 3, 30 or even 300 mi. is very small.

Although the temperature of the air, compressed by an object entering the atmosphere at orbital speeds, would become very high, it is the quantity of heat transferred to the object which affects the temperature of the latter. This quantity of heat depends not only on the temperature difference between the air and the object, but also on the air density. At the very low densities existing at extreme altitudes, the quantity of heat transferred can be quite small. Of course, if the heat transfer continues for a long time, any mass will eventually be heated to the temperature of the air, unless some heat is removed.

The one way by which heat can be removed under these conditions is by radiation. The rate at which heat is radiated depends upon the nature of the radiating surface, and upon its absolute temperature. Since the amount of heat transferred *to* the body *decreases* as the temperature of the latter is increased, and the amount of heat radiated *from* the body *increases* as its temperature increases, we might expect that a temperature would exist at which the two heat flows would just balance. This is indeed the case. The problem in designing a rocket for safe re-entry into the atmosphere is to keep this equilibrium temperature below the softening point of the skin of the rocket. This might be achieved by keeping the rocket at a sufficiently high altitude, where the air density is very low, until air resistance has somewhat reduced its speed. The rocket can then drop lower, lose more speed, drop further, and so on until the compression temperature of the air (called stagnation tempera-



U.S. ARMY ROCKET MISSILES Honest John (left), Nike (centre) and Corporal (right), each one the first of its type to be made combat ready and first to go into production. Honest John is a medium-to-long-range artillery rocket, Nike a long-range guided missile for destroying enemy planes and Corporal a long-range surface-to-surface guided missile. The weapons are shown on their launchers, the launcher for Honest John also serving as a transporting trailer

ture) is below the critical failure temperature of the structure.

Unfortunately, a wingless rocket could not maintain itself at a sufficiently high altitude to sustain this critical relation between frictional heat input and radiant heat output. Without more lifting surface than could be provided by the rocket body, the rocket would rapidly fall into denser and denser air, its temperature would rise and ultimately the structure would fail. Vaporization of the rocket and its occupants would be inevitable.

The addition of wings could prevent this catastrophe. The use of winged rockets is the method which appears, at the present, to be best for returning to earth from an orbital flight. With wings, the rocket could be kept high enough, where the density is sufficiently low that the heat input could be matched by the heat output, at a reasonable value of skin temperature. It has been calculated that the wing loading required to main-

tain the maximum skin temperature below $1,300^{\circ}\text{F}$. would be about the same as that required to give a landing speed of 65 mi. per hour at sea level.

A temperature of $1,300^{\circ}\text{F}$. would be a reasonable value for stainless steel skin.

It would, of course, be necessary to place insulation between the skin of the rocket and the inside cabin, to insure that only a small transfer of heat took place between the skin and the interior. Refrigeration in some form (perhaps by evaporating liquid oxygen) would then maintain the interior at a livable temperature.

Dawn of the Space Age

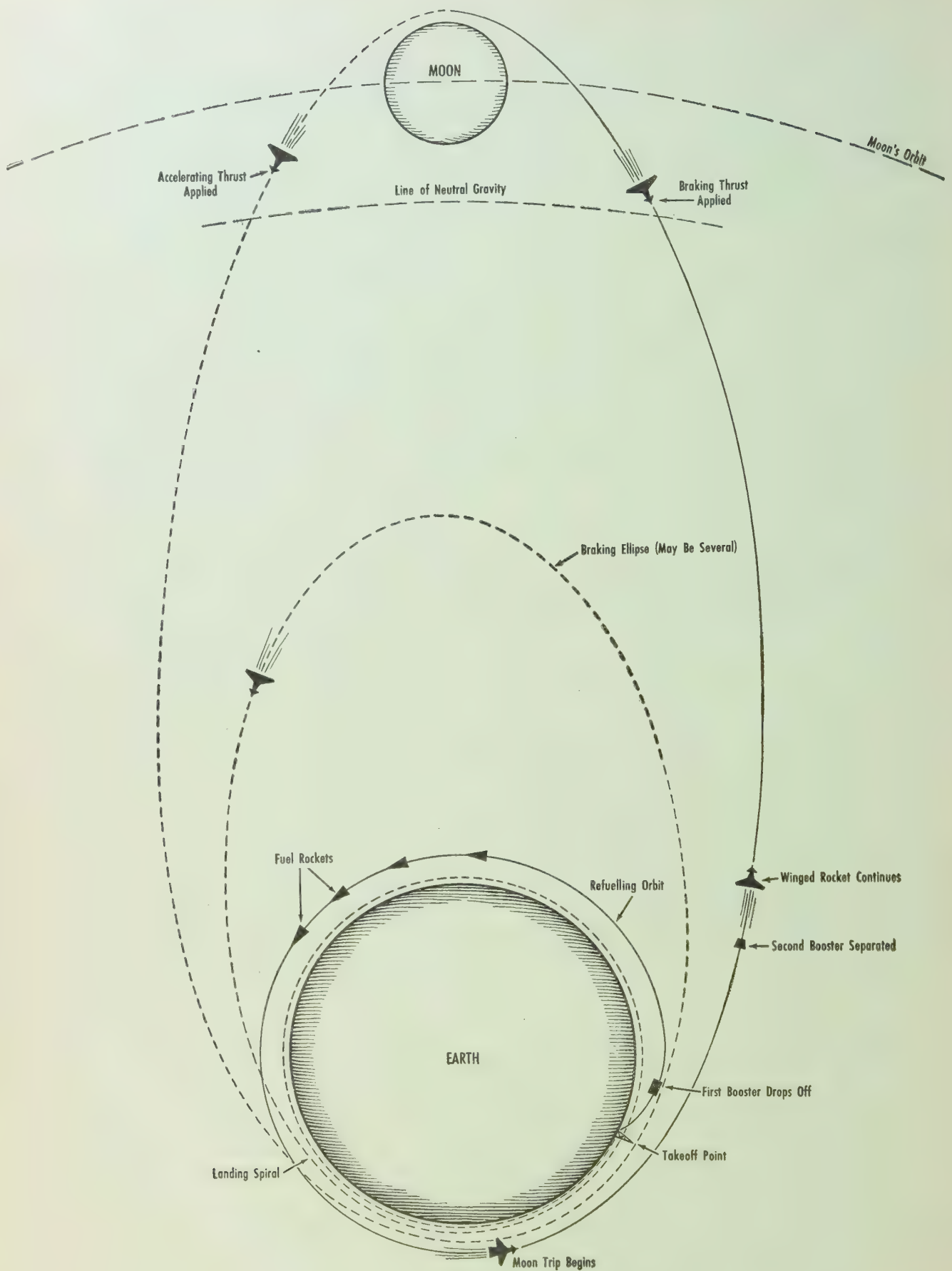


Fig. 8.—The flight around the moon

Dawn of the Space Age

A winged rocket could be used for the entire trip around the moon, returning directly to the earth after circumnavigating the moon. Aerodynamic braking would be employed to dissipate the velocity acquired in the long fall back to earth (substantially the same as the escape velocity of 7 mi. a second).

Another possibility would be to carry into an orbit, by means of ferry rockets, a special "deep space" vehicle. If too large for one ferry rocket, such a vehicle could be carried up in sections and assembled in space. This vehicle could probably be designed more efficiently for such a specialized mission. It would be tailored expressly for flight in space, with no provisions for landing on any body. Since there would be no air, no streamlining would be required. Since there would be no danger of falling back to earth, smaller motors could be used. Both these factors would contribute to reduced structural weight.

The space explorers would board this craft out in space, travel around the moon, and return to an orbit around the earth. A ferry rocket, using a winged upper stage, would then make contact with the deep space rocket and return the crew to earth.

In this type of operation, as in that described previously, the lunar rocket would have to be fuelled from an orbital propellant supply. This fuel would be used to accelerate the rocket from the orbital speed of 25,000 ft. per second to the escape velocity of 37,000 ft. per second. If properly steered, and if the velocity were very closely controlled, the rocket would fall into an orbit around the moon. This orbit could be made to pass very close to the moon's surface. Theoretically it could be held close enough so that the rocket would barely clear the highest mountain peak. Actually a somewhat higher altitude would be desired, but a height of only a few miles might be chosen.

There are some orbits which would return the circumlunar rocket to earth again without further application of power, but, practically speaking, a little braking action on approaching the moon and a little positive acceleration on leaving would probably be used to remove the requirement for very precise speed control.

The winged rocket, on the return flight to the earth, would be directed in an orbit that would only graze the atmosphere at closest approach. Whether it would be desirable, at these higher speeds, to attempt to hold the rocket, by negative aerodynamic lift, in the atmosphere, and spiral it toward the surface of the earth, is not yet clear. An alternate method would be to pass through the atmosphere, lose a little speed through friction, leave again in a natural celestial ellipse and return to repeat the process until circular velocity had been reached. The final return to earth would then be as described for the glide down from a satellite orbit.

The Voyage Around the Moon

Having seen the elements needed to make a journey around the moon and back to earth, and the theory underlying, we will follow through such a voyage step by step, using the winged rocket for the trip far out into space. (Fig. 8.) We will need eight rockets, each consisting of stages 1 and 2 (shown in Fig. 7), equipped with the pay load section shown on the right. These sections will be filled with propellants. These rockets will be launched from the earth, preferably from a location near the equator. In order to take advantage of the speed of rotation of the earth, they will take off toward the east. Each rocket ascends in the plane of the moon's rotation. After about 100 sec., the first stage burns out and the second stage is ignited. The velocity at this point is about 12,000 ft. per second. The first stage falls back to earth and the second stage continues to accelerate. After about another 100 sec., the sec-

ond-stage power plant is shut off, with a small amount of propellants remaining. The rocket then coasts upward on an elliptical trajectory until it begins to fall back toward earth. Then the power plant is ignited again for a few seconds to increase the speed to circular velocity for the particular altitude reached. (See Fig. 5.)

Although theoretically only eight rockets would be required, several "spares" would no doubt be provided.

We now have a number of rockets, whose nose sections are filled with propellants totalling in excess of 80,000 lb., floating around in space, more or less in the same orbit, and as close together as our control accuracy permits (but perhaps thousands of miles apart).

Next, the passenger rocket, composed of the same booster stages 1 and 2, but now carrying a winged rocket as pay load, is launched in the same fashion. This winged rocket contains two or three hardy "spacemen," survival equipment for about two weeks in space, scientific equipment and sufficient propellants to accelerate this stage to perhaps 3,000 ft. per second.

As the first stage is ignited, the passengers are forced down in their reclining seats with twice their apparent weight. The rocket ascends slowly at first, then, as the fuel load is consumed, with ever-increasing acceleration.

At first-stage burnout, the crew experiences an acceleration which makes them feel ten times as heavy as normal. Under these conditions, manual control of the craft is impossible. Automatic devices control the action of the rocket precisely, its human occupants having only emergency override control in case of equipment malfunction.

As the first-stage propulsion ceases, there may be a brief period of weightlessness. Then the second-stage motors come on and twice normal weight is again felt. At this point, the rocket is some 40 mi. high. The large first stage falls away, and the remaining two stages continue upward. (Fig. 9.) The occupants' weight again increases as before, then, suddenly all weight ceases as the first burning period of the second stage ends. The aeroplane-booster combination coasts upward, losing speed gradually as the force of the earth's gravity bends the flight path back toward earth.

Back on the ground, very accurate measurements are being made of the path of the rocket, of its speed and position at every instant. High-speed electronic computers determine the exact instant at which the second burning period of the second stage should commence. If the rocket has performed exactly as predicted, the final burning should take place just as the rocket reaches the peak of its trajectory (called, in astronomical parlance, the apogee of the ellipse). No doubt some deviation from the expected value has taken place. The time of initiation of the second burning period, and the additional burning time required, is radioed to the rocket at the proper instant. A final brief period of thrust, and the second stage has done its work.

If all has gone well, the second stage, carrying the winged rocket and crew, has arrived in the same orbit as the first eight rockets. Meanwhile all the fuel rockets, as well as the manned vehicle, are being tracked by ground radar. Computers at a central ground station now compare the positions of all the rockets and send to the manned rocket instructions as to how to reach the nearest fuel rocket. These instructions probably would take the form of a thrust, time and direction. The winged rocket, having detached the second-stage booster, uses its own internal propellants to reach the nearest (energy-wise) fuel rocket.

On reaching the fuel rocket the winged rocket replenishes its own propellant supply, using first any propellants remaining in the fuel rocket booster tanks, and then drawing on the pay load section as needed. The nose section, containing the remain-

ing propellants, is then detached and attached to the winged rocket by means of a tow line. The process is then repeated for the second fuel rocket. The winged rocket proceeds as before, towing the extra pay load compartment. This routine continues until a full load of propellants for both the winged rocket and a second-stage booster has been collected. (Fig. 10.)

The "astronauts," or space travellers, now transfer their hoard of propellants to the main tanks of the second stage of the last fuel rocket, remove the fuel pay load nose and replace it with their own craft. They may also detach some of the motors of the second-stage booster, since high thrusts are not needed to proceed toward the moon.

For these operations in space, the occupants must leave the confines of their ship. Donning pressurized "space suits" and secured to their craft by long nylon lines, the crew members float about, propelled by small hand rockets. The operations of unfastening cargo compartments from boosters, refuelling, etc., have been simplified and especially adapted to being performed by men whose movements are hampered by clumsy space suits.

When these operations have been completed, the moon rocket, consisting of the winged rocket and a second-stage booster, is fully fuelled and prepared for departure from the terrestrial orbit.

Acting again on instructions from the earth, and at the proper time, the crew now orients the craft in the required direction and fires the newly refuelled booster rocket. In a matter of perhaps two to ten minutes, the winged rocket reaches a speed of about 37,000 ft. per second, and, having detached the booster, is on a new elliptical path that will carry it toward the moon. It proceeds outward along this ellipse, losing speed gradually until it passes the so-called neutral point where the gravitational pull of the moon just balances that of the earth.

The spaceship now falls under the influence of the moon's gravity, and the speed gradually increases. During this fall toward the moon, careful measurements must be taken to determine the exact path of the spaceship. If it is not following the desired orbit, a corrective impulse is computed and is applied by the internal power plant of the winged third-stage rocket. In order to shorten the duration of the voyage, it is probable that a total velocity of slightly more than 37,000 ft. per second will have been imparted on leaving the refuelling orbit. Some braking now must be applied to insure that the rocket will be "captured" by the moon and pulled into an elliptical path around it. This is done by turning the spaceship end for end and operating the power plant for a short time. The braking and corrective thrust is applied in such a manner as to cause the rocket to orbit around the moon at a satisfactory altitude.

Now comes a busy period for the astronauts, as their craft begins to swing close to the moon. While most of their equipment is automatic, there remains the necessity for checking everything for proper functioning, perhaps for stopping and starting various devices, relaying information homeward by voice radio, making notes of their own observations and reactions, etc.

The trip around the opposite side of the moon would probably require somewhat less than an hour and a half. If this time proved too short to make all the observations and secure all the desired information which could be obtained, a second circuit of the moon might be made, provided some braking had been applied on the way down. If the velocity was less than about 7,000 ft. per second at the point of closest approach to the moon, the rocket would not reach the neutral point, as it returned toward the earth, but would continue in an approximately elliptical path around the moon. Photographs of the moon's surface would be taken. By using a relatively small telescope, a very minute record of the topography could be made.

When all obtainable information had been gathered, either in one pass or more, sufficient propulsion would be applied to boost the rocket past the neutral point, whence would begin the long fall back toward earth.

Corrections to the path would undoubtedly be found necessary. The returning spaceship must be aimed rather precisely toward the thin skin of the earth's atmosphere. An error in one direction could cause the craft to plunge deeply into the air, with cremation the inevitable end for the occupants. An error in the other direction would not be so serious. The rocket would miss the atmosphere and would take up a highly eccentric elliptical orbit. If sufficient oxygen were aboard to sustain the life of the occupants for several more days, the rocket would return on the same path and opportunity for an additional correction would arise.

If all has gone well, however, the space travellers would make the proper adjustments to the orbit, and the ship would graze the atmosphere at an altitude high enough so that the skin temperature would remain below the maximum allowable value. The rocket would glow a bright red all over, however, and the pilot would have little or no visibility. The altitude control would be from a thermometer, not an altimeter. When the maximum skin temperature was reached, the pilot (human or automatic) would cause the wings to bite into the air to maintain this temperature. Initially the natural celestial ellipse would tend to carry the craft deeper and deeper into the atmosphere. If the orbit bit too deep, positive (upward) lift would be required. On the second half of the elliptical path, the altitude would tend to increase. The rocket would then be turned upside down, that is, the earth would be above the pilot's head, and the craft would attempt to perform what would amount to a loop the loop *around the earth*.

Depending on its wing area, the rocket would or would not be able to remain within the earth's atmosphere against the centrifugal force tending to force it back into outer space. If the designers had economized on wing weight, the spaceship would not have enough "lift" (downward), and the craft would ascend upward and enter a new elliptical orbit. The amount of speed lost in the braking manoeuvre would determine how far out into space the rocket would go on this next orbit. The time required could vary from about an hour to nearly ten days before the ship would again re-enter the atmosphere for a second braking.

This process would be repeated until the rocket had slowed sufficiently for the combination of a deeper bite into the atmosphere and reduced centrifugal force to allow the rocket to remain within the atmosphere. Only one circuit of the earth then would be required to reduce the speed to a point where a normal landing could be effected.

Because of the difficulty in predicting the landing point, provision would have been made for landing in the sea. Means would have been furnished for the crew to escape by parachute in the event that a crash landing in unfavourable terrain could not be avoided. The rocket would land at about 65 mi. an hour as a conventional glider.

Rescue and recovery operations would be initiated by the ground establishment, based on latest information from the tracking stations.

The first voyage around the moon might well take place as described above. If the calculations of the scientists were correct, and if the equipment developed by the engineers functioned to perfection, the space adventurers would be delivered,

Fig. 9.—The moon-circling rocket (right) standing on its launching platform; and (left) at a height of about 40 mi., where the large first stage falls away and second-stage propulsion begins



safe and sound, to the tender mercies of a grateful and enthusiastic public. Otherwise the scientist must recheck his figures, the engineer return to his slide rule and drawing board and the personnel department must review again its applications for the job of space pilot.

The voyage *around* the moon may well be the most ambitious to be attempted using chemical fuels. If, however, it is desired to make a *landing* on the moon, and return again to earth, a rocket must be capable of completely braking its fall onto the moon, and "blasting off" again at practically the full lunar escape velocity of 7,750 ft. per second. The total equivalent velocity required is 15,500 ft. per second or approximately another factor of ten in mass ratio.

This could possibly be achieved by shooting up into the orbit ten propellant-carrying rockets for every one used in the circumlunar voyage. From 80 to 100 such rockets would be required in all. Ten second stages would be required in all. These ten second stages would be fastened together to make a first-stage booster for an eleventh, which in turn would carry the winged rocket.

There appears to be no fundamental reason why such a procedure should not work. However, there seems to be some reason to hope that by the time the circumnavigation of the moon has been accomplished, a new form of rocket propulsion might have been developed.

The Atomic Rocket

Although storytellers long before the time of the atomic bomb were looking forward to the use of atomic energy to propel their spaceships on trips through outer space, atomic energy has so far contributed not one whit to the solution of the propulsion problems of interplanetary flight.

The reason for this is fairly evident. The only method that has been devised so far for releasing nuclear energy in a controlled fashion is through the use of a reactor or pile. In this device, the energy is released as heat. The energy is contained originally in the flying fragments of the uranium atom after fission takes place. These fragments transfer their energy to other material in the pile by collision. The atoms of other material collide with additional atoms, in a billiard-ball type of chain reaction, until the whole mass of the reactor is heated. The temperature at which the heat is finally drawn off for utilization is limited by the melting or softening point of the reactor materials. No one has yet devised a reactor that requires no solid materials. It seems fairly safe to assume, therefore, that a nuclear reactor as presently conceived will not provide heat at a temperature higher than about 8,000° F. (the vaporization temperature of graphite, which is the most refractory substance known). It is very probable that the highest temperature attained in practice might be considerably below this.

It has been noted previously that the thermodynamic performance of a rocket (measured by its exhaust velocity) depends on the molecular weight of the exhaust gases, on the combustion chamber pressure, and on the chamber temperature. With ordinary rocket propellants, temperatures of more than 5,000° F. can be produced. The exhaust velocity varies with the *square root* of the temperature and inversely as the square root of the molecular weight. That is, to get *twice* the jet velocity we must quadruple the temperature, or reduce the molecular weight of the exhaust by a factor of *four*. It is apparent that even if nuclear energy could provide 8,000° F., only a small gain in performance would be realized.

Oddly enough, the greatest promise of nuclear energy in this connection is not that it will permit higher temperatures to be attained, but that it will permit a reduction in the molecular

weight of the exhaust. In searching for an ideal chemical propellant combination for the rocket engine, two conditions had to be met, simultaneously. Not only did the products of reaction have to be of low molecular weight, but the reaction itself had to be very vigorous. If the energy could be supplied from an atomic pile, a wider selection of propellants (usually called "working fluids" in discussions of nuclear rockets) would be possible. Pure hydrogen could be used. An exhaust velocity in the neighbourhood of 20,000 ft. per second could be obtained at a temperature of 5,000° F. using hydrogen.

The difficulty with hydrogen is connected with its very low density. With pure hydrogen, the problem of the weight of the tank to hold it is even more aggravated than in the case of the fluorine-hydrogen propellants, discussed earlier. Liquid hydrogen has a density less than one-tenth that of water. Tanks to hold a given weight of propellant would have to be more than ten times as large for hydrogen as for liquid oxygen and hydrazine, for example. They would probably not be ten times as heavy, but their total weight would not be as small as for tanks to hold the more dense propellants. The power required to drive the pumps, moreover, would increase in the same proportion as the reduction in density.

Ammonia, or even water, would be a fairly good working fluid. Methane is also a possibility.

At present, however, it appears that the weight of the nuclear pile, the weight of the protective shielding which would be required, the radioactivity of the exhaust, and the high development costs, would nullify the possibilities of increased specific impulse. It must be concluded that nuclear fission, using existing conceptions for releasing the latent energy, cannot materially assist in reaching the goal of interplanetary flight.

Science marches with ever increasing pace, however, and if means could be found for releasing the energy from within the atom in a controlled fashion, with only gases involved in the process, a considerable improvement in rocket performance might be possible. Although present combustion chambers have difficulty in handling even the modest temperatures of chemical propellants, designers are restricted by the necessity for extracting the maximum amount of energy from the limited supply available. With the abundant supply postulated for nuclear propulsion, the technique known as "film cooling" could be used more freely. Film cooling involves the injection of inert fluid—usually excess of fuel—along the walls of the combustion chamber and nozzle. This material forms a blanket of comparatively cool gas near the walls. By this means the walls are protected, but the average gas temperature is reduced. If additional energy were available, the temperature of the gases nearer the axis of the motor could be raised, and the average temperature kept constant or perhaps increased with a corresponding salutary effect on performance.

Through full use of film cooling, perhaps by injecting *all* of the working fluid along the walls, and by using a very hot core near the source of energy, it has been estimated that effective temperatures as high as 30,000° F. might be utilized. In such an atomic rocket, exhaust velocities as high as 40,000 ft. per second could be obtained. With such performance, two-way trips to the moon would become easy. Voyages to Mars and Venus would be no more difficult than orbital flight with chemical propellants. Truly the whole solar system would be opened for exploration under a determined program.

Territory for Exploration

The solar system contains many bodies of great scientific interest. There are the "terrestrial" planets Mars and Venus, which seem most suitable for eventual colonization. There are the huge planets, Jupiter and Saturn, on which most unusual



Fig. 10.—Orbital refuelling. A winged around-the-moon passenger rocket with second-stage booster being refuelled from fuel rockets

conditions would certainly be found. There is the tiny inner planet of Mercury which is as hot as molten lead on one side and near absolute zero on the other. There are the outer planets of Uranus, Neptune and Pluto, so far away from the sun that it appears only as a point of light in their skies.

Many of the planets have moons, some of which are larger than our own. Altogether Saturn has nine moons; Jupiter, eleven. Two of Jupiter's moons, Ganymede and Callisto, are larger than the planet Mercury.

In addition to the planets and their moons, there are a very large number of smaller bodies known as asteroids which vary in size from tiny objects up to a fairly respectable diameter of 480 mi.

Ad Astra

When men have exhausted the possibilities for adventure and satisfied their curiosity regarding the solar system, they can proceed onward to the stars. This may sound like a fantastic prediction, but we can, even today, visualize in broad outline

how it might be accomplished.

The nearest star, Proxima Centauri, is roughly 25,000,000,000,000 (twenty-five trillion) mi. away. If a spaceship could travel with the speed of light, it would still require more than four years to travel there from the earth. At the escape velocity of seven miles a second, considered barely attainable with chemical rockets, it would require 100,000 years to reach the nearest star. Obviously very much higher speeds would be required if such a journey were to be made in the span of a single human life. Curiously enough, speeds approaching that of light are not necessarily beyond the realm of sober speculation. Not only would such speeds reduce the elapsed time for a round-trip journey, as it would appear to an earthy observer, but a peculiar consequence of relativity would make time itself run more slowly for a person travelling on the spaceship. This phenomenon could lead to bizarre results. For example, an astronaut could climb aboard his interstellar craft, be whisked

at very nearly the speed of light out to some convenient star, examine the surroundings briefly, and return to earth in a matter of days, or so it would seem to him. On arrival home, however, he would be greeted at the door by his grandchildren, grown gray awaiting his return! Such a feat would require higher acceleration than the human body can stand, means for converting mass to jet energy with almost 100% efficiency, and some other, more minor, innovations, at present seemingly impossible, perhaps, but worthy of consideration for the future.

It can be imagined, for example, that some form of ionic rocket might serve for voyages to some of the nearer stars. In principle, the ionic rocket would resemble particle accelerators, the atom smashers used as tools of modern nuclear physics. These machines use magnetic or electric forces to accelerate charged particles. In a sense, a particle accelerator is a rocket having a very low thrust and extremely high "jet" velocity. Particle speeds approaching that of light are not uncommon. For propulsion purposes, the problem would be to increase the thrust (by a factor of millions) and to supply the enormous energy requirements. Although we do not know exactly how to do either of these at present, no fundamental impossibilities are apparent.

Certainly interstellar voyages are not just around the corner, but the sciences of rocketry and nuclear physics are still in their infancy.

Problems of Human Survival

Space travel presents other problems than that of propulsion. A reasonable assurance of survival of the space travellers must be provided. Space is a rather hostile environment. It is true that sunlight is there, but even this blessing must be received with care, for the direct rays of the sun in space are rich in ultraviolet. A nasty sunburn could result from even a moderately short exposure. Fortunately, ultraviolet rays are comparatively easy to filter out. Ordinary window glass does this efficiently, but most transparent plastics do not, so care must be used in selecting glazing for portholes or for space helmets.

The most insistent of man's environmental requirements is the need for oxygen. The body can exist without an external supply for only about two minutes before losing consciousness.

The human body also requires external pressure for survival. Aeroplanes are today flying at altitudes too great to permit survival without artificial aids. The simplest means for providing the required pressure and the oxygen is to completely enclose the crew in a pressure-tight container. This is done in modern commercial and military planes today.

The possibility always exists, particularly in military aircraft, that the pressure cabin will be punctured. If this occurred at very high altitudes the crew would die before the aeroplane could be brought down to a safe height. As a precautionary measure, full pressure suits are being developed, although none is yet completely satisfactory.

The possibility of cabin puncture also exists in a space craft, for there are meteors whizzing through space that could easily puncture the light skin of a spaceship. The absolute density of meteoric particles is, however, very low, and the larger ones are extremely rare. It has been calculated that a spaceship making a round trip to the moon would have only one chance in 10,000 of being struck by a meteor large enough to penetrate its hull. Small holes could be detected and patched. One way to reduce the hazard caused by small meteors would be to install outside the cabin envelope a second skin, or "meteor bumper." Small meteors striking this bumper would penetrate it, but would be vaporized in the process, so that the pressure hull would not be penetrated.

The over-all possibility of meteor damage appears so small,

however, when compared with other hazards of a journey into space, that it would probably be ignored for early ventures.

One of the hazards of space is the presence of primary cosmic-ray particles. These very energetic particles, the nature of which is not yet entirely understood, enter the earth's atmosphere with energies of billions of electron volts. As they strike atoms of nitrogen and oxygen in the atmosphere, they smash these atoms into smaller particles. These particles in turn, having received much energy from the collision, strike other atoms and cause further disintegrations. This "cascade" effect continues until the energy has been dissipated to a point where the individual particles can no longer cause disintegration of atomic nuclei.

In space, beyond the protective blanket of the atmosphere, the primary particles would penetrate the spaceship and the bodies of the crew members. Such a ray, striking an atom in the body, would start a cascading shower. It should be remembered, however, that there are billions of atoms in the body, and a few shattered atoms would probably not be harmful. However, when a particle strikes the nucleus of a cell, it seems possible that damage to the entire cell could result. In spite of this, scientists are inclined to be optimistic about the cosmic-ray problem, since, although the energy of individual particles is very high, the total energy density is extremely low, approximating that of starlight. It is difficult to visualize how such a small amount of energy could create any significant over-all damage to the human body.

Much has been said about the "terrible cold of space." This idea of the temperature of space is a misconception, however, for temperature is, by definition, a measure of random molecular motion. In a perfect vacuum there would be no molecules, hence no temperature. The word can have meaning only with reference to a *body* in space. Because of the almost complete absence of other matter in space, heat transferred to or from an object placed there would take place almost entirely by radiation.

The amount of heat absorbed by an object would depend on its reflectivity. A shiny object would receive very little energy, whereas a black object would absorb about $1\frac{1}{2}$ kw. for every square foot of surface exposed to the sunlight. The amount of heat leaving a body would depend on its temperature, and in a factor called emissivity, which is closely allied with reflectivity. An inert object in space would reach an equilibrium temperature which would depend on its emissivity and reflectivity. A method suggested for controlling the temperature of a spaceship is to paint one side black and leave the other shiny. If the temperature were too cold, the black side would be rotated to face the sun; if too hot, the shiny side would be faced toward the source of energy. Intermediate values could be obtained by positioning the ship so that part of the surface receiving the sun's rays was black, and part shiny.

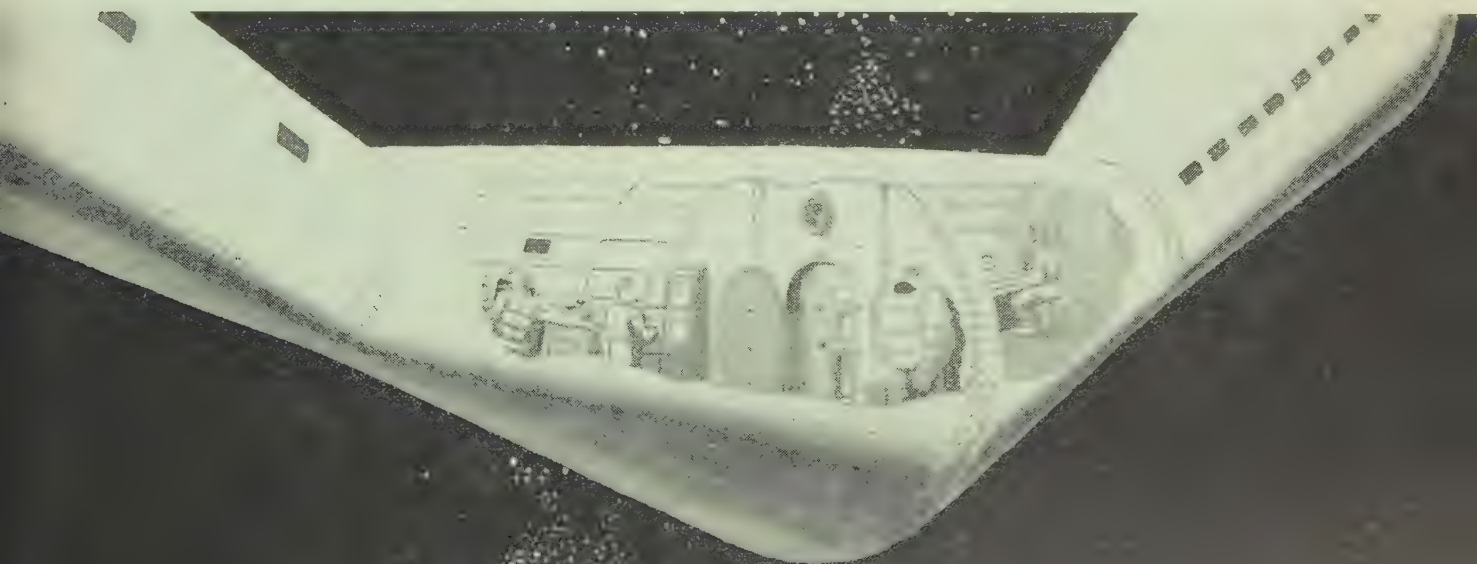
Since the spaceship would probably have an internal source of energy, and since the amount of heat radiated back into space would be relatively low, it appears more probable that the spaceship would be heated internally, and like a well-insulated house, would require but little energy for this purpose.

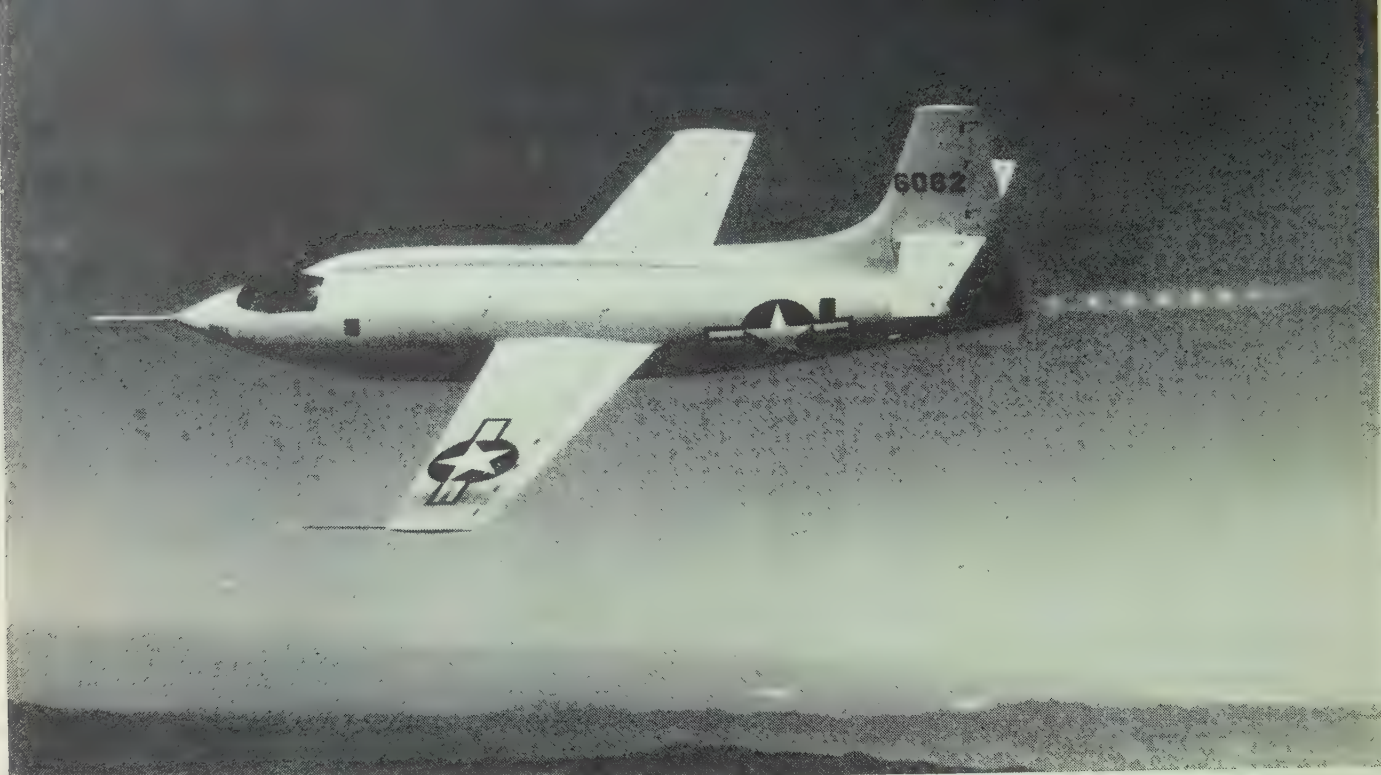
Another popular misconception is that the human body would not be able to withstand the terrific speed of 25,000 mi. an hour. A little reflection shows that speed itself has no effect on the body. The surface of the earth is moving around its axis with a speed of about 1,000 mi. per hour at the equator, and the earth itself is travelling around the sun at a velocity approaching 70,000 mi. an hour. It is not the speed that the body reacts to, but the starting, stopping and change of direction.



Fig. 11.—The manned station in space, with two winged rockets shown moored to the centre, or hub, section (above). The rim of the wheel is made up of empty rocket booster tanks; it contains living quarters, laboratories, etc.,

as shown in the cut-away view below. Floating above the wheel is the solar power station, a polyethylene balloon, half of which is silvered. This is the author's conception of how the station in space might be constructed





BELL X-1, rocket-powered plane, the first aircraft officially to fly faster than the speed of sound

This problem has already been encountered in turns with high-speed aircraft. It has been found that the ability of the human body to resist acceleration depends critically upon the direction of the acceleration with respect to the body, and on the attitude of the subject—sitting, extended, etc.

The accelerations are commonly measured in terms of "g" units. One g is the acceleration resulting from the force of gravity on a freely falling object. An acceleration of one g upward would cause a man to press down on his support with a force of twice his normal weight (one unit for his normal weight, plus one unit induced by the acceleration).

It has been found that, properly supported in the most favourable attitude, a healthy man can endure accelerations up

to 15 g's for moderate periods of time without harm. Fortunately, other considerations, such as weight of propulsion equipment, would prevent the attainment of extremely high accelerations for space rockets.

The accelerations expected would be in the order of 10 g's maximum, a value readily endured.

A final and very interesting environmental condition would be the weightlessness of all matter. This condition would ensue, not only in the depths of space, but in any rocket as soon as propulsion had ceased. Although gravitational attraction would, in fact, be present, it could not be detected once the rocket began falling or coasting freely. This phenomenon would result from the fact that all bodies would be accelerating under the

DOUGLAS SKYROCKET, U.S. navy rocket-powered plane which established a speed record of 1,243 m.p.h. in 1951



Dawn of the Space Age

force of gravity in exactly the same degree.

It is not yet clear whether the absence of weight would be detrimental or advantageous. As far as is known, the only bodily process which requires weight for proper functioning is the level-sensing system of the inner ear. A constantly changing direction of gravity frequently causes nausea (*e.g.*, seasickness, airsickness). Whether absence of gravitational directivity would have a similar effect has not yet been determined. Human beings have been subjected to the condition of zero gravity for short periods. The pilot of a fast aeroplane sometimes floats in his cockpit for several seconds during a pushover. Likewise, a man jumping out of an aeroplane, particularly at high altitudes, experiences weightlessness until either his parachute opens or air resistance begins to slow him down.

So far there has been little indication that weightlessness would cause adverse physiological effects on man. Monkeys and mice were sent up in the Aerobee rocket, and experienced the weightless condition for a few minutes without suffering harm. Although there are indications that some loss of co-ordination may take place, the great power of accommodation possessed by the human body, exhibited by sailors and aviators, gives some promise that zero gravity would not prove a serious obstacle to man's existence in space.

Should prolonged exposure to free-fall conditions be hazardous or extremely inconvenient, artificial gravity, in the form of centrifugal force, might be provided. This is one reason why many designs for space stations take the form of a rotating wheel. Inside such a wheel, or "doughnut," there would exist a simulated force of "gravity" pressing all objects toward the periphery.

Certainly, unless special measures were taken, the absence of gravity could be a serious nuisance. On a spaceship, liquids would not flow, but would drift out of their containers and float around, breaking into smaller and smaller particles under the action of surface tension. Plastic squeeze bottles would have to be furnished for dispensing liquids. Items of equipment in a spaceship would have to be anchored in place in some positive fashion. Suction cups would probably suffice for many items that required frequent moving.

The absence of gravity in the space traveller's environment does not appear to be inherently dangerous. If the implications of weightlessness are fully anticipated, and its effects are provided for, the lack of gravity may actually be a source of comfort and convenience to the spaceman. One should note that the primary complaint of an aviator on a long mission is the fantastic rate of increase in hardness of the parachute on which he sits!

Stepping Stones to Space

The imaginary trip around the moon described in this article would probably not be man's first venture into space. In a sense, all long-range ballistic rockets are spacecraft. Even the small Aerobee rocket spends most of its flight time beyond any very appreciable atmosphere. The V-2 travelled through airless space for most of its 200 mi. range.

True space flight, however, is usually taken as beginning with orbital flight around the earth, and artificial satellites,

flying in these orbits, are expected to be the first spaceships. Satellite vehicles can take on many forms. The simplest and the easiest to put up into an orbit would simply be an object large enough to be seen. An inflated metal balloon or perhaps a radar reflector might be used. Such an object could weigh very little, perhaps only a few pounds. With such a satellite, it would be possible to measure air density at extreme altitudes, or to make measurements that would increase the accuracy of terrestrial mapping. It would certainly be highly useful in developing techniques for tracking the more sophisticated satellites to follow.

Larger orbital vehicles could carry instruments to measure and relay to earth such items as cosmic-ray energy and intensity, air pressure, density and composition, and the earth's reflectivity or albedo. Television equipment could be included, which would send back to earth pictures of the earth's surface and the location of clouds, tornadoes and other meteorological phenomena.

The next step would be the manned satellite. This step would result from joining the experience gained from unmanned satellites and from high performance, rocket-propelled aeroplanes. Stepwise development of these craft would lead to the means for transporting men to and from an orbiting space station.



BELL X-1A, rocket-powered plane which on Dec. 12, 1953, flew at 1,600 m.p.h. and climbed to an altitude in excess of 80,000 ft.

The Bell X-1 and Douglas Skyrocket might be considered to represent the first attempts. With them, man has flown higher and faster than ever before. Equipped with successively larger booster stages, similar aeroplanes could probe the skies to higher and higher speeds and altitudes. Initial designs could be made on the basis of predicted conditions for 18,000 mi. an hour operation, but such speeds could be approached only gradually with careful measurements providing information for redesign as necessary. The final product would be capable of taking one or more men on a round trip to an orbit and back.

The primary element of a station in space would be a pressure-tight container, or several such containers, to permit retention of a breathable atmosphere. The equipment and supplies for the space station would probably be shot up into the orbit in unmanned cargo rockets. It is possible that the empty upper-stage propellant tanks might serve as the primary structural cells for the station itself. These could be joined together in sufficient numbers to make any size station desired. In a sense, these pressure vessels could be obtained free of charge, since they would necessarily arrive in the orbit with each "shipment" of men or materials.

When finally assembled and equipped, the manned space station would be a scientific and perhaps military tool of first-rate

importance. (Fig. 11.)

One of the first measures would doubtless be to equip the station with telescopes for terrestrial and astronomical observation. With a telescope of only moderate power, very fine detail could be observed on earth. Photographs could be made of objects of interest and returned to earth by means of the winged "return rockets."

From the station, astronomers could turn their telescopes toward the heavenly bodies with renewed interest. Without the turbulent atmosphere to interfere with their "seeing," a wealth of celestial detail could be resolved with telescopes of even modest apertures. If the much discussed canals of Mars exist in fact, for example, they should be visible from the vantage point of the station outside the atmosphere.

Electronics scientists could, at the space station, conduct experiments in a vacuum of highest purity and infinite size. Cosmic-ray research could be conducted with a full supply of the primary particles. From these studies alone could come a richer and fuller understanding of the nature of matter and energy.

In the field of communications the space station could offer much. The short waves used in television and in much telecommunication travel in straight lines. Consequently they cannot reach beyond the horizon. A system of three space stations, however, receiving and rebroadcasting, could provide coverage of the entire earth.

The Reason and the Reward

We have said a great deal about the "how" of space travel. The question has been reviewed from both a fundamental aspect, from the point of view of detailed engineering and from

the standpoint of practical economics. It has been shown that flight into space, at least to the point of making a journey around the moon, seems to be within the realm of engineering accomplishment with substantially present-day techniques. It has also been indicated that such a voyage could only come as a result of a rather expensive program.

The people of the civilized world, and of the United States in particular, have demonstrated the ability to bring to successful completion tremendous feats of engineering. Given sufficient motivation, there appears almost no limit to what can be achieved.

Interplanetary travel would probably be the most stupendous adventure upon which mankind ever embarked. The moon and planets represent new frontiers, more strange and exciting than any new land ever before laid open to exploration. No material wealth that could conceivably be brought back from another world could ever compare in value with the new knowledge that would result from exploration of the heavenly bodies. The knowledge itself would be insignificant in value compared with the tremendous stimulus that would be injected into our civilization.

Perhaps such a new outside interest would reduce our preoccupation with our own atomic destruction. The reasons for exploring the universe, therefore, are concerned not so much with man's *ability* to exist, but rather with the *fullness* of his existence.

Interplanetary travel would add an entire new dimension to our conception of the universe around us. With the announcement in July 1955 of the first satellite program, it might be considered that the conquest of space has truly begun. Fascinating results are sure to follow.

William Benton Reports on the Voice of the Kremlin

Some first-hand observations
on red propaganda techniques
within the U.S.S.R. and Satellites

WILLIAM BENTON, publisher of *Encyclopædia Britannica*, spent part of the autumn of 1955 visiting the Soviet Union, Poland, Hungary and Czechoslovakia, accompanied by his wife and 13-year-old son John, and also with a Russian-speaking assistant and interpreter. The Bentons are believed to be the first such family group from the West to be given visitors' visas for Russia since before World War II.

Mr. Benton sought to observe and study some of the methods used by the Communists to indoctrinate the Russian people and others under their control. To such a study, the editors of *Britannica* feel that he brought unique qualifications. He has spent the 35 years of his adult life in the fields of communications, education and public service. He founded a major advertising agency, Benton & Bowles, and retired from it in 1936, at age 36. He served as a part-time officer of The University of Chicago for eight years. He became U.S. Assistant Secretary of State for Public Affairs in 1945, and organized America's first peacetime program of international information, including the launching of the *Voice of America* and its Russian-language broadcasts. He was one of the founders of UNESCO (United Nations Educational, Scientific and Cultural Organization) and served as chairman of two U.S. delegations at UNESCO conferences. In 1948, he headed the U.S. delegation to the U.N. Conference on Freedom of Information.

As United States senator from Connecticut from 1949 to 1953, one of his early major proposals was that the United States develop what he called a "Marshall Plan of Ideas."

When *Britannica's* editors invited Mr. Benton to write a report on Russian propaganda and indoctrination techniques, a major but little understood arm of Soviet policy, he accepted with the following caveat:

"First, I shall do all I can to assemble and study available data, both in the United States and Great Britain. Then I shall visit Russia and some of the satellites. However, no one, no matter how well prepared, can tackle this subject and expect to produce a rounded and balanced report which meets the high standard of scholarly accuracy *Britannica* seeks. For example, there is no way of checking the reliability of information and statistics given by Communist government officials and publications. Even riskier than the judgment of such material is the assessment of public attitudes and opinion. This latter effort is beset with pitfalls even in western countries and under the best conditions. In Russia, it is impossible for a foreigner to do better than hazard guesses. Mine I hope will be informed guesses, even educated guesses, but manifestly no visitor can know for sure what is the reaction of a kolkhoz manager to the Soviet propaganda, or even of a youngster in a *tekhnikum*.

"Western diplomats stationed behind the Iron Curtain, who for years have studied the unfolding techniques of the Communists, differ on the depth and the breadth of Marxist-Leninist-Stalinist indoctrination. Some experts think the degree of loyalty to Communism varies in inverse ratio to the privileges and economic status of the individual; e.g., the higher the educational and economic level, the greater the degree of loyalty. Experts will argue on both sides of such a question as the attitudes of the Poles towards the Russians and how these attitudes will affect the amount of pressure the Polish people will stand before breaking into open revolt. Yet it is imperative on hundreds of similar questions that we reach the best judgment we can. Thus although I shall approach the writing of this report with humility, I shall submit it for publication with no apology."—EDITORS' NOTE.

FOR thirty-eight years, ever since the Revolution of October 1917, the Kremlin has been conducting the most stupendous experiment in psychological manipulation ever attempted—with the entire population of the Soviet Union as subjects.

There is a century of history behind the experiment. For Communism is itself the child of propaganda. Communism began as propaganda and its growth is inconceivable without propaganda. Modern Communism was launched by a pamphlet, *The Communist Manifesto*, one of the most striking pieces of political pamphleteering in history. The *Manifesto* was published in 1848 by two German social theorists, Karl Marx and Friedrich Engels. For the next half century the ideas of Marx and Engels were kept alive, with little or no organization, backing or support, by the propaganda of their disciples. Marx and Engels had not concerned themselves seriously with problems of organization, strategy or tactics. They dealt most earnestly with ideas. Ideas are the weapons of propaganda.

On Nov. 7, 1955, on Red Square at the great annual celebration of the anniversary of the Revolution, I heard the speaker of the day, Lazar Kaganovich, one of the 11 members of the Presidium, shout:

"Revolutionary ideas know no frontiers; they travel throughout the world without visas and fingerprints. When Marx and

Engels issued the 'Manifesto of the Communist Party' there were no radios, no telephones, no aeroplanes. But the immortal ideas of Marx and Engels penetrated into all corners of the world and into the consciousness of the working masses of all countries of the globe. All the more so in the 20th century, the great ideas of Marx, Engels, Lenin and Stalin, which have gripped the world, have been and will be victorious. . . It is precisely the strength of these ideas which explains the fact that in October, 1917, our party, which had only 240,000 people—a drop in the sea of the people—led millions of workers and peasants to storm capitalism, to defeat capitalism and the landowners."

Nikita S. Khrushchev put this more succinctly in his visit to Burma in Dec. 1955. He said, "Ideas can't be stopped by rifles."

Nicolai Lenin, a Russian disciple of Marx and Engels, who founded the Communist Party as we know it today, and who conceived it as a tightly knit, strongly disciplined, conspiratorial body, wrote as far back as 1905: "Propaganda is of crucial importance for the eventual triumph of the Party." A professional revolutionary, agitator and organizer, he thought of propaganda as the chief instrument by which he could attain his goals. He himself was a propaganda genius.



WILLIAM BENTON, MRS. BENTON AND JOHN in Moscow. Mrs. Benton had suffered a leg fracture several weeks before their departure

During the long years of his exile from Russia, before his dramatic return in 1917, he was forging a party around himself. For this party he developed a revolutionary doctrine. Lenin's only weapons during this period were the written and spoken word. He had no other way to impose his ideas on anyone. Through his skill as a debater, his deftness with the pen, which found expression in *Iskra* ("Spark"), a newspaper he published, and through his output of polemical pamphlets, he rose to the leadership of the revolutionary movement which destroyed the Czars and achieved supreme and absolute power in Russia.

"Without a revolutionary theory there can be no revolutionary movement," Lenin said. Thus Communist Party leaders have been theoreticians as well as men of action; they have sought to persuade the Russian people and the world that Communist doctrine is the only means to salvation.

While Lenin perceived that theory could serve as a formidable striking weapon against his enemies, he also recognized theory as an instrument of discipline within the Party itself. Those who hold control of the complex theory of the Party also control the interpretation of that theory, and thus they control the policies and actions carried out under the theory. Acceptance of the basic Party dogma by the members winds up as total conformity and obedience.

Lenin continuously stressed the primary role of propaganda and agitation as instruments to win intellectual converts and to prepare the masses for the Revolution. In his pamphlet of 1901, *Where to Begin*, he emphasized the role of propaganda. In 1902, in *What Is to Be Done*, he said: "We must go among all people as theoreticians, as propagandists, as agitators and as organizers . . . the principal thing, of course, is propaganda and agitation among all strata of the people." The Party itself, as the most thoroughly indoctrinated and disciplined element in the population, was to serve, in Lenin's words, as "teacher, leader and guide" of the masses.

The success of the Bolshevik Revolution of 1917, according to Lenin, was due to the Party's ability "to combine force and persuasion." This combination is not unique in history. Cer-

tainly force has been a major factor in most historic crises—and not least in the fall of Czarist Russia. It was the degree of emphasis on persuasion, however, and its deliberate and systematic character, that was the distinctive factor in the success of the Oct. 1917 Revolution.

The combination of coercion with persuasion has remained the hallmark of the Soviet rule ever since 1917. Seizure of the power of government by the Communists did not obviate their need for propaganda; on the contrary it placed an even higher premium on it. In order to consolidate the victory of the Revolution, the deeply ingrained habits and attitudes of whole populations had to be eradicated and replaced with new ones; and that could not be done merely by force and coercion. Lenin said that the Communist regime must be prepared to sacrifice two whole generations. He anticipated the thorough indoctrination of the third. Today, it is Lenin's third generation that is surging through to power.

Joseph Stalin, first editor of *Pravda*, who followed Lenin at the helm of the Communist Party, subscribed fully to Lenin's doctrines in the field of propaganda. Although Stalin's regime became notorious for its repressive measures and its use of terror, Stalin pursued the path of persuasion as relentlessly as he conducted his purges. In his lecture on "The Foundation of Leninism," in 1924, Stalin said, "The masses, likewise the millionfold masses, must come to understand this need (for the overthrow of the old order) . . . Our task is to see that the masses shall be provided with opportunities for acquiring such an understanding." At the 18th Congress of the Communist Party in 1939 Stalin said that political leadership is "the ability to convince the masses of the correctness of the Party's policy . . . If our Party propaganda for some reason goes lame . . . then our entire State and Party work must inevitably languish."

These views of Lenin and Stalin, via Marx and Engels, must be thoroughly comprehended by anyone who wishes to achieve even a rudimentary comprehension of the Russia which is perhaps today more obscure, more the riddle and the enigma and the mystery, than at any time since 1917.

The New Phase

When Stalin died in 1953 his heirs to power, who had been hand-picked by him as members of the Politburo (now called the Presidium), undertook to rule as a collective leadership, at least temporarily. They began to exhibit a new style of tactics, somewhat more flexible, somewhat less harsh, than Stalin's. In the field of propaganda this partly took the form of a moderation in the "hate the West" and "hate America" themes. This intensive campaign, which portrayed the United States as a "warmonger," is perhaps a noteworthy example of the fact that Communist propaganda doesn't always work. The Russian people don't like war any more than do the American people. They didn't like the sound of "warmongering America." This gave them agonizing thoughts of war. They greatly preferred Khrushchev's "spirit of Geneva" which seemed to promise peace.

Post-Stalin propaganda conceded that there was some evidence of progress in the West. For example, it said, in effect, "Comrades, let us not be arrogant; we can learn something about productivity from the West." It loosened slightly the reins on Soviet writers and artists. It permitted a limited increase in the admission behind the Iron Curtain of western visitors of whom I became one. It actually encouraged Soviet "missions" or "exchanges" sent to the West.

Because these developments seemed startling by contrast with the years since V-J Day, the western press described them and dramatized them thoroughly. This had the temporary effect of obscuring the elemental fact that (1) the aim, (2) the scale and (3) the organization of Communist propaganda remained

Benton Reports

essentially unchanged.

The aim of Communist propaganda, internationally, is to advance the Communist cause throughout the world, and thus to swell the power of the Soviet Union. Gigantic though this international effort is, it is small compared with the effort that goes into the propaganda at home in the Soviet Union and among the peoples of the satellite countries. In this article I do not attempt to deal with Communist propaganda world-wide, though the international impact of Soviet propaganda is enormous, as I first learned in my service as Assistant Secretary of State when I was responsible for combatting Russian propaganda throughout the world.

This article will deal with some aspects of the Communist home propaganda, with some of the techniques of indoctrination and with their impact. The home propaganda is a real "saturation program," dominating every aspect of Soviet life. It is employed on a massive scale, previously unknown in history. At its simplest level, it is used to mobilize the energies of the people for the accomplishment of concrete tasks, such as gathering the harvest or raising labour productivity. Such propaganda at its most useful level isn't too unlike our efforts to promote highway safety or to recruit more nurses. At its best at this level the message the Soviet government projects to its own people is no more than any government might reasonably seek: loyalty to the regime, hard work, vigilance against the enemy, belief in the future.

At its most ambitious, the aim of Soviet propaganda is so daring that we in the West can hardly comprehend it: so to condition its citizens that they think of their personal freedom, and their personal ambitions, as identical with the purposes of Soviet society. The latter of course are wholly determined by the Communist leadership.

To any American who has been sensitized to propaganda, the most striking single impression he gets as he passes behind the Iron Curtain is the all-embracing character of the effort. In America he may think of propaganda in terms of advertising, or political campaigns, or crusades for good causes, or even in terms of slanted news. In Russia he discovers that the rulers seek to convert the total culture into a giant propaganda apparatus.

The distinctive features of Soviet propaganda manifestly stem from the Communist theory of government. In Bolshevik theory the Communist Party is to be the "vanguard of the working class," and the leading force in the creation of a new society. On this premise the Party has assumed a monopoly over all means of communication. The Party is wholly intolerant of any competition. It regards itself as the repository of all truth and wisdom. It claims unrestricted authority to impose its views and its will on the people. This claim extends into the most personal and private matters of human existence.

In western nations the role of the government in guarding public and private morals is largely limited and negative. Our laws set outside limits to what may or may not be done by the individual, and punish only gross transgression of moral standards. By contrast, the Soviet government seeks to mould the behaviour of the Soviet citizen not only at work, but also at home and during leisure hours. It seeks to guide all his thoughts and attitudes—not only toward his government but also toward society in general and toward his fellow men individually, including his closest associates and even his relatives.

Soviet indoctrination is a function not only of the traditional instruments and channels of communication, the so-called mass media—newspapers and periodicals, broadcasting, motion pictures—but also of literature and art and the theatre, of schools and religious institutions, and also of farm and factory and indeed of every form of social organization. In Russia no human

activity can be justified for its own sake. All must be subordinated to Communist dogma.

The Organization

To supervise its vast propaganda program the Communist Party has built an elaborate machinery of policy making, administration, control and censorship. At the top is the Agitation and Propaganda Department of the Communist Party itself—the so-called Agitprop. This is attached to the Party's central secretariat. It is headed by one of the top leaders in the Soviet hierarchy, though his identity is not always known to us. My casual acquaintances among Russian officials, cordial and outspoken on many subjects, did not respond to questions about Agitprop.

Agitprop gives central direction to all propaganda and indoctrination activities and agencies. In this it controls the press. It is also aided by a number of governmental departments, the most important being the Ministry of Culture. The Agitprop, the Ministry of Culture and the All-Union Ministry of Higher Education operate throughout the U.S.S.R. Corresponding and subordinate organs, in both the Party and the government, exist on all territorial-administrative levels.

F. Bowen Evans, in his book, *Worldwide Communist Propaganda Activities* (1955), reports:

"Agitprop has an elaborate organization with about a dozen subsections: for the Central (Moscow) Press, for the Local (Provincial) Press, for Publishing Houses, for Films, for Radio, for Fictional Literature, for Art Affairs (theater, music, painting, etc.), for Cultural Enlightenment, for Schools, for Science, for Party Propaganda, for Agitation (administrative), and for Propaganda (administrative). As a Party organ, rather than a government organ. Agitprop for the most part does not itself engage in propaganda operations. Its primary role is that of planner, guide, supervisor, and policeman over the Government agencies which actually do the publishing, filming, broadcasting, etc." (With permission of The Macmillan Company.)

The propaganda of indoctrination is so all-pervasive that it ceases to be a measurable activity, and tends to become identical with the total culture of the country. But some notion of the scale of effort within the U.S.S.R. that goes into "propaganda and agitation" is shown by Evans' estimate that in 1953 the Soviet government used 375,000 propagandists full-time and another 2,100,000 part-time. These total about the size of the U.S. army. Another 10,000,000 intellectual and professional workers were expected to engage in propaganda work as a condition of their employment. This latter figure is roughly four times the number of college students in the United States.

Throughout the Soviet Union there are about 6,000 special schools maintained by the Party devoted exclusively to training professional propagandists. These have an enrollment at any one time of 185,000 students. Above these 6,000 schools are 177 regional "propaganda colleges" to train 135,000 "alumni" of the local schools. This is 50% more than the total college and university enrollment of Great Britain. And above the regional schools are a dozen higher institutions giving "graduate training" to several thousand advanced students. Communist leaders throughout the world, such as Mao of China, Togliatti of Italy, Duclos of France, and Browder, Foster and Dennis of the United States, have attended these advanced schools.

Propaganda is by far the biggest business of the U.S.S.R., except for the Soviet armed forces. It is so much the spirit and the essence of Communism that I visited Russia in an effort better to understand it, and to prepare this article about some of the significant but little understood aspects of it. My present goal of course is merely to report some observations and incidents which will help some of us Americans to achieve greater



Left: General view of the city, showing on the left a new office building of the popular Soviet architecture style

Above: The Tsar Kolokol bell in the Kremlin. Damaged in the fire of 1737, the bell was never hung

Right: Interior of the Izmailovskaya station of the Moscow subway. The ornate architectural style was criticized by the government in 1955

Below: A slum area, about 100 yd. behind the United States embassy. This photograph was made in 1953 by a U.S. college student editor





MOSCOW

Photographs of the Soviet capital. The three on this page and the two on the top of the facing page were presented to Sen. Benton by an editor of *Izvestia*, the Soviet government newspaper in Moscow

Top: The Kremlin, former palace of the czars, now housing the central government offices of the U.S.S.R.

Right: Statue of George Dolgoruki, prince of Rostov, legendary founder of Moscow. The statue was unveiled in 1947 during the 800th anniversary of the city

Below: View of a principal building and fountain of the agricultural exposition





ROMAN CATHOLIC CHURCH in Moscow. Sen. Benton observed that he saw few persons under the age of 60 in Soviet churches

understanding of what I believe is the most terrifying competitive threat in the competitive co-existence which seems to lie ahead.

I shall concentrate here first on education because this is most fundamental and for the long pull most important; secondly, on the press; thirdly, on the use of the arts for Communist propaganda; and finally, some rather casual comments on broadcasting, the motion pictures and on my visit to three of the satellite countries. In my concluding section I seek to sum up. I also give some of my further personal observations.

Of the influence of religion I shall say only that the regime's slightly more tolerant attitude today does not mean that it is relenting in its militant atheism; it may only mean that, in Russia, religion no longer worries the Party. I saw very few Russians under age 60 in church. Khrushchev said not long ago, "Religion is still the opiate of the people, but we are strong now and not afraid of it." I fear the Communists have been largely successful in the U.S.S.R. in their antireligious propaganda, though I suspect the total success of this campaign is often exaggerated; many feel there are deep religious convictions still in the hearts of tens of millions of Russian people.

I shall pass over, briefly, the entire area of "face-to-face" propaganda which occupies such a large proportion of the trained propagandists. There are two major types. One consists in formal lectures, conducted at a fairly high theoretical level and often before large audiences. This is technically called "propaganda" by the Communists, and is the responsibility of the Society for the Dissemination of Political and Scientific Knowledge. The Society has more than 300,000 members. Its lectures range from animal husbandry to the philosophical underpinnings of Marxism-Leninism. It also publishes propaganda pamphlets. The Society claims to have organized roughly 1,000,000 lectures in 1954.

The other is called "agitation" and takes place within groups of about 10 to 15 people. Problems and ideas are handled in simplified fashion, one idea at a time. The local Party units select and train agitators. Agitation meetings are usually short sessions held at places of work. The agitator's job is to convince his listeners of the wisdom of Party decisions, and to exhort them to their best efforts. More than 2,000,000 serve

as agitators. In American sales language, this is the "merchandising at the point of sale" for which the educational system, and the mass media, have prepared the way.

I do not present many of the following observations as other than cursory. They are subject to continuous re-examination. The information I have sought for this article is not easily come by. I spent months studying the available data, both in the United States and England, before leaving for Russia. I submit the data I have assembled, my reports on interviews with high Russian officials, and my personal observations—I submit these in full knowledge that they only scratch the surface. But I submit them also in the deep conviction, after a lifetime of experience in the field of communication, that a far better understanding of this subject by the government and people of the United States is vital to our future welfare.

THE SOVIET EDUCATIONAL SYSTEM

In the Educational Institutions the Foundation Is Laid and the Basic Attitudes Shaped for Communism

"Just because we don't teach Marx in the first ten grades, please do not conclude that our lower schools are non-political. Our aim is Communist education."

This was Ivan Kairov speaking, the Minister of Education for the so-called Federated Russian Republic. This republic is by far the largest and most important of the 16 republics which make up the U.S.S.R., embracing both Leningrad and Moscow and extending from the Baltic to the Pacific. I interviewed Kairov in Nov. 1955. His ministry is responsible for the entire educational system through the first ten grades. It has instituted a ten-year program which is now compulsory in the 122 biggest cities and for about 70% of all young people; it is to be compulsory everywhere by 1960.

The ten grades are at least comparable to the average high school education in the United States. The Russian youngsters go to school six days a week and 10 months a year. Further, students at all levels work much harder than students in America. The parents know that this is the sure way for their children to get ahead. Indeed, the Soviet government felt it necessary a few years ago to pass a law prohibiting teachers in the lower grades from assigning homework for Sunday, so that the child would have one day off in seven.

"We teach history as we Communists see it," the Minister continued, and he showed me the beginning textbook in Russian history, which Soviet youngsters encounter in the fourth grade, at age 10 or 11. He explained, "The children are not introduced in any depth into the significance of the class struggle in the fourth grade, but of course they are instructed on the part played by the landlord versus the worker throughout the history of Russia. Such instruction prepares them for the concept of the class struggle which they will be taught in the higher grades, and after they finish the ten-year school."

At my request, Kairov later sent me copies of four history texts used by Soviet youngsters for the fourth, eighth, ninth and tenth grades. The text for the fourth grade, which went to press in June 1955 in a printing order of 1,000,000 copies, has for the first two sentences of its introduction: "The U.S.S.R. is the country of socialism. Our Fatherland is the greatest country in the whole world." A few lines later the introduction goes on, "Unlike other countries, the U.S.S.R. has neither capitalists nor landowners. In the U.S.S.R. there is no exploitation of man by man. We all work for ourselves, for the whole society."

The changing propaganda themes of the Soviet regime, as they are laid down by the Communist Party to fit changing

Benton Reports

needs, are hammered constantly, uniformly and insistently through the press and through broadcasting, films, the theatre and other media. But it is in the schools that the foundation is laid and the basic attitudes shaped into Communism.

It would be a serious mistake, however, to assume that Soviet education consists entirely, or even largely, of Communist indoctrination. By any standard, the educational achievements of the Communist regime have been impressive. The most striking of these has been the virtual elimination of illiteracy among people under 40. In its issue of Oct. 30, 1955, *Pravda* claimed that 60,000,000 Russians are now going to school, adult classes included.

Kairov told me that, before the Revolution, 30% of all Russians were illiterate. Mr. Palgunov, managing director of Tass, gave this figure as 65%. An American study puts it at 55%. (These differences may partially result from using earlier or later boundaries.) Advances had been made under the last Czar. A few years after the Communists took over, they threw themselves into the task of education with fervour. Their slogan seems almost literally to have become, "Education instead of butter."

Kairov told me that the first "law of Universal Obligatory Education," making four years of primary education compulsory, was passed in 1930. In 1947 the requirement was raised to seven years for urban children. The big decision to introduce universal obligatory ten-year education by 1960 for everyone was taken in 1951. The mayor of Kiev, capital of the Ukrainian Soviet Socialist Republic, in explaining to me that his city was already on the compulsory ten-year program, said that the city had 6,000 teachers to serve its 160,000 to 170,000 pupils.

By American school standards the U.S.S.R. now has a strong primary and a rapidly expanding and developing secondary system. Surprising to many Americans is the phenomenal growth of higher education. Today, according to figures which Western students of the U.S.S.R. accept, about 1,800,000 are enrolled in universities and higher institutes, and about another 2,500,000 are enrolled in the *tekhnikums*—vocational schools above the ten-year school system. In some fields, notably technological, the Soviet Union is producing graduates who compare favourably, both in number and quality, with those in the United States. Indeed, Allen Dulles, head of the U.S. Central Intelligence Agency, and Admiral Lewis Strauss, chairman of the Atomic Energy Commission, say the Soviet output of engineers and technical specialists may exceed that of the U.S. by as much as 50%. This figure becomes the more startling when one recalls that the Russian economy is probably no more than one-third the size of that of the United States, and thus, presumptively, the demand for engineers internally should be far less than in the U.S.

The Soviet educational system is designed to meet the needs of the state, not the needs of the individual. The system has two predominant goals; first, to produce trained specialists to meet the demands of the expanding state economy; second, to produce graduates with the "correct" political orientation, that is, loyal and unquestioning believers in the government and in Communism.

These two goals have not always received equal stress under the Red regime. In the 1920s, political indoctrination was the more important goal, and educational standards suffered as a consequence. Since 1945 the demands of the national economy have received the greater emphasis. Today, in the technical institutes, the Minister of Higher Education, Vyacheslav Yelutin, told me that 90% of study hours go to the students' special field of training, with only the balance of 10% to the teaching of Marxism, Leninism and Stalinism. But of course 10% over the years adds up to a great deal of studying; and, one may be

sure, 10% over the years adds up to fully adequate indoctrination by Communist standards.

Early Communist Experiments

Before the Soviet regime came to power in 1917 the prevailing educational system of Russia, modelled largely after the German, was one of the most liberal features of the Czar's government. The pre-1917 Russian schools had high academic standards. They were open to children of all classes and both sexes (though on a "separate and unequal" basis). Primary education was developed and supervised largely by the local self-government units. Most secondary and higher schools were run by the state. Only about half of all Russian youngsters of primary school age were going to school in 1914, though on the eve of the 1917 revolution the system was in process of great expansion. If only one-half the children were in school in 1914, and in an educational system which was expanding, this statistic would seem to support the illiteracy estimates of 55% or 65%.

It was not until the 1920s that the new Communist government had the time and power to formulate and put into effect a Communist educational policy. At first, this policy consisted largely in doing away with anything that came from the past. Regular subjects of instruction were abolished and a "core curriculum" substituted; entrance requirements, examinations, grades and academic degrees were swept away. All work was done in student "brigades." Testing became "collective." Each brigade had a leader who answered for the group, and the brigade received a collective mark. The authority of the teacher was considered one of the "reactionary vestiges" from Czarism. Students were allowed to contradict the teacher, or even to denounce him on political grounds. Since the students were recruited largely from worker and peasant families, while the teachers were of necessity holdovers from the old regime, plenty of friction resulted. Teachers reported that they feared denunciation if they failed to give a *Komsomol* (member of the Communist youth organization) a good grade. Standards of quality, especially in higher education, fell to a low point. The national economy was suffering because the schools were graduating second-rate technicians, rather than the top-flight engineers and scientists who were needed in the Soviet drive for industrialization.

So with the first Five-Year plan, in 1928, the government began to withdraw its previous educational "reforms" and to reintroduce examinations and individual grading. It re-established regular academic courses and reaffirmed the authority of the teacher. By 1955, education, with liberal doses of Communism added, had largely returned to the structure and standards of prerevolutionary times, but on a vastly expanded scale. However, many features are new; the system is not only universal in the primary grades, but, throughout, it is coeducational and secular. Further, it is closely and continuously geared to the demands of the national economy.

The Ten-Year School

The curriculum of the Ten-Year schools has not been greatly altered in recent years except for the new constant drive to step up and improve "polytechnic" instruction. Since many Ten-Year school graduates have considered themselves too good to work with their hands, the Soviet press continually conducts a strenuous campaign on the "joys of manual labour." It emphasizes the values of "polytechnic instruction" in the Ten-Year schools to prepare young people for work in industry and agriculture.

The hours formerly devoted to the Russian language and literature, and to psychology and logic, have been cut. Kairov

explained to me: "We are working toward a school that is general and polytechnic, all in one." Even in the first four grades, a course of study which the Minister called "The Study of Labour" has been introduced. In the city schools, shopwork perhaps similar to what in the United States is known as manual training has been added; in rural schools, gardening. This manual program is increased to two hours a week in the fifth and sixth grades. From the eighth to the tenth grades the students engage in what are called "Practicums," dealing with work techniques. All students in the last three grades must do two weeks of summer work in factories or on farms. In addition, all schools have "Voluntary Circles" for these grades, for groups interested in practical hobbies, from making radios to keeping bees. "We are trying to work out a combination of study and productive labour," says Kairov.

Youth Organizations

Against Kairov's statement that "our aim is Communist education" comes the discovery that less time is given to formal indoctrination in Communist ideology than one would suppose. All courses of all kinds, even in the natural sciences, are admittedly slanted towards so called "materialism." Yet an overwhelming percentage of the study courses goes to academic and technical training.

The schools can and do lean on the press, radio, TV and other media for continuous and daily indoctrination of the young (as well as the old). For the young, however, there is still another source of ideological indoctrination. Almost all Soviet children go into the Young Pioneers at age nine, in the third grade, and remain until age fourteen, in grade seven. Then in large numbers they enter the *Komsomol*, the youth organization for youngsters from 14 to 23. These two organizations are perhaps equally responsible with the schools for the early stages of formal indoctrination.

The statutes of the *Komsomol*, which Khrushchev claims numbers 18,000,000 members, require each member to study Marxism-Leninism; to engage in constant efforts to raise his own political literacy; to explain the political line of the Party to the masses of youth; and to provide an example of socialist attitudes toward work and study. From the *Komsomol* comes a large reservoir from which the Party can cull its future leaders and functionaries.

At any one time about 40% of the 18,000,000 members of the *Komsomol* are engaged in serious study of Marxism-Leninism. *Komsomol* leaders are continually pointed out in the Soviet press as young people who should set examples of loyalty and devotion to the regime. In the schools, they seem to carry a large share of responsibility for the maintenance of discipline and loyalty to the regime among students. If a student refuses to go to his job assignment, or shows unwillingness, the *Komsomol* representative will be the first to explain to the student why he should go. This seems to be the advanced Soviet technique of what was called "student government" when I was at college.

The Tekhnikums

Some children are siphoned off into specialized schools called *tekhnikums* at the end of the seventh grade. There they take a four-year course in their chosen vocations. Others enter the same schools after the tenth grade for two or two and a half years. In 1955 it was anticipated that the admission of seventh grade students and those under 16 would shortly be abolished.

The *tekhnikums* are not a Soviet invention, but a development from the Czarist system. There is no equivalent for them in the United States. Perhaps the best name for them in English would be vocational junior colleges. They are designed to

produce "middle-trained" specialists not only for industry, but also in music, art, medicine and education. A *tekhnikum* graduate in medicine would occupy a position intermediate between a doctor and a nurse.

The *tekhnikums* are run by the great industrial ministries such as the Coal and Coke Ministry, the Ministry of Communication, the Ministry of Agriculture, etc. One estimate placed the total number of these *tekhnikums* throughout the U.S.S.R. at "more than 2,000." This was given me by the prorector of the University of Moscow who says the total *tekhnikum* enrolment is 2,500,000.

I visited a *tekhnikum* in Kiev. This is one of 50 maintained throughout the Soviet Union by the Ministry of Coal and Coke. (The All-Union Ministry of Higher Education, however, appears to set minimum standards for all *tekhnikums*.) The principal told me that when his *tekhnikum* opened 11 years ago it had only 255 students; and that it now has 2,500 students and 85 teachers. He offers tenth grade graduates two and a half year courses in four specialties—construction of coal mines, construction of coal mine buildings, construction of roads for coal mining enterprises, and construction and use of communications equipment used in the coal mining industry.

The equipment, the models and laboratories astonished me. The principal said that the equipment, some of it covering rooms 100 feet long, was worth "millions of roubles."

The principal was particularly proud of a scale model of a "Palace of Culture" made by one of his students. A Palace of Culture is a kind of local club which is supposed to symbolize the progress of the Soviet people. There must be tens of thousands of them throughout the Soviet Union and thousands more going up all the time. The model was about 12-ft. long by perhaps 5 ft. deep, with electric lights, and a tiny simulated moving picture flickering inside. All the details of construction were visible when part of the "Palace" was lowered in order to give a cut-through. Indeed the student builder was also on exhibit, a tall, gaunt poetic-looking boy with a receding chin. I asked the principal how he could put such a boy into a coal mine.

The problem of getting boys voluntarily to apply to a *tekhnikum* in the field of coal mining interested me because I know that coal mining isn't exactly a popular career in the United States. The principal suggested that the problem is one of propaganda and promises. The boys from the Ten-Year schools are "guided" by the government into the *tekhnikums* where they are most needed. This is done by what the principal called a "process of popularization." I did not have the chance to inquire whether salary incentives were also involved; for example, whether a coal mine foreman is paid more highly than a young man who is being trained to go into journalism, which sounds, at least to me, like a more pleasant and interesting occupation.

Applicants have an opportunity, on a certain day each year, to come in and look the *tekhnikum* over, and listen to representatives of the school, before they make up their minds. I presumed that there must be those whose academic grades failed to qualify for the universities or higher institutes. But the principal says this isn't necessarily so. Some talented young people who might qualify just don't want to wait the five years of the university or comparable higher education, before they go to work. They apply for a *tekhnikum* because it takes only 40% or 50% as long. They, and others who may develop academic aptitude in the *tekhnikums*, have a second chance for the university or higher institute if they stand in the top 5% after their 2 or 2½ years at the *tekhnikum*; this 5% goes on into the higher institutes purely on the recommendation of the faculty, and without examinations. Thus the bright student in Russia can have, at the expense of the state, all the education he

wants and can absorb. However, students who go from *tekhnikum* to university or institute from this top 5% must remain in the same field in which they were trained in the *tekhnikum*.

The rest of the *tekhnikum* graduates serve at a job to which they are assigned for three years. Only after the expiration of this job assignment may they apply for admission to a higher educational institution. To be admitted they must pass the competitive entrance examinations and they must continue in the fields for which they've been previously trained. The Russians feel the need for skilled technologists too keenly to allow them the free choice to shift fields.

For most students, of course, graduation from a *tekhnikum* is the terminal point in their formal education. But many continue to struggle and strive. This is why one sees the young people in the bookstores at the sections featuring scientific works; they buy books on nuclear physics in preference to novels in order to get ahead. This is why I found every desk occupied in the great reading rooms connected with the scientific sections in the Leningrad library. The silence was absolute; the concentrated zeal of the students was a bit breath-taking; and the rooms are jammed by day with workers from the night shifts of the factories; and by night with those from the day shifts. It can't be stated too often that the surest way to get ahead in Russia is by studying and by learning. Promotion can't often be won, as occasionally in the West, by inheriting money or influence or by marrying a dowry or the right girl.

Universities and Higher Institutes

The University of Moscow, with its gleaming new 33-story tower, is, after the Kremlin itself, Moscow's most arresting structure. The prorector of the university, Professor Vovchenko, told me it cost the astonishing sum of 3,000,000,000 roubles. At the present inflated four-roubles-for-a-dollar exchange rate that would be U.S. \$750,000,000; even at the lowest estimate I picked up anywhere on the rouble, twenty-for-a-dollar, this is U.S. \$150,000,000, or more than has been spent for the physical plants of any but a handful of American universities. This greatest of the Russian universities is a symbol to all Russia of what lies ahead in the fulfilment of Soviet ambitions in the field of higher education.

Vovchenko, a chemist, told me that the University of Moscow had graduated 85,000 in its 200 years, 45,000 of these since the 1917 Revolution. It now has 23,000 students enrolled, and turns out 3,000 graduates a year. About half of all students are being trained as teachers. Ten per cent of the graduates are permitted to stay for graduate work (compared with about 5% at the University of Kiev and in the Soviet Union as a whole) and of these, after three years of advanced study, more than 90% earn the *kandidat* degree. The teaching faculty numbers 2,000, all of whom must do research, with another 500 who do not teach devoting themselves exclusively to research. (The great new building has 1,900 laboratory rooms.) The university's annual budget is 250,000,000 roubles, exclusive of construction.

Vyacheslav Yelutin, Minister of Higher Education, told me that there are 760 institutions of higher learning in the Soviet Union, but these do not of course include the *tekhnikums*. Vovchenko estimated that 1,825,000 students are enrolled in these higher institutions. (In the United States, about 1,850 institutions are in the "higher education" category, with 2,533,000 students, and of course there are no *tekhnikums*.) If we add the *tekhnikum* enrolment, we reach a total for institutions beyond those comparable to high schools in the United States of more than 4,300,000—or almost double the post-high school enrolment in the United States.

In the U.S.S.R. there are three basic types of higher educa-

tional institutions: the university, the institute (the latter category including technical, medical, legal and other specialized schools, but excluding the *tekhnikums*), and the pedagogicals or teacher-training institutes.

According to Soviet sources about 90% of all students in these higher institutions are on state scholarships, with the amounts of the scholarships increasing slightly every year that the student remains in school. This largely removes from Soviet education the factor of the economic status of the parents which is so important in the U.S. in determining the educational advantages and advancement of the young people. The fact that, generally speaking, in the U.S.S.R. a student can keep going, at the expense of the State, as long as he can make the grades—this fact is profoundly important when the present Soviet development of its potential manpower is weighed against and compared with the practices in the U.S.

The U.S.S.R. scholarships are fixed by the Ministry of Higher Education and they vary in amount from field to field. There must be a technique of persuasion, as in the *tekhnikums*, to channel students into the fields of greatest need, as judged by the State. The larger sized scholarships will encourage students to enter in sufficient numbers those fields to which the government gives high priority (for example, scholarships in mining and aeronautics are very high, but scholarships in history are almost negligible).

After a male student has been accepted at a higher educational institution, he applies for draft deferment, which is apparently automatic. This Soviet draft deferment policy has never been explicitly stated by the government. Before 1939 all students were exempt from military service. After 1939 all youths from the age of 18 were made eligible for the draft, but it appears (from testimony of displaced persons) that most students attending schools of higher education obtain deferments not only during their period of study, but also after graduation. Instead there seems to be, especially for students in the fields of science and engineering, some sort of R.O.T.C.-type training: summer camps and military courses are included in the curriculum. On graduation these students are commissioned in the reserve. The draft deferment policy, and the exact nature of the military training given, are never mentioned in the Soviet press. The Soviet policy, however, is manifestly designed to utilize youth and manpower so that its sum-total productivity will bring maximum benefits to the State. This policy, in my judgment, as it increases in effectiveness, poses a most serious threat to the West, dangerous in war because of its efficiency, and ominous in any form of competitive co-existence we can envisage. The victory in such competition between the U.S.S.R. and the West in areas like Asia and Africa may well go to the largest battalions of technologists trained for export.

The academic load of the average Soviet college student sounds far heavier than in the U.S. Further, Yelutin explained to me that the higher institutions draw their students from the entire population, and not from any particular segment. He said there are perhaps 100,000,000 workers in the U.S.S.R., of whom perhaps 20,000,000 could be called "members of the intelligentsia." And of the total enrolment in higher institutions, Yelutin says, about 20% come from "intelligentsia" families. He commented, "In admitting students, we don't ask who the father is; we want a clear head."

The U.S.S.R.'s 33 universities are directly under the jurisdiction of Yelutin's ministry. A typical Soviet university has 12 "faculties"; for example, in physics, mathematics, language, literature, history, biology, geography, chemistry, philosophy, economics, law and journalism. The two universities I visited, Kiev and Moscow, two of the three most important, have six faculties in the natural sciences and six in the humanities and



Views of Lomonosov State university, Moscow

Left: Palace of Science on Lenin hills, completed in 1953. The building contains all scientific departments, a library of more than 1,000,000 volumes and rooms for 6,000 students and faculty

Below: A lecture by Soviet scientist A. I. Oparin, department of biology and soils



Left: Book stacks in Gorky library, Palace of Science



Right: Assembly hall, Palace of Science, during bicentenary of the university, 1955

Below: Old university buildings, downtown Moscow, now housing humanities departments



Right: An arithmetic lesson in the second grade of a girls' secondary school in Moscow. Mechanical counters and the abacus are still widely used by businesses in the U.S.S.R. Electrical computing machines are almost unknown



EDUCATION

Right: Scientists of the Dokuchayev Agricultural Institute in Kharkov using atom tracers to study the absorption of radioactive phosphorus by sugar beet leaves

Below: The oral examination is a part of the educational system from the lowest grades. Note the "hero" medals on the male examiner



Above: Typical school building of a collective farm

Right: Moscow children pose in front of a modern building in the new primary grade uniforms adopted in 1954





FUTURE LEADERS, members of the Lenin Young Communist league in the Hall of Sessions of the Kremlin, Moscow, during the congress of 1954

social studies.

If a student is accepted for graduate work, his three years will follow an individual study program which is worked out with his adviser. This is the first time in the Soviet educational process that the student is not following the uniform study plan laid down by the government.

Graduate work in the U.S.S.R. is also offered by the research institutes of the Academy of Sciences. The Academy controls and directs nearly all basic and theoretical, and much of the applied, research in all scientific fields in the U.S.S.R. The distinction between doing graduate work in a research institute and in a regular academic institution is not clear to me. However, Vovchenko told me that members of the Academy of Science serve on the Learned Council of the University of Moscow.

The first graduate degree, the *Kandidat Nauk* (Candidate of Science), calls for a level of training roughly equivalent to that of the Ph.D. at a good university in the United States. The second, and the highest, Soviet academic degree, *Doktor Nauk* (Doctor of Science), is not predicated on any formal plan of study but requires a successful defense of a Doctor's thesis which involves an original and significant contribution to science. The degree of Doctor of Science may take 25 years for the holder of the *Kandidat's* degree to achieve, and many *Kandidats* are said to spend their lives striving for it without success. There is no such super-advanced earned degree in the U.S. and if my information is correct, our Ph.D. from many departments in many universities is, by comparison, a diploma from a junior college.

Yelutin explained that the pedagogical institutes, for teacher training, are under the direction of Kairov's Ministry of Education; that the medical institutes (of which there are 90) are under the Ministry of Health; that the 100 or more agricultural institutes are under the Ministry of Agriculture; the 200 or more technical institutes are under various economic

ministries. However, Yelutin's ministry serves as what he called a "kind of legislative organ for all institutions of higher learning." As Minister of Higher Education, he says, "I follow out the orders issued by the government and also put out additional regulations of our own."

Among Yelutin's responsibilities is certification of all degrees. He confirms and approves all teaching plans and curriculums. He also has a right or privilege which seems odd to us, and which must be important to the control he exercises. Only he can authorize putting into a book the phrase, "This is a textbook." No university or institute can do this; only the Minister can do it for them. The book publishers, he says, can put out what they may regard as textbooks—but they can't say, "This is a textbook."

Yelutin's ministry appoints the rector (or director) of each higher institution. Under the rector are two or three deputies: one for academic administration, one for general administration, and the third for Party affairs. The latter has much to say in the matter of personnel selection and policies. Highly important by our standards is the fact that no university professor has permanent tenure. Any professor can be fired at any time when the authorities, who are politically appointed, judge his work to be unsatisfactory. Each university faculty has a "Learned Council" with some powers; but no one seems clear about how much power. It is clear, however, that the appointment of their members must be approved by the Ministry of Higher Education.

The entire question of how rigidly and to what extent the Soviet educational system is centrally administered is not clear. The relaxation of control since the death of Stalin has been evident in education as well as in other fields. For example, there is today wide academic discussion of a so-called "new charter" under which the rector of a university will in future be elected by the Learned Council by secret ballot. But there is no discussion of changing the requirement calling for the approval by the Minister of every professor elected to any Learned Council, nor did I hear of any discussion of any extension of tenure in their jobs to scientists and scholars.

Of foreign students Yelutin said, "We are willingly going in the direction of taking more foreign students. When other governments ask us we respond positively." Yelutin continued, "the financing of these students varies. One system of financing is mutual exchange between countries. We have this kind of arrangement with Norway and Finland, for example. Sometimes the students are financed by their own governments. Now there is talk of using the United Nations funds for backward countries to finance students. We expect Indian students here who will be financed by these UN funds." The Minister added that it is "difficult to overestimate the importance of this exchange of students."

There are of course thousands of foreign students in the U.S.S.R. Even in the satellites, there are many. Professor Urduig-Gruez, Minister of Education in Hungary, told me there are between 200 and 300 Korean and Chinese students in Budapest. When I asked him what they were studying, he replied, "Many are specializing in the Hungarian language and literature." On this I can only comment briefly that Generalissimo Mao must be looking a very long way ahead.

Of the 60,000,000 students *Pravda* claims, I do not know what proportion are in the institutions for formal education, in contrast with those engaged in what we would call "adult education." The percentage of the latter must be substantial, and notably through correspondence courses. In the U.S.S.R. adults keep at their studies because diligence and industry pay off in the form of advanced education and certificates and diplomas and the rewards that accrue therefrom.

Summary of Soviet Aims

Perhaps a quick way to conclude this key section in this article, and to summarize the aims in Soviet education, is to quote from the *Great Soviet Encyclopaedia*. Its editors are instructed to produce the final instruction on "the Marxist-Leninist-Stalinist outlook." Their task is regarded as of such supreme importance that they report directly to the top Council of Ministers.

In their special volume devoted to the Soviet Union, published in 1948, they imprinted Kairov's views on the duty of the schools to provide the Communist education. The Soviet encyclopaedia progresses as follows:

"To develop in children's minds the Communist morality, ideology and Soviet patriotism; to inspire unshakable love towards the Soviet fatherland, the Communist Party and its leaders; to propagate Bolshevik vigilance; to put an emphasis on atheist and internationalist education; to strengthen Bolshevik will-power and character, as well as courage, capacity for resisting adversity and conquering obstacles; to develop self-discipline; and to encourage physical and esthetic culture."

This definition of aims of Soviet education is exactly in line with the subjects of all articles in the 50-odd volumes of the so-called "Great Soviet Encyclopaedia." I spent more than three hours with the editor, B. A. Vvedenski, and with four of his top associates. This subject is naturally of special interest to me as publisher of the *Encyclopaedia Britannica*. The *Great Soviet Encyclopaedia* serves to illustrate how the publishing of all books in the U.S.S.R., as with all other media of communication with the people, is directed towards the furtherance of the aims of the Party and the State.

The creation of "the new Soviet man" is to be brought about not only by the teachers in the course of the schooling period, but also by the whole system comprising the Pioneer and Youth organizations, as well as by the Pupils' and Parents' committees.

The ideological fare doled out in schools today is limited and is accomplished chiefly through the courses in history, literature and geography. One reason no greater indoctrination pressure seems required from the lower schools is that the student is surrounded by the government propaganda, everywhere and on all sides, wherever he looks and in whatever he reads.

Some further and more detailed comments by Mr. Benton on the Soviet Educational System

The Ten-Year School

The Ten-Year school is subdivided into a primary school (classes 1 to 4); an incomplete secondary school (classes 5 to 7); and a complete secondary school (classes 8 to 10). These subdivisions correspond roughly to the U.S. elementary school, junior high school and senior high school. At age seven a child enters the first class. As in Czarist days, he wears a uniform (this his family must buy). He studies the same subjects at the same time as every other child in the republic. Scholastic demands are strenuous, hours are long and discipline is severe.

For the first three years, pupils are passed from grade to grade on the recommendation of the teacher, but at the end of the fourth class they must pass written and oral examinations both in Russian and in arithmetic in order to move into class five. From the fourth class on, they take written and oral examinations at the end of every year on a whole year's work. A student's mark for the year depends largely on how he does in his examinations. The marking is from 5 to 1 as we mark from A to E: 5 is excellent and 1 is failing; 2 is "unsatisfactory."

For the oral examinations the pupils appear before a special examining board which includes their regular teacher. The course has been subdivided into about 75 specific topics or questions. These have been printed on tickets which are placed in a bowl in the front of the room. About 20 minutes before a child is called on to recite, he is allowed to pick his ticket. When his turn comes, he stands up in front of the class and recites the answers to his questions. This oral examination procedure is used right up through university and graduate work.

At the end of the seventh year comes the first watershed in the Soviet educational process. For some students, about 30% of the total according to Kairov, and largely in the rural areas, this is the terminal point of their formal schooling.

At the end of the tenth class, a special examination is held. All those who pass are graduated and receive a certificate known in Russia as the *Attestat Zrelosti* (Certificate of Matriculation).

Labour Reserve Schools

A system of "Labour Reserve schools" was established in 1940 under the Ministry of Labour Reserves to provide a "continuous stream of labour for industry," from both the country and city. While in Russia I asked many questions about the Labour Reserve schools but could pick up little about them. Officials seemed to intimate that they are on the decline, or even in process of being discarded. This may or may not be true.

These schools trained semi-skilled workers, largely for heavy industry, and have been a scholastic dead-end. They were filled both by volunteers and a form of draft. Every collective farm had to send two boys or girls from 14 to 17 years of age and two from 16 to 18 years of age per 100 of the population, counting males and females between the ages of 14 and 55. City quotas were reassigned yearly.

The Labour Reserve schools were run on a military pattern. The students lived in barracks, and it was a criminal offense to leave the school. Youngsters who left were subject to imprisonment in a labour colony—a forced labour camp—for a term up to one year. Tuition, room and board were free. Upon graduation a student had to work four years at an assigned job, again at the risk of criminal liability for non-attendance.

There has been considerable evidence that these schools were unpopular with young people because of the harsh military life and the almost certain lack of future. Obviously these schools provided a place for the less talented students, and there has been some evidence that the transfer to Labour Reserve schools was used as a punishment ("If you don't do better this term, we'll recommend you for a Labour Reserve school"). There were three types of Labour Reserve schools: so-called trade schools, which had a two-year course and trained semi-skilled workers, for example, miners, metal workers, mechanics and electricians; railroad schools, which had a two-year course and trained railroad workers; and schools of "factory-plant instruction" with a six-month course, which trained relatively unskilled factory, mine and construction workers.

In the fall of 1954 a new kind of technical school was opened by the Ministry of Labour Reserves—the technical academy. These schools, with a one to two year course, are built on the base of the Ten-Year school, but they are distinct from the *tekhnikum*. Admission is wholly unselective; i.e., anyone between the ages of 17 and 25 who applies is enrolled without entrance examinations and there is no tuition. The students are trained largely for work in heavy industry—the metal and oil industries, industrial construction, railroads, mining and agriculture—and the students are obligated to work on an assigned job after graduation.

Higher Institutions

The various types of higher institutions have many features in common. Largely, they draw their students directly from the Ten-Year school system, or from the *tekhnikums*.

The admissions policy for all types of higher educational institutions (referred to as *vuz* in Russian) is the same. The prospective student files an application for admission to a specific faculty (department) of a given institution. Then he must take four or five entrance examinations. For example, the required entrance examinations given by the physics faculty at the University of Moscow are in mathematics, physics, chemistry and the Russian language and literature. The only students exempt from the entrance examinations are the honours graduates from the Ten-Year school (called medallists, since they win a gold medal) and the top 5% of the students from *tekhnikums*.

Since 1940 all higher educational institutions have charged nominal tuition and compensated for it with a system of scholarships that blankets almost everyone.

While the course of study at a university or institute lasts five years, at a pedagogical institute it is only four. The curriculum for every "specialty" (major) is laid down by the Ministry of Higher Education. The courses are taught much as in the United States with lectures, laboratory work and group meetings. The 10% of every student's course-load devoted to lectures in the field of indoctrination cover the first three years only, and are devoted to Marxism-Leninism, history of the Communist Party, and dialectical materialism; all the rest of the courses are in the student's field, beginning with very general subjects and becoming increasingly specialized until, in the fourth and fifth years, the students concentrate wholly on their specialties. Very few electives are allowed, and they must be in the student's major. Thus, except for political subjects in the first three years, and a foreign language, a Soviet advanced student takes no subject outside his field. The Western idea that a physicist might want to take a fine arts course, just for his own edification and increased breadth of interest, seems wasteful to the Soviets.

Every graduate from the technical institute must serve for three years at a job assigned by the relevant ministry. He (or she) is criminally liable if he refuses to accept a designated job or if he leaves his job. (There are a few exceptions; a wife cannot be assigned to work in a different city from her husband.) The job assignment practice, although alien to the West, does not seem to be unduly resented in the U.S.S.R. Complaints, according to refugee reports, are made about particular assignments, not about the practice itself. The students' attitude, it is said, is that the State has educated them and that they are repaying the State by their work. In the student's mind, a compulsory job assignment may be an entirely acceptable alternative to a tour of military duty, from which he is exempt. The official Soviet propaganda line is: How lucky Soviet students are in comparison with American students: our Soviet students have jobs waiting for them when they graduate, while the unfortunate American graduates have to pound the pavements and haunt employment offices.

A student admitted to graduate work, in order to obtain the *kandidat*

degree, follows a course of study laid down by his adviser, and he must pass certain examinations. He must hand in and publicly defend a *kandidat* thesis. This usually takes three years after the five years of the university.

The Faculties of Higher Institutions

Higher institutions are divided into faculties (departments), headed by a *dekan* (dean), and each faculty is organized into *kafedras* (chairs). For example, the mathematics faculty at the University of Moscow is divided into the *kafedras* of mechanics, differential equations and others. It is around the *kafedra* that graduate work and university research are organized.

The highest in the academic ranks is a professor, for which rank a doctor's degree is theoretically necessary. Next comes a *dotsent* (who can be compared with an assistant professor) of whom a *kandidat* degree is required. The lowest rank is that of an *assistant* which is similar to that of our instructor.

The most important academic body in a higher educational institution is the *Uchenyi Sovet* (Learned Council). The Council is supposed to coordinate the academic and research work of the different faculties and *kafedras*. It grants *kandidat* degrees and recommends the granting of advanced degrees. However, only the accrediting commission of the Ministry of Higher Education can grant the relatively rare and highly prized Doctor of Science degree. The Learned Council also serves as a transmission belt for policy decisions from the Ministry of Higher Education. The Council does not have any control over the number of students that can be accepted annually or over the distribution of students by fields within an institution. This direction must emanate from the government or Party in line with the needs of the State.

Evening Schools

During World War II, evening schools (incomplete secondary and secondary) were established for young people whose education had been interrupted by the war. In the city, so-called Schools for Working Youth and in the country, Schools for Rural Youth were established. These schools continued to increase in number ever since their establishment in 1943-44. They have apparently become a permanent fixture.

Adult Education

There is an extensive program of adult education, both in evening schools and by correspondence, designed to serve adults who are employed and who are willing to put in long hours of extra study in order to get ahead. The courses of study are supposedly the same as in the regular schools. They are extended over a longer time period. The tuition is half that of a regular school. The extension student must pass entrance requirements. He is supposed to take correspondence training only in the field in which he is regularly employed, but it is evident that many students use correspondence education in hope it will help them eventually to change fields. An employed person who enrolls in a correspondence course is legally guaranteed time off sufficient for examinations and laboratory work. Formally, a correspondence degree is equivalent to that of a regular degree. The same benefits (increased salary and promotion) accrue to the holder, even though qualitatively the standards are not so high. One of the fields where correspondence schools have been used to great advantage is in teacher training. One of the remarkable facts of the Soviet educational system has been its success in training hundreds of thousands of new teachers.

THE SOVIET PRESS

The Key to the Understanding of Soviet Propaganda and Indoctrination

Fifty-four years ago Nicolai Lenin defined the press as an instrument for "collective propaganda and collective agitation." Further, newspapers were to be a "collective organizer." Lenin would not be disappointed in the Soviet press today. He would enthusiastically approve of its short term values and long range goals.

In separate meetings I visited with three top newspaper executives of Moscow. They exceed in power and influence any 300 American newspapermen. Colonel Robert McCormick or Roy Howard in their heydays were but cub reporters in influence by comparison with any one of them. They are not so sharp as Lenin in their language—one of them blandly commented that, after all, a newspaper is a newspaper, whatever the society—but none would question Lenin's definitions. They are experienced and sophisticated men, attractive men, manifestly able men, and because of these qualities they are potentially dangerous men to the U.S.

They were N. G. Palgunov, managing director of the Tass News Agency, the Russian counterpart of the Associated Press and the only source of world-wide and U.S.S.R.-wide news for about 7,000 Soviet newspapers; Constantin Gubin, editor of

Izvestia, second largest U.S.S.R. paper, which is the organ of the Supreme Soviet, the highest governmental body in the Soviet Union; and Yuri Zhukov, deputy editor (and foreign editor) of *Pravda*, organ of the Communist Party, and by far the largest and most powerful Soviet newspaper.

All were cordial, and on the whole, I thought, candid. All three vigorously denied that they received editorial marching orders regularly from above, or gave marching orders to the rest of the Soviet press—which is why I qualify my word "candid." All three conceded without hesitation that the Party runs Russia—including its press.

In the press as in every activity in the Soviet Union, all power is concentrated in the Party. Palgunov of Tass said, "Of course the Party directs the economic, social and cultural life of the Union. We do not deny that the Party gives the guidance, and *Pravda* is of course the central organ of the Party." Gubin, editor of *Izvestia*, also conceded at once that *Pravda*, as the Party organ, is more significant than his own paper. Zhukov told me that his chief editor, D. T. Shepilov, devotes more time to his duties as secretary of the Central Committee of the Communist Party than as editor.

I told Gubin I had been authoritatively informed that *Izvestia* and *Pravda* had differed editorially in 1954. I knew that *Pravda* had urged concentration on heavy industry, in the tradition of the Stalin era, and that *Izvestia* had called for greater emphasis on light industry and consumer goods, a view identified with Georgi M. Malenkov at that time. Gubin said the two papers could never differ—they could never have a major difference on an important issue. He said, "There cannot be any difference between the view of the Party, represented by *Pravda*, and the Supreme Soviet, represented by *Izvestia*."

Palgunov told me that there are more than 7,000 newspapers in the Soviet Union. Gubin gave the figure as 8,000—one of many evidences I received that statistics in the U.S.S.R. tend to be erratic. Of these papers, more than 500 are dailies, with a total circulation between 43,000,000 and 47,000,000. In Czarist Russia there were about 100 dailies, with 2,500,000 circulation; obviously the steep rise in literacy under the Soviet educational drive has been a factor in this increase. (In the U.S. there are published 1,785 dailies, with 55,000,000 circulation.) In addition to *Pravda* and *Izvestia*, there are 23 other so-called All-Union papers which circulate everywhere throughout the U.S.S.R. The remainder are provincial and local organs of regional and local soviets, unions, Party units, etc.

The All-Union papers are said to account for 30% of the total newspaper circulation in the U.S.S.R. Several ministries publish their own All-Union dailies. For example, the Red army publishes *Red Star*. The Ministry of Agriculture's daily is said to have a circulation of 1,000,000. The newspaper *Labour* was described as the organ of the labour unions. The *Komsomol*, the Soviet youth organization, has its own *Komsomol Pravda*. All newspapers are of course properties of the Party or the State as is everything else in Russia. All are thus propaganda organs of the Communist Party.

The Soviet press differs profoundly from that of the United States in practically everything except printing presses and paper. There is little resemblance either in purpose or execution. Palgunov handed me a volume of his lectures for the faculty of journalism of the University of Moscow, dated 1955. Here is a sample, and I concur wholly with the first sentence:

"In its character and content Soviet information differs radically from the information which is distributed by the bourgeois press. In the capitalist world the press is used by the bourgeois in order that, by misleading simple people, the capitalists might be able to impose their will upon the workers. In a capitalist society, newspaper information, like all the bourgeois

press as a whole, very frequently serves as a means of diverting the attention of the popular masses from the truly important, serious and vital problems. Thus it serves as a means of glossing over social conflicts. For this purpose the press makes a practice not only of incorrectly and tendentiously reporting the facts, but also of tendentiously selecting the facts. Ordinarily the pages of the bourgeois newspapers are filled with sensational, detailed and graphic descriptions of murders, robberies, armed raids, street manifestations, trials, scandals in high society and generally with a description of the life of the 'high society,' etc."

In the lectures Palgunov said further, "Unlike the bourgeois press, Tass is interested only in facts. The Tass reporter must follow the struggle of the classes; but he must do it objectively."

Objectivity as we in the West idealize it—the reporting of relevant facts and of both sides of every controversy—is alien to the Soviet publishing system, which is based on the doctrine that "impartiality results in the distortion of historical truth."

Being "first with the latest" is not a worry of the Soviet editor. Even major international events sometimes must wait their turn, until the Party line has been worked out. There are no "enterprising young reporters" in Soviet journalism, outdoing each other for "beats," no hard-bitten city editors; and of course no salesmen of advertising space!

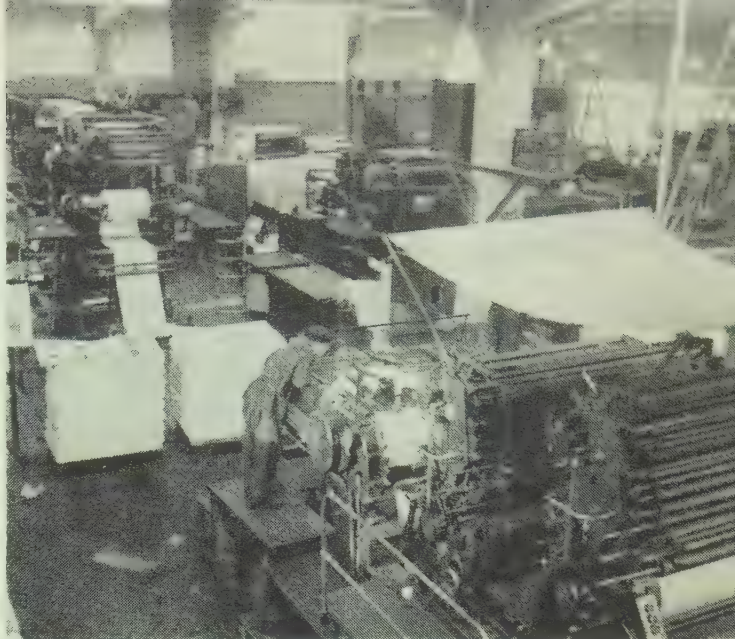
Crime, if it is reported at all, is treated as a shortcoming in Soviet society traceable to the surviving remnants of capitalism. It provides the newspaper with the chance to admonish, to lecture, to point up a moral. For example, *Sovetskaya Estonia*, reporting the case of a group of "speculators" whose alleged crimes included the theft and sale of stolen goods on the black market, identified the criminals as people who "did not wish to engage in socially useful work" (as all good Soviet citizens are supposed to wish to do!). The story went on:

"The case has ended. The criminals have been punished. But we would like to emphasize something that was not mentioned at the trial, namely, the struggle which our public should wage against speculation, a most shameful survival of capitalism. Unfortunately, certain public organizations overlook such cases. . . . The struggle against speculators and their accomplices is the duty not only of the militia (police), the prosecutor's office and the courts, but of our entire population as well."

If the exploits of an individual should happen to make news, the treatment is impersonal. The Soviet press has written a great deal about "Stakhanovism." Though the term has not been in official use for the past year or two, it had been made a household word in Russia, standing for the worker's initiative and resourcefulness in overfulfilling production quotas. It takes its name from one Stakhanov, a miner who accomplished extraordinary feats with a drill. But what is known about Stakhanov himself? Nothing about him except what he did with a drill has ever been considered newsworthy.

Society news, when it is reported, resembles the court circulars of Victorian times. From time to time it is this news that provides the only clue to the status of one or another high ranking official. The first indication of police chief L. P. Beria's fate was given by a "society" announcement. The list of dignitaries at the opening of an opera failed to include his name. It was confirmed later that at the time of the performance he was in custody.

In Aug. 1955, in the early weeks of "the spirit of Geneva"—the phrase of Khrushchev's so widely publicized in Soviet propaganda—so well publicized that most Americans don't even recognize it as a Soviet propaganda slogan—*Pravda* departed from accepted form to report a unique social affair "in the country." Premier Nikolai Bulganin had invited the entire dip-



THE PRESS ROOM OF *Pravda* and other Soviet newspapers and magazines, Moscow

lomatic corps and foreign correspondents to a party. *Pravda* used such extravagant—for it—phrases as "laughter and merriment were heard" and the "mirror-like stillness of a millpond."

The Communist Party line in the press has its hero. It is the "social process," as this is conceived by the Party. One day the featured press article may be the coming election to the Supreme Soviet. Another day it may be the celebration of Miner's Day, and what this implies for the "glorious construction of socialist economy." Industrial production and the need for more of it; problems of agriculture; aspects of Party life, such as indoctrination of citizens and supervision of government institutions—all these are constant themes in the pages of Soviet newspapers.

A typical day's offering in the four pages of *Pravda* looks like this:

Page 1. Unsigned editorial on the status and shortcomings of the building industry. Texts of two government decrees, one instituting the annual observance of "Builder's Day," the other announcing the demobilization of Soviet troops who have served a fixed term of service.

Page 2. Detailed, editorialized reports on (a) a competition between the coal miners of the Karaganda area and the Donets basin to outproduce one another; (b) progress of grain procurement by collective and state farms in various regions of the U.S.S.R. Formal announcement of the visit of a foreign prime minister with retinue.

Page 3. Article by an official of the Ministry of Building Industry about the problems of the industry. (This serves to reinforce the editorial on page 1.) Article by a professor on how best to harvest the current crop of flax. In the column on "Party Life" a letter from a Communist urging better preparation to insure smoother, more productive Party meetings. News briefs (4 or 5 lines each) of domestic events.

Page 4. An editorialized dispatch from Bucharest about cooperation between Rumanian agricultural workers and their Russian counterparts. Article summing up foreign press reaction, and giving official Soviet slant, on the forthcoming negotiations with the foreign dignitary whose arrival was formally announced on page 2. News briefs on foreign affairs (4 or 5 lines each).

Reading a Soviet newspaper from cover to cover is a chore entailing ineffable boredom for a western reader. The Soviet press is by its nature dull—except to those for whom it is a matter of life and death or at least a matter of their political

or economic future, because it is the key to the attitude and line of the Party.

Palgunov claimed that Tass has an incoming daily file that averages 1,677,000 words a day, received from (a) its 40 foreign correspondents, with a total of 200 employees overseas; (b) its exchange services with the Associated Press, the United Press, and other world telegraphic agencies; and (c) its 800 domestic correspondents. He estimates the incoming file of the Associated Press at 1,000,000 words a day, but concedes that the Associated Press, having more correspondents, is better off with its 1,000,000 words. He explains that this is because they are more usable words; that the Associated Press has told its correspondents exactly how many words it wants on each story, or each day, which cuts down the total wordage greatly and improves its quality.

Palgunov says Tass sends out daily to its newspaper clients 40,000 words of domestic material, and 20,000 words of foreign material. A four-page newspaper, which is the typical size in Russia, can print only 16,000 words. Therefore, the editors must select what they want from the 60,000. Palgunov flatly denies there is any direction from Tass as to what the papers should select. He claims that any Russian editor could edit his paper without printing a single word from Tass—if he wished. He quickly admits, of course, that this would prove impracticable because without the Tass service an editor wouldn't have any domestic or international news at all.

Palgunov pushed at me a batch of the previous day's papers. I picked up three of the top four or five. These had exactly the same headline across the left-hand two columns on the first page, and the same size picture of the same event streaming full width across the bottom. I asked if Tass had sent out instructions to handle this story in this manner. Apparently embarrassed, Palgunov vigorously denied that the sameness of headlines and make-up was Tass's doing. He insisted that the identical headlines and pictures were only "coincidental"; that any good editor would give this same play to the story about U Nu, the Burmese premier, which was the big story of the day. He didn't try to explain why the headline position, the headline itself and front page format were exactly the same.

I was puzzled by Palgunov's momentary discomfiture. The standardization and uniformity of the Soviet press is as obvious as it is well known. The three papers I picked off the top of the pile, representative of several hundred throughout the Union on that same day, could not have had that identical treatment by accident. Such a meeting of minds of editors on headline and make-up and picture is manifestly impossible mathematically. If Tass doesn't send out such material with instructions to editors, then the instructions must come from somewhere.

The following day Gubin of *Izvestia* laughed at my account of the three papers with identical headlines and pictures, and said that this was "forced news." He referred to "Tass headlines." But he wouldn't elaborate. He said, "With experience the editors learn how it should be done," and I really believe that this last comment is the key comment on the press as a whole. This is a more important factor than any instructions coming from anywhere. Who indeed wants the responsibility for giving such detailed instructions on any except perhaps the biggest stories, such as U Nu's visit? Thus my over-all impression is that the uniformity of the Soviet press is not achieved by detailed internal censorship or detailed instruction by *Pravda* or by Palgunov or by anyone else. The responsible editors of all papers are hand picked by the Party. They are highly trained in Party matters and discipline, as well as on technical matters. They know how to put out the kind of newspaper the Party wants. They don't have to be instructed in details (except once in a while!).

Gubin insists that, far from having someone over him who must approve his material, he is told by those to whom he is responsible, the Presidium of the Supreme Soviet (not the same body as the Presidium of the Party), "You're the editor; get your editorial board together and make up your mind what position *Izvestia* wants to take."

Gubin presented me with three issues in which he criticized the Ministry of the Meat and Dairy Industry. The minister was so upset that he wrote a long letter. The Collegium of the Industry, according to the letter, had met and agreed with the correctness of the *Izvestia* criticisms. The letter pointed out that there was "incipient reconstruction" of the ministry's work. It thanked *Izvestia* for "yielding much that was useful." This ministry, Gubin said, is now more compact. Costs have been reduced, extra departments have been eliminated.

Gubin sought to imply that his role is similar to that of an American newspaper in criticism of the government; but he did not suggest that he ever criticized the top figures of the Communist Party, or any of the Party's plans or statements.

Izvestia's daily circulation of 1,400,000 is drawn in large part from the 1,500,000 deputies of local soviets, and from the administrative commissions under these soviets. A soviet is described as a legislative body, but it doesn't have too much legislating to do because it takes its orders from the Party. Gubin points out, quite correctly, that his newspaper, being devoted to government, has special importance in the Soviet Union because government itself is most important, embracing as it does the total life of the people—not only their economic life but even their culture.

The circulation of *Pravda*, the Party paper, in Nov. 1955 was 4,900,000, but was to be stepped up about Jan. 1, 1956, to 5,500,000. But it was claimed that *Pravda* could sell 10,000,000 or 12,000,000 copies if it had the needed paper. It flies matrices of its daily issue to regional centres throughout the U.S.S.R. for printing and local distribution.

Pravda is very profitable. Its plant prints 20 magazines in addition to the newspaper. It has 5,000 employees. It owns apartment houses, a sanatorium, a secondary school, a school to train printers and a Palace of Culture. And still there is much profit left for the state budget.

I asked Zhukov, *Pravda's* deputy editor, whether the American editors and people were right in thinking that *Pravda* set the line for the entire Soviet press. He replied that when he worked for *Komsomol Pravda*, that paper had made an effort to set a line so that others would copy it. So, he said, did the labour paper; it also would like to set a "line." And, so he said, would all editors. Thus he was happy that *Pravda* now makes this same effort. In this explanation we have an example of the skill of the Soviet leaders in dialectics: their skill in dodging the direct question and seeking to divert the answer into other channels. Zhukov knew that I knew that the answer to my question was a simple affirmative. Indeed, he confirmed it as he went on, "Some think that top members of the Communist Party read and approve every article in *Pravda*. This is not true. But of course *Pravda* reflects the line of the Party." Zhukov, foreign editor of *Pravda*, as befits his role in setting the line and tone for the treatment of foreign news for the entire U.S.S.R. and satellite press, talked more about politics than about *Pravda*.

The second Geneva conference was in session at the time I spoke to Zhukov, and "contacts between East and West" was one of the questions on its agenda. Some days before, U.S. Secretary of State John Foster Dulles had announced that the United States would abolish the requirement that American passports must be specially validated for travel to the Soviet Union and certain other east European countries. *Pravda* and

other Moscow newspapers were printing editorial articles on the desirability of "more East-West contacts." No word of Secretary Dulles' passport announcement had been allowed to penetrate the news columns of the Soviet press. When I asked Zhukov what was the reason for his paper's total silence about this key item in the world news, his reply was that space was "limited" in the four-page Soviet newspapers!

Zhukov's views on foreign policy, as distinct from journalism, I shall not report except for the key point, which is an example of the propaganda line of Nov. 1955. He said: "One could argue at length as to who is to blame for the loss of trust after the second war. Let us leave that to the historians. The main thing now is not to allow this little flame which has been kindled at Geneva to flicker out.

"The American people are practical. They will understand that the two countries must start where we now are. We now have two sides that are equally strong. If the two sides were not equally strong, there might be some reason for one or the other to make compromises or concessions. But today there is no better starting point than exactly where we are. Indeed there is no other.

"To put it crudely, you of the United States must not go after false Utopias. Don't think that you can make the Bolsheviks retreat. This is impossible."

This was his way of saying that the United States must accept the hard fact of the injustices Communism has worked on unwilling peoples in many parts of the world. If America wants to remedy these injustices, Zhukov intimates, what is she prepared to offer Russia in return?

Frederick Barghoorn of Yale university has called the Communist Party "an ideology in arms." The press is on the Party's front line of ideological artillery. As an easy example of complete Party domination, we may well remember how the entire Soviet press, which had been cannonading against Naziism day in and day out for years, suddenly changed its tone to one of friendship and mutual regard within 24 hours after the Ribbentrop-Molotov pact was signed in 1939.

Some observers minimize the effectiveness of the Soviet press because of its dullness. But I am impressed with the fact that approximately 43,000,000 Soviet citizens buy the dailies, and tens of millions more buy the 7,000 other papers.

I'm impressed by the fact that the press calls the tune to which others march.

I favour continuing the efforts of the Voice of America and the B.B.C. (British Broadcasting Corporation) to bring straight news to the Soviet people, even though only part penetrates the Soviet jamming. I favour bringing top Soviet journalists to the United States to see for themselves what we are like, even though they will be required when they return to be critical of us. I favour formal demands that the position taken by western statesmen be fairly reported. I favour negotiations for the circulation of western newspapers and periodicals within the Soviet Union. I favour consistent pressure on the Russians to cease and desist their costly jamming of our broadcasts. I like Secretary Dulles' idea for an exchange of radio programs on domestic networks.

I am not optimistic that any important improvement in the Soviet press, from the western point of view, will come about except as Communist Party strategy or tactics dictate. Every column, every story, every editorial will continue to promote the Communist Party line, to the complete exclusion of anything that interferes with that line.

This is a major area of the Communist saturation strategy—that everywhere the Soviet citizen looks, and in everything he reads, he finds nothing but the promotion and glorification of the aims of the Party.

PROPAGANDA AND THE ARTS

The Most Diverting and Perhaps the Most Transient of the Soviet Propaganda Assaults

Olga Bergholtz, a Soviet writer on art and literature, recently voiced a criticism that would have been impossible before Stalin's death: "Our Soviet theatre has lost its theatrical qualities . . . Love has disappeared almost completely from our lyrical poetry, just as nude bodies have disappeared from our paintings, and movement has gone out of our movies. There the characters do nothing but sit and stand and talk, and above all take part in meetings."

What Mme. Bergholtz was complaining about, though she couldn't and didn't say it directly, was the Communist concept of "socialist realism." That is the phrase used by Soviet propagandists to prescribe the goal for Soviet artists, novelists, playwrights, musicians and movie makers. With this phrase as their cloak, the politicians convert the creative artists into propagandists. With it they have stultified the great tradition of the arts in Russia.

On Dec. 19, 1955, the United Press sent a dispatch from London stating that "The Communist Party newspaper *Pravda* has complained that Russian music, while full of 'socialist realism,' is dull." The dispatch continued, "Soviet music and musical criticism have resolutely taken up the position of socialist realism, gained in the struggle against formalism, naturalism, aestheticism, cosmopolitanism and against the neglect of classical heritage and manifestations of antipopular bourgeois ideology."

In Leningrad, Moscow and Kiev, in Warsaw, Budapest and Prague, I asked the "cultural officials" what the phrase "socialist realism" meant to them. The words and ideas used to describe it are among the most interesting and diverting I encountered on my visit. Further, they show the dialectical skill of the Russians in defense of attitudes which seem to us preposterous.

"Socialist realism" was established as the basis of all the Soviet arts in a resolution of the Central Committee of the Communist Party in 1932. This decreed "the creation of works of high artistic significance saturated with the heroic struggle of the world proletariat and with the grandeur of the victory of Socialism, and reflecting the great wisdom and heroism of the Communist Party."

When I entered the Soviet Union at Leningrad, my first exposure to "socialist realism" in painting and sculpture came in that city at the art school of the Soviet Academy of Art. I believe I am the first American to visit this school since the 1930s. It is one of the two leading art schools of the U.S.S.R., the other being the Academy's school in Moscow. The dean at the Leningrad school gave me this definition: "Socialist realism is realistic art understandable to the masses of the people." The paintings themselves, in room after room of the school's exhibit of work of present and past students, reminded me of the illustrations that used to appear in the *Saturday Evening Post* and *Collier's* back in the 1920s, except that the themes were different. The technique is what our American artists of those days called "commercial art"—and, I suppose, still do.

In one of the art classes I visited, I turned to the dean in front of three finished oil paintings, which seemed to me to be competently done by commercial standards. They were large paintings, perhaps 24 in. by 40 in. in size, of a woman in bright coloured clothes and with a not unattractive face, and I asked the dean how anyone could determine which of the three was best. All seemed to me to be the same. The dean shrugged his shoulders and said that sometimes it was impossible to deter-

mine the best among works of equal merit. In such cases he assured me that more than one artist is given the prize. But he insisted that there were often differences which I might be unable to detect.

In the rooms of exhibits there were hundreds of paintings by former students including some dating back to the period before 1917. In the post-1917 rooms (the earlier period was represented inconspicuously in the back rooms) were countless scenes of Soviet heroes. There were no boys and girls; no families and no nudes; no attractive or beautiful designs or arrangements of lines and colour; no mirth and no gayety; no impressionism, abstractionism, surrealism or any other kind of ism. I walked through room after room of huge canvasses showing Lenin making orations, usually with a young black-haired determined Stalin sitting next to him; showing farmers resolutely putting their hands to the plow; showing generals grouped together pointing triumphantly at their charts, gesturing onward to a victory that seemed certain; showing Stalin in heroic size and posture.

I commented that the art of Russia, in addition to being "realistic," was certainly grim.

The Leningrad school has five faculties—painting, drawing, sculpturing, architecture and "history and interpretation of art." The most talented child students—about 175 to 200 of them in Leningrad—are selected when they are only 11 years old from the fourth grade of the ten-year educational system. (There must be a high mortality rate, since the dean says the school has only 700 or 800 students.) Others take examinations and enter after the ten-year school, at about 17. These older students take a four-year course, almost wholly vocational, with five hours a day of drawing and painting.

The associate director, who accompanied the dean and me on our tour, assured me, "men like Picasso had to go through years of painting of the kind we teach here before they could develop individuality." This statement later seemed extraordinary to me, as I looked back on it. It implied that there may be something beyond "socialist realism," and something even better. This was the only such implied admission that I received anywhere from any Russian or satellite citizen.

(In Moscow I was told by an American correspondent that Picasso, himself a member of the French Communist Party, had said, "There is no art in Russia; just portraits of generals loaded with medals." In reply to this, Gerasimov, president of the Soviet Academy of Art, and a painter of what I call the "Stalin school," retorted: "We respect Picasso as a fighter for peace; but he's no artist.")

As I left the Leningrad Academy I saw two large blank canvasses, perhaps 10 ft. by 15 ft. in size, lying on the floor at the top of a great staircase. I asked what they were for. The associate director told me that they were for the pictures of Marx and Engels which were to be painted for the coming great holiday, Nov. 7. I raised my eyebrows and asked how long it would take to paint these giant pictures. He said, "Two days. We can of course in an emergency do them in eight or ten hours; they are just copies of photographs."

"Just copies of photographs!" This is one way to judge Soviet art and its slogan, "socialist realism." But it isn't the only way.

I pursued my inquiries in Moscow. Mr. Nazarov, a deputy minister of culture for the entire U.S.S.R., and not only a trained dialectician, as most Soviet officials seem to be, but eloquent as well, as many also are, said to me: "We emphasize the theme of labour in art and literature because everything comes from labour and everything should go to labour."

Nazarov continued, "All Soviet literature and art pursue the most lofty aims of mankind. I do not say this as an agitator, but as a fact. As to freedom, our American critics are misled.

Ask any artist or man of letters here whether he is free. His answer will be 'yes.' He can pick his theme. He can deal with it as he wishes. The issue is how one defines freedom. Socialist realism is not a stereotype. On the contrary, it gives the artist the opportunity to manifest his individuality to the full."

This statement isn't true by our standards. If the artist wants to support himself as an artist, he must paint as he is told to paint. By western standards, Russian paintings can only be called stereotypes. But I do not claim that Nazarov did not believe what he said. He has been trained, for example, to use a tortured definition of the word "free." Such usage is an instance of the Communist propagandists' trick of first appropriating, and then debasing and bastardizing, the great words of western civilization.

Even more eloquent, and more dialectical, was Nicolai Skachko in Kiev, deputy minister of culture for the Ukrainian Soviet Socialist Republic. To my question, as to whether politicians set the standards for artists in their efforts to convert all artists into propagandists, he replied, "There is no particular author for our standards. They are the work of the collective. The philosophical basis for them is of course in Marx. Lenin and Stalin were the people who worked out Marx's philosophy applied to the arts. To understand socialist realism you must understand dialectical materialism. Materialism has a great and long history, and dialectical materialism is even more complex."

Skachko went on, "The method of socialist realism gives the artist an opportunity to project the developing world; it is the method by which the artist portrays the objective world around him, the world that exists independently of the artist's will, the world that is everybody's world." This explanation was delivered with emphasis because the deputy minister could see that I wasn't in agreement. He kept giving new definitions and examples. It almost seemed that he couldn't imagine that he could fail to persuade me. He was himself an example of how deeply imbedded runs the Communist indoctrination, even in men of high intelligence and training. Indeed, this is perhaps the most marked among the most highly placed. The minister continued, "Things are constantly dying out and are being born. The artist must stress the latter, what is being born, rather than what is dying. The artist is an active participant in our life, and by his works he takes part in the new life."

All this must sound pretty reasonable, even appealing, to large numbers of Soviet artists who have never heard anything else. I'm sure that many of them can't even imagine anything else. And of course all this brings them to heel as tools of the propaganda apparatus of the Soviet State.

Skachko continued by explaining that "socialist realism" was more than just duplicating photography. It must portray an image, he said. Thus when an artist paints a woman *kolkhoz* (collective farm) worker, he must "catch the image"; he must "project the depths of her soul." The minister waxed enthusiastic. "In her eyes," he said, "I see a woman—more than a woman, I see a mother—I even see more than a mother—I see that someone loves her. And beyond all this I see that she is performing an heroic deed in her work at the *kolkhoz*. This image is realism; the rest is photography." What the government is after in this case, of course, is motherhood and high productivity for the *kolkhoz*. Towards these ends, they prostitute the artists.

To my question, "Should the artist paint the weak side of life?" the minister replied affirmatively. But he explained that the weakness should be painted only so that it can be eliminated. He told me of a painting called "Discussion of the Two." In the Soviet schools, the marks used in grading the pupils' work run 5, 4, 3, 2, 1—and 2 is "unsatisfactory." The minister said, "Here you see young people condemning—by

Benton Reports

their postures—the behaviour of a comrade who got a 2.” Here in this painting, he said, is “socialist realism.” And so it is. The Soviet government in this case is using the artist to shame and cajole students to greater effort for the greater glory of the fatherland.

“Is the artist in the Ukraine free to paint what he wants, and as he sees it?” I asked. “His theme is wholly up to him,” said Skachko. “It is his personal affair, with no restrictions.” Then came the big qualification, and in this qualification unhappily flows the artist’s lifeblood, his chance for a livelihood. Skachko hurried on, “The Ministry of Culture does turn to the artist to persuade him to accept certain themes.” Skachko was speaking the next day at an artist’s meeting. He was going to recommend to them as a theme the new Kakhovka power station. He wanted the artists to go there and work out compositions “to show the images of the people who created the power station—so that a person looking at the picture can read the whole story of this great achievement by looking at these people.” Here in this illustration, we see how, under Communist dogma, “socialist realism” fosters and furthers the aims of the state.

There are about 1,000 artists in the Ukrainian S.S.R., said Skachko. I assume that a high percentage must be employed in the propaganda bureaus, in industry and other places where the themes are obligatory if the salary is to keep coming through. But even with other artists, their pictures seemingly cannot be exhibited or shown if they fail to fit into the definition of “socialist realism,” or even if they stray too far from the approved themes.

Thus Skachko is listened to most intently by those Ukrainian artists who want their daily bread.

There have been two periods since the Revolution when artists and writers were under most intensive pressure to conform. These were in the mid-1930s and in the years immediately following World War II. The pressure now seems to be easing slightly, since Stalin’s death.

One hopeful sign is that the paintings of the French Impressionists, which for years have not been displayed by the Hermitage in Leningrad, were shipped to Moscow for a show in Nov. 1955. Another is the report of Henry Shapiro on the Moscow annual art show for Soviet artists. Shapiro has covered Moscow for 17 years for the United Press. He tells me that, up until 1952, more than 50% of all pictures exhibited showed Stalin either as the only figure or in conjunction with Lenin or in some other favourable situation. The “Stalin school” still predominates, but the paintings of the Marshal himself are no longer in evidence. Further, Shapiro believes that many Soviet artists have painted things in recent years for their own enjoyment and pleasure, well knowing that they could not show them or sell them. He thinks that such paintings, now hidden away, may begin to make their appearance over the next few years.

Perhaps an even more hopeful sign is that Gerasimov (not only head of the Academy, but the brother-in-law of Presidium President Klementiy Voroshilov), whose paintings always featured Stalin, admitted recently to Shapiro that he was painting some peasant women taking a bath. This indeed sounds like the Revolution—in Soviet art.

In the satellites, “socialist realism” receives obeisance but apparently hasn’t yet become the sole lodestar of the arts. However, in Prague, Mr. Stoll, Minister of Culture of the Czechoslovakian government, described “socialist realism” in literature as “in fact a continuation of the great traditions of literature basing itself on Shakespeare, Cervantes, Tolstoy, Mark Twain and Walt Whitman. Socialist realism isn’t meant to restrict a writer’s style. However, each writer must realize



LOUD-SPEAKER mounted on a telephone pole broadcasts news and propaganda to workers in the fields

a harmony; the personalities of the writers must not clash with the interests of society.”

In Budapest, Mr. Ibos, of the Hungarian Ministry of Culture, who is responsible for 56 permanent theatrical companies—plus the circus!—said that “socialist realism” is “by Gorki from Marx and Engels out of Lenin.” But only about one-third of the plays he produces qualify as “socialist realism,” the remainder being the classics or “critical realism.” The last group are “modern” plays written before “socialist realism” was ever heard of.

The director of the motion picture division of the same ministry in Budapest, Mr. Uzhely, paid his respects to “socialist realism” as depicting “real life, including people at work.” He said, “You cannot say that Marxism-Leninism isn’t in our life, because it is.” He added, “If we show in the life of our people only love, and don’t deal with administrative problems, we are going to make an unrealistic film. But if we show only the people’s interest in production—with no love, no family—that too will be unrealistic. If we show everybody satisfied, everybody agreeing with the government, that likewise would be unrealistic.”

When I pressed for an example of a film of criticism, he cited a film he had recently made, *The Ninth Room in the Hospital*, which “shows that the care of the sick often is not good.”

All of the foregoing quotations from leading practitioners of “socialist realism” in the arts help to show how Communist dogma suffuses every activity of life, and how it is used as

an all-powerful yardstick to whip the unwilling or uncertain into line, and to marshal every recourse of society for the glorification of the goals of the state.

Harnessing the Writers

Writers are of special concern to the Communist Party, not only because of the influence of their plays and novels and essays, but because the Party is dependent on them for the words and phrases which are the bullets of the propaganda machine gun. And they pose very special problems to the Party. The task of harnessing creative imagination to the purposes of political propaganda is not simple, for great writing usually requires full freedom of expression for the writer. In Communist Russia's upside-down world of the arts, the Party and not the writer orchestrates the emotion and decides what is right and wrong, and even what is ugly and beautiful.

Under the Czars the function of writers as critics of society acquired high significance. Political activity as such was prohibited, and thus literature became the best means of protest against autocracy. Satirists such as Gogol and pamphleteers like Kropotkin contributed to the revolutionary ferment. The Communists are not unmindful of this tradition. They themselves most benefited from it. Thus they now take extraordinary pains to try to enlist the loyalties of writers, and to stifle even the slightest manifestation of any trend critical of the regime.

For the writer, "socialist realism" has at least two major stable elements. The first is the Party dialectic. This demands a "true and historically concrete expression of reality in its revolutionary development." Of course the only truth it recognizes is that of "people struggling for socialism." Everything that favours the development of "socialism," as it is conceived by the Communist Party, is true and must be glorified. Everything that opposes it must be slandered and combatted.

The second important and stable element is optimism. "Socialist realism" cannot admit possible failure in the achievement of socialist aims. It must focus on a "happy end," on the final victory of socialism. The exploits and sacrifices of the heroes of Soviet literature must not be treated as ends in themselves. The cause of socialism is always the end. Reverses and shortcomings can never be more than temporary. They can never be attributed to defects in the system itself. They are always caused by alien, by enemy, machinations. In the end socialist righteousness must triumph.

This bundle of self-righteous precepts can and has led to absurd, even grotesque, presentations of life. In the years following World War II many writers unwittingly fell into the trap of portraying their villains more realistically than their heroes. Their villains were human beings, with a normal dose of failures and weaknesses. Their heroes were artificial creatures who resembled no one the reader could recognize. And this villain-hero reversal of course netted many writers sharp rebukes from the Party.

The talented poet, Anne Akhmatova, was personally denounced in 1946 by A. A. Zhdanov, a member of the Politburo, in the following language:

"Our literature is not a private matter calculated to please various tastes on the literary market. We do not have to make room in our literature for tastes and preferences which have nothing in common with the morality and the virtues of the Soviet people. . . . Her [Mme. Akhmatova's] writings may only plant the seeds of sadness, demoralization, pessimism, the desire to flee away from the real problems of social life, and of isolation from the social life and activities for the sake of the narrow world of personal experiences."

Under the pounding of criticism and denunciation many writers sought ways of escape. Some ceased producing alto-

gether. Others, such as Akhmatova and Pasternak, found refuge in translating foreign works. Still others fled into the past, into historical themes that seemed safe to handle.

Most writers seem to have tried their best to cater to the demands of the Party. The Soviet playwright Nicolai Vinta invented the "no-conflict theory" which was well in accord with Stalinist ideology. It was based on the assumption that, since Communism has eliminated basic conflicts from Soviet life, and since Soviet drama is supposed to represent life as it is, drama itself should therefore be "conflictless." The only thing wrong with this assumption is that it flouts reality and produces dull plays.

Current topics are the touchiest for the writer. The Party may unexpectedly frown on his treatment and denounce him for "kow-towing before the West," or for "bourgeois nationalism" or any of several other "isms." Some works which were rewarded with prizes have later been found wanting and have had to be revised. Alexander Fadeyev, one of the important names in Soviet literature, had to refurbish his Stalin prize-winning novel, *The Young Guard*, only two years after it was published. Fadeyev's fault was that he had portrayed the heroic resistance to the Nazi invaders by a *Komsomol* unit without emphasizing that the feat was accomplished under the guidance of the Party.

When authors seek safety by treating their subjects as inoffensively as possible they frequently incur charges of "formalism." To be accused of formalism, however, is infinitely better than to be found guilty of the dread crime of "bourgeois cosmopolitanism." The punishment for the latter is usually expulsion from the Union of Soviet Writers. Expulsion means loss of livelihood, and manual or menial work if the writer wants to eat.

After Stalin's death Soviet writers began to experiment cautiously. Vera Panova, a former Stalin prize winner, and Ilya Ehrenburg, best known in the west among current Soviet writers, came out with novels, *The Seasons of the Year* and *The Thaw*. These exposed some of the seamier side of Soviet life. Both books discuss graft and petty thievery, crookedness and double dealing on the part of Soviet officials. They do not conceal other human weaknesses such as dissimulation, drunkenness and jealousy. They describe the longings of people for a better life, for more comfort and for safety from the secret police. Ehrenburg even had his lovers talking about love, instead of about "higher productivity for the glory of the motherland."

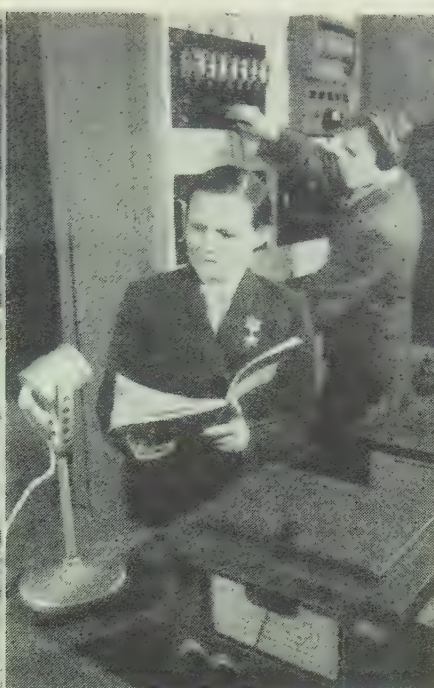
Both Ehrenburg and Panova were reprimanded for "exaggerating" and for an "impermissible exercise of personal arbitrariness," but they did not lose their membership in the Union of Writers.

The writer's need for at least some freedom, if only to make good propaganda outside the U.S.S.R., has apparently now been recognized in the U.S.S.R. However, Soviet literature clearly remains the handmaiden and vassal of the Party.

In Moscow I lunched with Konstantin Simonov, one of the half-dozen leading writers of Russia, a poet, playwright and novelist. Simonov had denounced Ehrenburg's book. I asked Simonov if in his new play, "A Love Affair," the lovers talk about the need for higher levels of productivity. He replied, "Well, people do talk about the need for more production."

For their subservience to "State purposes," Soviet writers like Simonov are well rewarded in money and in prestige. They receive generous royalties; and those whose works sell best are authentic "millionaires," with cars and chauffeurs, town apartments, country homes in the suburbs and *dachas* in the sunny Crimea. They are like the commercial writers in the United States. They give the client what he wants, and are very well paid for it. In the United States, the client may be CBS, Gen-

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Above: Election posters on a Moscow billboard during voting for membership on the Supreme Soviet in 1954

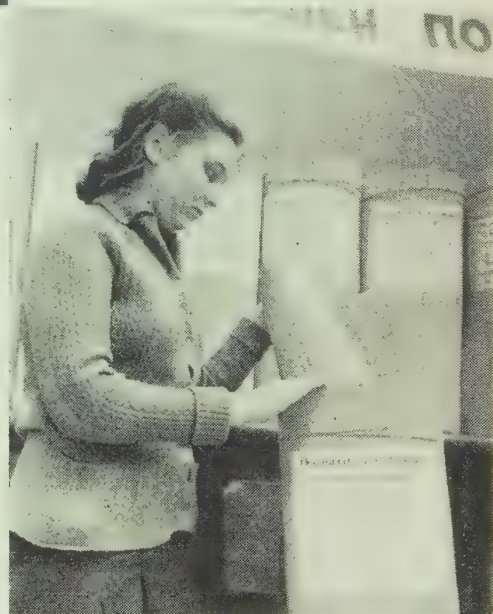
Below: Matrices of *Pravda* newspaper, Moscow, being loaded into mailing tubes for shipment to outlying cities. Local newspapers have limited space for local news



Above, left: Gear cutting machine operator of Sverdlovsk posing proudly in front of sign showing his production pledge of 30 annual quotas

Above, centre: A "Hero of Socialist Labour" broadcasting over a local collective farm radio network, telling farmers methods of increasing production

Left: Members of the MVD, secret police, pose on the steps of their office in Alma-Ata



PROPAGANDA AND PATRIOTISM

Below, left: Honour boards in public parks display photographs and descriptions of workers with outstanding production records

Below, right: Parades and celebrations mark important national anniversaries, such as this one in 1954 in honour of the tercentenary of the reunion of the Ukraine with Russia



Benton Reports

eral Motors, the *Saturday Evening Post* or MGM. In Russia, it is only the Party. And the Party seeks only propaganda, for its own ends and for those of the Soviet State.

How Culture Is Organized

Astride the entire area of the arts, including the popular arts, rides the Ministry of Culture. This is an all-powerful body in its domains. Its functions are difficult for an American to comprehend. Mr. Nazarov sketched out for me the areas covered by his ministry: (1) the creation and production of films; (2) theatres and music; (3) representative or pictorial art; (4) radio and TV; (5) publishing houses, exclusive of newspapers (not all publishing houses are under the Ministry of Culture, but the ministry coordinates all); (6) the printing trades; (7) books, including the operation of book stores; and (8) cultural enlightenment.

Each of these eight divisions is manifestly a gigantic enterprise. I was particularly impressed by the scope of number eight, which is perhaps comparable with everything that happens in what some people in the United States like to call the field of "adult education." Under cultural enlightenment come the libraries, and Nazarov claimed 400,000 of them; the cultural clubs or centres, of which there are scores of thousands; the museums; the village reading houses; and the palaces of culture. These last are the large new and fancy buildings that dot the Soviet landscape and in which the cultural activities of the communities centre.

Skachko, whose Ministry of Culture in Kiev covers the Ukrainian Soviet Socialist Republic, with its 42,000,000 population, and which reports up to the Ministry in Moscow, outlined a somewhat similar scheme of organization. Its theatrical division, for example, operates 74 theatres. There were only seven under the Czar, Skachko claims. The control of the theatres, of course, brings the ministry into close touch with the Union of Writers. How can the writers do their work for the theatre, Skachko wanted to know, unless they know what will be produced? His version of the Moscow ministry's "cultural enlightenment" included the supervision of "35,000 libraries containing 111,000,000 books which serve 5,000,000 regular readers; and 70,000 amateur 'circles' for painting, drama, ballet and music, with 1,000,000 members."

* * * * *

The chief glory of the Soviet Union in the field of the arts remains the ballet, the opera and other forms of music, and the classical theatre. These are the arts which have proved least susceptible to "socialist realism." The contemporary theatre is as blighted in its writing as the contemporary novel; but Shakespeare and other great Western drama is widely popular, along with many of the Russian classics. Simonov told me there are about 550 to 570 full-time theatrical companies playing throughout the U.S.S.R. This is on a scale which must far exceed, several times over, that of all the nations of the West put together.

As was shown by the United Press dispatch quoted at the beginning of this section, attempts have been made to convert Soviet music to "socialist realism." For example, composers have been urged to weave folk melodies into their settings. But Soviet music, its composers, opera companies, orchestras and soloists, still remain outstanding by Western standards. As for the ballet, that is purely classical, and in a tradition going back almost two centuries. I visited not only the ballet in Leningrad, but also the great ballet school maintained by the Bolshoi theatre in Moscow. Everywhere in the U.S.S.R. the ballet is superb. There are 30 great companies and 11 full-time schools which take the most talented children at age

10 and turn them out as ballet performers at age 19. But even the Moscow ballet school has its propaganda task. Students come from all 16 of the Soviet republics to be trained in folk dancing. They also come from the "People's democracies." And, of course, the ballet is sent outside Russia, even last year to Paris. The Soviet propagandists seek to make the ballet a symbol of the glory of the Soviet arts.

* * * * *

Sir John Maynard, a not unfriendly historian of Russia, has written, in his *Russia in Flux*:

"The terrifying efficiency of organized propaganda, eliminating truth by calculated suppression and misrepresentation, and dinning the prescribed formulas into the ears of millions prepared for their reception by universal education, is ominous of a more complete regimentation than any merely negative censorship. The Czars only played with control of thought: their worthy and somewhat somnolent (not to say thick-headed) censors passed the most transparently subversive suggestions. The greatest innovation of the Bolsheviks in the 'bear's corner' of old Russia is an efficient administration. Their orders go right through to the bottom. They have harnessed the writers and artists themselves to their censorship: they have secured an effective monopoly of truth, and filled the market with their own brand of the article, and the smuggler of the precious commodity has little chance of competition with merchants in whom all powers are concentrated."

SOVIET MOVIES, RADIO AND TELEVISION

In these areas as in all other fields of communication, every technique centres on teaching and instructing the public, or at least on conditioning it, according to the lights of the Communist Party.

The function of providing entertainment or diversion, dominant in American movies, is only a secondary motive in Russian movies. In radio and television, the Russian and American systems grow closer together. In the United States, the entertainment is used to attract the audience so that the advertiser can project his sales story; the Soviets use the entertainment to develop an audience for their political propaganda. In the U.S.S.R., the political indoctrination of radio and TV becomes the "commercial."

In all three fields, there is a limit beyond which the Russians cannot go with their propaganda.

A communication system devoted largely to propaganda or to instruction needs a monopoly position and a captive audience. The Russian newspapers are a good example. The audience for newspapers can be made captive only if there is no other way of satisfying the thirst for news—or if subscription is compulsory. This is the situation in the U.S.S.R. American editors must compete to catch and hold the readers' interest; the Soviet editors need not.

However, the Soviets must limit or trim the dosage of propaganda when the audience can't easily be made captive. This is true in the arts such as the theatre and ballet. It is also true of some of the mass media. A theatregoer can attend the ballet rather than a propaganda play. Or he can stay home or go to the park. The same is true of a movie-goer. The radio listener or TV viewer can turn off the set.

Yet the Communists constantly strive for greater and greater propaganda impact through radio, TV and the movies, even at the risk of cutting down on the appeal of the product to the point where it may lose a part of its audience or its effectiveness. The Communist Party once noted that new plays being developed for the Soviet stage under the guidance of the min-

Benton Reports

istries of culture were submitted for examination to "the local art boards, the Republican Committees on Arts, the Chief Repertoire Board, the Central Theatre Department of the Committee on Arts, the Art Council of that committee, to theatre directors, editors of periodicals and officials of publishing houses." This process will insure simon-pure Communist plays; it will also guarantee in most cases plays that are uninspired and dull.

Motion pictures, likewise produced under the ministries of culture, suffer not only from the rigid formula of "socialist realism" but also from the cumbersome machinery which emerges from the foregoing example. Orthodoxy is purchased at a high price, in terms of both boring films and long delays. For the next two years the Ministry of Culture has prescribed a quota of more than 200 original feature films. Based on past records, it is doubtful that half that number will actually be produced.

The topics chosen for filming are keyed to the over-all political purposes of the Party. A representative post-war film, produced in 1948 while the anti-American campaign was in full swing, was called *Court of Honor*. This depicts the trial by their fellow scientists of two Soviet medical researchers who have invented a new anaesthetic. One of the pair, Losev, is accused of disclosing his discovery to American scientists at a world medical congress in the U.S. Losev tries to explain, "We cannot isolate our Russian science from the world! People are sick everywhere. States have borders, but science has none." But Losev is accused by the Party secretary in the medical institute of "helping those who want to drag humanity into the inferno of a new war . . . From whom did you want recognition? From foreign shopkeepers, moneylenders, hired murderers?" Losev is unmasked as a "traitor" and punished.

Many forthcoming films will deal with the changes brought about by the Soviet domination over the peoples living in Asiatic Russia and in the former borderlands of Czarist Russia. The post-Stalin regime has pushed the economic development of these areas vigorously. Khrushchev himself has been the foremost exponent of cultivating the virgin lands and grazing areas of central Asia.

One motion picture of this venture, *The Daughter of the Steppe*, has already been produced. This is the story of a peasant girl who leaves her home in a desolate region of central Asia to study in Moscow. Returning to her home as a doctor of medicine (a nice achievement in itself) she finds it completely transfigured. The government's decision to till previously fallow land has caused the area to bustle with the activity of happy and purposeful people engaged in "glorious socialist construction."

The subject matter of Communist motion pictures also came into my conversation later in Prague with the chief of the film division of the Ministry of Culture of Czechoslovakia, a Mr. Hoffman. When I asked what kind of entertainment films he was making and planned to make, he said that emphasis in the next year would be on "films dealing with Czechoslovakia's great heroes and artists, with special stress on the greatest period of Czech history." I asked him what this period might be and, manifestly surprised that I felt it necessary to ask, he replied, "The period of the Hussite movement, of course." (John Huss, Bohemian religious reformer, was burned at the stake for heresy after his conviction by an ecclesiastical commission in 1415.)

The first of three films in a trilogy on the Hussite movement, *John Huss*, has already been released. When I asked Hoffman to describe for me how this film and the second of the trilogy, *Battle of God*, now in production, would differ from films on the subject which might have been made in 1938 or even as late as 1947 before the Communist coup in Czechoslovakia, he replied: "This is a very simple matter. This is a question of ideology. In 1938 our films were made from the capitalists' point

of view. After 1948, all films have been made from the workers' point of view. We stress the progressive role in Czech history of the people. We show that the people have played the biggest part in the development of this history. In our films the people become the heroes, not the emperors and kings. The great developments of Czech history have stemmed from those that have been ruled rather than from the rulers."

The only motion picture theatre I was able to attend in the U.S.S.R. was an open-air movie (not a drive-in!) in Kiev, when the temperature was about 40° F. More interesting to me than the feature was the newsreel. By our standards, it was largely party and government propaganda. It included shots of a mayor's conference in Trieste, featuring the mayor of Moscow; a travelling Soviet dance group in Paris; the arrival in Moscow of two New Zealand officials; the arrival of a British naval fleet in Leningrad, and the departure of a Soviet fleet for a return courtesy call in England; the opening of a new coal mine; a new tractor capable of operating in swampy terrain; and a style show in Moscow, including styles for 6- and 7-year-old children. I was told that the inclusion of footage filmed abroad is new since 1953.

I could not get any figures on the number of foreign films shown in the U.S.S.R., or on the attendance at Soviet movie theatres. With adaptations in the sound tracks of imports from the 15 other Soviet Socialist Republics, as well as from the "People's democracies," there are perhaps in excess of 200 new feature films available annually in the U.S.S.R. and the satellites. Mr. Uzhely of Hungary told me he had imported eight Chinese films since the war; also many films from West Europe of which the Italian films were most numerous because they were "most realistic." My interview with Uzhely persuaded me that few American films would be shown in Russia even if Hollywood offered them to the Iron Curtain countries for nothing. The U.S. films do not conform to the standards of "socialist realism."

Educational and Classroom Films

Bureaucracy and the propaganda strait jacket have blighted the Soviet production of "entertainment" films. But the same cannot be said of either the production or use of Soviet films for education.

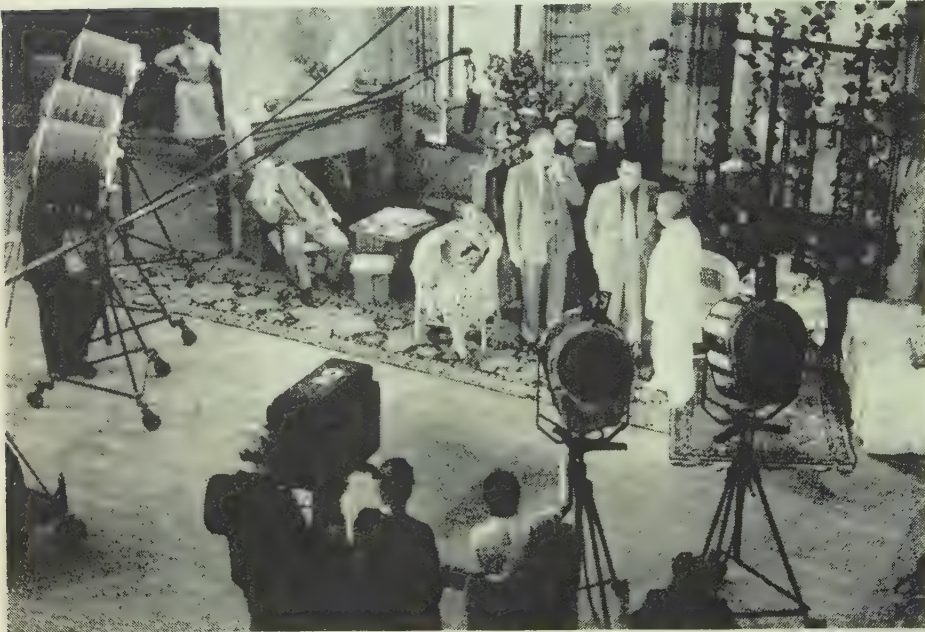
As Chairman of the Board of Directors of Encyclopædia Britannica Films Inc., which has pioneered in the production of classroom films in the United States, and which is by far the free world's largest producer of such films, I was particularly interested in Soviet activity in this field. In the U.S. growth has been very slow. More than a quarter century of patient work has gone into demonstrating the value of this new tool for education. Bit by bit individual teachers, school administrators and school boards must be won over. By contrast, in the U.S.S.R. with its system of decrees from the top down, development in this field, once begun, has been most rapid. We in the U.S. are still ahead in the technique of making classroom films (the Russian films are like our "documentaries," and are not closely integrated into the curriculum). But the Russians seem to be forging rapidly ahead of us in the classroom use of films and in the production of films in quantity.

Mr. Kairov, Minister of Education, told me "the use of the film is of tremendous importance." He has the authority and he can demand action. In 1953, he told me, there had been a government decree under which "our Ministry of Education is called upon to develop mobile apparatus and films for the schools; and the Ministry of Culture which makes the films for the theatres must make films for us in accordance with our requests and directions." Kairov added that the use of films in education is only "at the beginning."

Benton Reports



Above: The Russian museum, Leningrad



Left: Scene from a dramatic program being telecast from Moscow

Below, left: Soviet sculpture and painting by art students at the U.S.S.R. Academy of Arts, Moscow

Below, right: The Tschaikovsky museum in Klin showing the composer's piano



THE ARTS

Right: Scene from the motion-picture version of the opera *Boris Godunov* with A. Piragov as Boris. The film was in production in 1955

Below: Visitors at an exhibition of 15th-20th century French art displayed at the Pushkin State museum, Moscow, in Nov. 1955. Shown on the wall are paintings by Paul Gauguin

Bottom, left: Young dancers training for the ballet at a school in Moscow



Below: Composer Dmitri Shostakovich performing with the Leningrad State Philharmonic orchestra



But the present activity in this field in the U.S.S.R., so far as I was able to observe it, looks like far more than a "beginning" when contrasted to where we are in the U.S. and when we recall how long it has taken us to get there. I had a chance to study the 1954 catalogue of films for educational purposes put out by the Ministry of Culture in Moscow. It ran 206 pages and listed 937 titles grouped around the following areas of knowledge: natural sciences, agriculture, technology and construction, medicine, preventive medicine, physical culture and sports, culture and art, and fire fighting and traffic regulations. As specific examples, under the section on astronomy there were films on the universe, on thunder and lightning, solar and lunar eclipses, the rainbow, the changing of the seasons, and on the sun. Under physics, there were titles such as *A Drop of Water*, *In the World of Crystals*, *In the Laboratory of the Sun*, *Rays of the Spectrum*, *Marked Atoms*, and so on.

Many of these 937 films were produced primarily as educational shorts to accompany feature films in theatres, but are offered also for use on TV or other nontheatrical use, including that in the schools. However, many films primarily for classrooms are produced by the ministries of culture, and 10 of the 33 Soviet universities make and exchange motion pictures.

In Kiev, at the Film Studio of the Ministry of Culture, I saw two films which were made for school use. One was a good straightforward picture about the coke industry (very important in the Ukrainian S.S.R.). The other was titled *The Story of the Note Book*. It opened with a fourth- or fifth-grade teacher holding up her pupils' notebooks and admonishing her class on their care. Some of the notebooks had smudges on them, some had fingerprints and some had sloppy writing. She told her pupils that she wanted them to appreciate the large amount of work that went into producing a notebook, so that they would have better respect for their notebooks. The film faded into a still photograph in her classroom. This was of lumbermen felling great pine trees. Suddenly the photograph began to move, and the movie went into a very creditable pictorial dramatization of the making of paper from the pine tree right through to the notebook, with the teacher's voice narrating throughout. At the end, back in the classroom, the pupils were standing up and swearing that henceforward they would treat their notebooks with deserved respect. This was a creditable classroom picture by our standards.

In the Ukrainian S.S.R. the schools are served by mobile units with projectors. Some schools have special projection rooms. The goal of a projector-in-every-classroom has not yet been achieved in the U.S.S.R., but at the present rates of progress the Soviets will achieve this goal decades before the U.S. gets one in every four classrooms. I accidentally discovered that the University of Moscow has a professorship on the science of making motion pictures; there is no such chair in the U.S. to my knowledge.

Better to understand the significance of the foregoing paragraph, a reader must cover the opening two sections of this article, and also the final section. If the Soviet Union is going to surge ahead of the U.S. in the adoption and mastery of the modern techniques of education, this can promise an ever-widening gap in their favour in the training of the skilled manpower which will inevitably play a major role in the world of the future.

The adoption by the schools of the United States of modern teaching aids and techniques, in which they are now so backward, is no longer a mere matter of local concern for our towns and cities. Such adoption is critical to the competitive struggle with the Russians which now faces us whether we like it or not—and which promises to deepen and intensify in the years ahead, with ever greater and greater stakes involved.

Broadcasting

Broadcasting within the Soviet Union, both radio and television, is far less thoroughly exploited for propaganda purposes than we Americans might suppose, in view of our own experience with its potentialities in advertising and politics. The Russians know that if they push too hard, the people will turn off the sets. Thus radio and TV are used chiefly for music and the other arts.

In Moscow, I talked with Mr. Andreev, deputy in charge of radio and television; and with Mr. Zimin and Mr. Jouravlev, both of whom, although in the Ministry of Foreign Trade, are involved with the exporting, importing and production of motion pictures and thus with TV. In Kiev, Mr. Skachko, Deputy Minister of Culture, had enlightened me about broadcasting in the Ukrainian S.S.R. The statements below are drawn largely from these interviews. I believe them to be reasonably accurate, but I have no way of double checking.

There were 10,000,000 radio receiving sets in the U.S.S.R. in 1953 (compared with 110,000,000 in the U.S.). In addition there were 30,000,000 loud-speakers in meeting places, on the streets, etc., wired to community antennas. One is exposed to these everywhere.

The Moscow radio offers three programs, on three different stations, totalling 48 hours a day, with one of the programs always available throughout the 24 hours. Music and drama constitute 80% of the total program output (more than 50% is "fine music"). The other 20% is "oral." The oral includes news, international affairs, sports, popular science, agriculture, talks by people prominent in industry and the arts, and children's programs.

There are popular-type lectures on economics and Marxism for adults. There is no politics on programs for children under ten "because they wouldn't listen," but for older youngsters "we try to give them an idea of what is happening in the world—and one lecture a week is to help them understand Marxism as taught them in the schools."

Television stations are operating in Moscow, Kiev, Riga, Tallin, Kharkov, Sverdlovsk, Nalchik, Krasnodov, Omsk, Tomsk, and Vladivostok. These now operate separately and independently "but extensive work is under way to develop a relay system." By 1958 it is planned to have 51 TV stations in operation, tied into a network. Moscow is to have three stations, one using colour.

At present 1,000,000 receivers are in use (mostly 12-in., I gather, from seeing those on sale in stores), exclusive of those in factories and public places. Six to seven million receivers are planned by 1958. (There were 33,500,000 TV receivers in the U.S. in 1955 but only about 7,000,000 to 10,000,000 outside the U.S.)

Stations are programmed from 7:10 P.M. until 12:30 A.M. weekdays, 6:00 P.M. to midnight Saturdays, and Sundays from 2:00 P.M. until 11:30 P.M.

The bulk of TV programming consists of two types: first, the major dramatic productions, both live and on film, as well as operatic and ballet performances, all live, many running 2½ or 3 hours or even longer; and second, films, both feature and educational, with the feature films running about 90 min. each. These latter are available to TV six to eight days after they are released to theatres; the 30-min. educational films are available simultaneously or even before. Newsreels are made especially for TV, and there are some "exchanges" with other countries. These exchanges seem to include purchases from a company in the U.S. called Tele-News. Mr. Andreev said, "Your American company Tele-News covered the Soviet farmers' visit to the United States very well indeed and from their material we produced three programs."

Skachko claimed that by 1960 the Ukrainian S.S.R. would enjoy television coverage of more than 90% of all homes. He said that this would be better coverage than any in Europe. This prediction may show the TV trend throughout the U.S.S.R., and I believe it does. Because the Russians understand propaganda and believe in it, after the full potency of TV has been given an experimental demonstration, they will move rapidly ahead to expand TV coverage. They will seek better to learn how to exploit TV for the benefit of the Party and State. (This will also apply outside the U.S.S.R., as has been true with radio. In Helsinki I learned of a Russian TV station, just over the border, broadcasting Finnish programs. There are no TV stations within Finland, but TV sets are being bootlegged.)

Right now, there is a great shortage of sets throughout areas covered by TV. A set costs about a month's pay, but the pay is low. Actually the cost of the set is low in roubles if judged by U.S. dollar prices. Costs will stay low, as with newspapers, because the Soviet government gladly sacrifices revenue in return for propaganda, and TV sets are likely to remain in short supply for years. Why should they not, when they give to the Soviet buyer such easy access to the great world of the theatre, ballet, opera and first-run movies? With such a bill of fare, for a nation starved for entertainment and escapism, the political indoctrination via broadcasting may be as easy for most of the Russian people to take as our commercials have proved to be easy-to-take—for our people in the U.S.

* * * * *

There is little sign that Soviet leaders propose to relax their monopoly of the movies, radio or TV within the areas they control. Just as they give little indication that they want American movies, so they shrug their shoulders when asked about Soviet jamming of Western radio broadcasts. One top official replied to my query, "that is a political question." Others refused to discuss the 1,000 jammers which are now operating and which seem increasingly effective in obliterating American and British broadcasts, and in shielding the Russian citizens from exposure to anything except the orchestration of the Soviet propagandists.

SOME OBSERVATIONS ON SOVIETIZING THE SATELLITES

Thirty-eight years after the 1917 October Revolution the Soviet Union presents to the West the picture of a full-blown psychological mass disaster. In the satellite countries I visited—the "People's Democracies" of Poland, Hungary and Czechoslovakia—the seeds of disaster have been planted and are now being fertilized and cultivated.

My stays were too brief for much first-hand analysis. Many of my impressions and opinions came from men who impressed me as being competent and knowledgeable and who live in these countries as diplomats from the West—some of them for years and even decades—and whose job it is to understand and report on what's going on. I also interviewed many native-born Poles, Hungarians and Czechs who are Communist officials.

There are major differences between the Soviet Union on the one hand, and these three satellites on the other; there are also very great differences among the three satellites. What they have in common, in the field of communications, is the absolute monopoly power of the Communist Party. Because of this, it is my unhappy judgment that, unless its power is broken, the Party's psychological success in the Soviet Union bodes ill for the satellites during the decades ahead.

At a first casual inspection, the Party's propaganda successes in East Europe do not seem too striking. In Poland and

Hungary the Communist control of communications goes back only a little more than a decade, and in Czechoslovakia only eight years. Some observers will tell a visitor that the Communist indoctrination and propaganda have thus far largely failed. Western observers stationed in Prague agree that, in Czechoslovakia, perhaps no more than half of the 35% who voted Communist in the last free election, just before the Communist coup of 1948, would so vote in a free election today. In Hungary the estimate is that the Communists could get no more than between 5% and 10% of a free vote, with possibly only 1% in the rural areas.

Here are five basic differences between the U.S.S.R. and the satellites which must be borne in mind in judging the present progress of the Communist program of indoctrination:

(1) Because Communists have been in control of the satellites for a decade or less, or one-fourth as long as they have controlled Russia, the first generation is still dominant. This is the generation among whom it is most difficult to win converts.

(2) Since the Communists are in power as conquerors, they have less success when they attempt to appeal to the emotion of patriotism. This was the emotion so successfully played upon by the Soviet leaders within Russia during World War II. Because within the satellites the revolutionary formula is imported rather than native, it does not easily or quickly command the same fervour.

(3) The cultures of Poland, Hungary and Czechoslovakia have for centuries been oriented toward the West, with emphasis on the standards and achievements of the West, and mixed with contempt—beyond any warranted—for Russia. These countries still remain closer to the West than to the East, both emotionally and physically. Reorientation toward Russia is difficult and will take time.

(4) Because of the great waves of emigration in the first quarter of this century, millions of families in East Europe have relatives living in the West. Furthermore, the satellite people are more accessible to the West. They have more radios than the Russians, and more success in listening despite some jamming.

(5) The great majority of east Europeans share religious ties with the West. (And many observers I talked with, including one Communist official, said that church attendance today is higher than before the war; this is most certainly so in Poland, where I learned that the people kneel in front of the crowded churches during Sunday services.) Poland in the last pre-Communist survey was 99% Roman Catholic. Czechoslovakia was 65% Roman Catholic and 30% Protestant. Hungary was 63% Roman Catholic and 32% Protestant. Thus in all three countries church and home can combine to try to offset the orientation young people receive through the schools and the public media of communication.

The new Communist regimes, under the spur of the Kremlin, are thus confronted with stupendous psychological hurdles, far more difficult than their masters face in Moscow. Their progress must be judged against the enormity of the task. Since they consolidated their political power after the war, they have waged their own type of unrelenting war against old values and traditional attitudes. They have attacked the citadel of the mind with unabating vigour. They have attempted to carry out nothing less than a massive spiritual and psychological revolution.

Even to a hurried visitor, the surface manifestations of this campaign of "re-education" are everywhere in evidence. New buildings—for example, the great towering Palace of Culture in Warsaw, "the gift of the Russian people to the Polish people"—reflect the architectural style in vogue in Russia. Theatre marquees once ablaze with English, French and German titles now display native or Russian titles. Bookstores, once famous for

their variety of foreign books in French, German and English, are now replete with Russian Marxist-approved classics. The make-up of local newspapers bears the unmistakable imprint of their Soviet model.

But the revolution wrought by the Communists cuts even deeper. Every satellite institution concerned with ideas, from academies of science to the teaching of poster design, has been reorganized. The administrative machinery of broadcasting and motion pictures, the editorial offices of newspapers, the administration and operation of the opera, ballet and theatre, all were thoroughly overhauled to bring them in line with currently prevailing Soviet models. Further, just as in the U.S.S.R., vast ministries of culture have been developed to promote Communism on every cultural and communications front.

In the Soviet Union the attack on religion had opened with a frontal assault against religion as such. In the satellites the opening moves were aimed at subordinating organized religious bodies to the will of Party and State. Instead of seeking to abolish religion, the Communists have dreamt of infiltrating religious institutions and thus corrupting them into tools of the State. In recent years such infiltration seems to have succeeded in Russia with the remnants of the Russian Orthodox Church.

The relative restraint in religion with the subject people of the satellites, dictated in part by fear of costly resistance, has not been duplicated in other fields. Perhaps the best quick example is the educational system. This has been profoundly shaken up. Curriculums and textbooks have been drastically revised. Teachers have been indoctrinated and re-indoctrinated. The satellite schools have been geared to turn out capable practical specialists and technicians, just as in the Soviet system. There has been a great increase in scientific and technical subjects as in the U.S.S.R. The amount and depth of Marxist-Leninist indoctrination have been even more pronounced than in the Soviet Union. The satellite texts and instruction are even more obviously infused with propaganda. In Poland something like one-fifth of the total number of class hours in elementary and secondary schools are devoted to "political" propaganda and other useful "social tasks."

In Hungary, Mr. Ibos, of the Ministry of Culture, described the change to me in the language of Communism: "Our educational system has been reorganized along scientific lines." He meant along the lines of dialectical materialism. Behind the Iron Curtain this is the foundation of "science."

In Czechoslovakia even the revised textbooks were attacked in 1951 as too "modest in presenting Marxist-Leninist ideology." They did not teach the youth "to love Stalin and Gottwald . . . the Soviet Army and the Czech Secret Police." The texts failed to emphasize the "community of interests between Czechoslovakia and the U.S.S.R." Geography texts were still under the "influence of bourgeois objectivism and cosmopolitanism." The selection of illustrations of bourgeois countries showed "natural beauties such as mountains, rivers and art treasures," and not "the real face of capitalism, such as slums, beggars, etc. . . ." History texts still "treated the pre-Munich republic with kid gloves." They did not show "its true reactionary face" and did not distinguish sufficiently between it and the "People's Democratic Republics."

Russian has supplanted other languages as the number one compulsory foreign language. It is required in Hungary and Czechoslovakia from the fifth grade up. In Poland, it is admitted that more than 60% of fifth graders are studying Russian. My interpreter chatted with Czech children in Russian on the streets of Prague.

The Communists claim there are 300,000 subscribers to U.S.S.R. newspapers in Czechoslovakia alone. Soviet cultural outlets have been created throughout the satellites to popularize

Soviet literature. Translations of Russian works have multiplied. The satellite peoples, who never previously had much taste for Russian literature, are now being introduced to it with a vengeance. The sales of Russian language books have shot up. In Hungary, Russian books now sell about 1,000,000 copies yearly. In Czechoslovakia the figure is three times greater.

In view of the handicaps they faced, the ominous fact is not that the Communists have made but little progress in the conversion of the satellite peoples. It is that they have made *some* progress, and some significant progress. This often seems most notable among the intellectuals who frequently set the styles for the next generation.

The Soviet attempt at the conversion of entire peoples, and peoples who enjoy a higher level of education and sophistication than the Russians—in a few years or even a few decades—is a major offensive effort which is both new and startling. In my judgment, and I believe most expert observers in these countries concur with this, the Soviet monopoly of power over education and the media of communications, plus the turn of the generations, put the odds on the Communists, if they retain their power. Much of the popular resistance to indoctrination in the satellites has rested on hopes of liberation. These hopes are fading. As they fade, the grave danger is that the resilience of opposition will diminish.

In their new-type psychological war of attrition, the Communists have a powerful arsenal of weapons. To the captive peoples, they seem firmly and ever more permanently entrenched in power. The possibilities of success for internal revolt in east Europe are dismissed even by outspokenly disloyal elements. Russia's nearness, as well as the presence of Russian armed forces stationed in Poland and Hungary, discourages hope of successful opposition to the U.S.S.R. even if the present local regimes could be overthrown.

However, we of the West, like the satellite peoples themselves, can reasonably hope that recognition within Russia and outside it will grow that the military strategic importance of these "buffer" countries, so much stressed by military historians, has faded under the impact of the aeroplane and the new weapons. Many now hope for a spread of so-called Titoism, and indeed I believe that there is every possibility that Russian policy will develop so as to favour more local autonomy for subject peoples. Inevitably, changes must come within the Russian hierarchy and government; and these may most unexpectedly and constructively affect the chances of the satellites for a greater measure of freedom. Indeed, the only sure prediction about the future within Russia is that there will be changes in the power structure.

Although the influence of Western culture is still strong throughout the satellite countries, it now appears to many observers to be a waning asset of the West. This may not necessarily turn out to be so, particularly if we in the United States do a better job to keep it alive. Our U.S. foreign policy should seek in every legitimate way to nourish Western influence. We should do far more than we are doing at present—for the refugees, in propaganda, in so-called "cultural relations," and on every available front. We should make no promises beyond our capacity to deliver.

We should and indeed must play for the long term and not the short. Above all, we must never give up hope. Year-in-and-year-out, and administration-in-and-administration-out, the long range interest and welfare of these captive people should continue to be a major goal in the United States foreign policy. This goal should be ours not because we are bound to these people by emotional ties, nor because our efforts may turn out to serve their best interests. This goal should be ours because it is also in America's own best interest and greatest tradition.

A FEW CLOSING COMMENTS AND SUGGESTIONS

The year 1955 saw a small but definite gain in communication between the two great areas of this tense and troubled world. Though the smiling Geneva conference of July was followed by a grim Geneva conference in November, the net at year's end was a slight advance toward understanding, an inching lift in the Iron Curtain.

During the year, the "hate" element of Soviet propaganda against the U.S., both at home and abroad, was relaxed. Unfortunately, we Americans cannot assume that this shift reflects any change of heart on the part of the Communist leaders. The last years of the Stalin era were unusually severe, even by Soviet standards. The moderate relaxation since Stalin's death in 1953 doesn't necessarily mean more than a return to earlier practices.

Stalin's last years were marked by a tightening of the Party's reins over all media of communication and by harsher and ever harsher demands for conformity. In some degree this was due to a hardening of Stalin's own personal attitude in the declining years of his life. To an even greater degree, it was the inevitable aftermath of war. The urgent needs of the fighting had led to neglect of the ideological training conceived as a necessity by Soviet leaders. Further, many Soviet citizens had been directly or indirectly exposed to Western propaganda. Worse from the Party standpoint, many for the first time had come into contact with Westerners and the West. The effect of such exposure was often devastating. The "decadent West," even in some of its less lustrous manifestations in the Balkans, did not conform to the image which Soviet propaganda had painted. The material comforts and the cultural achievements of the "rotten bourgeois nations" astonished the Soviet soldiers. Their exposure to the West revealed not only the backwardness of the Soviet Union but also the falsehoods of Soviet propaganda.

To combat this war-induced background, in 1945 and 1946 the Communist Party launched a major campaign of spiritual decontamination. Stalin's aim was to quarantine the entire Russian and satellite populations against "harmful outside influences." With his death, the pressures relaxed.

Thus many observers now report a decline in the Soviet regime's ideological fervour. As the Communists had increasingly entrenched themselves throughout the 1930s and 1940s, they had been compelled to face up to the problems of day-by-day management of a huge governmental structure. Their dreams of world revolution had receded into the future. Many experts today predict still further recession of this dream into a still mistier future.

The heroic days of the 1917 Revolution are remembered vividly today by only a very few. The dynamism the Revolution unleashed, and the enthusiasm and pioneering spirit it engendered, have long since been muted. Compromises had to be made. Retreats from some extreme positions became obvious necessities. The recklessness which was characteristic of the 1920s, say many observers, by now has matured into a new form of relative conservatism.

Measured against its highest claim—to alter human nature and create on a mass scale a new kind of human being—Communist propaganda has obviously failed. In his later years, Stalin seemed to have decided, as it were, to make a last desperate thrust to create the "new Soviet man," the dream man of Soviet propaganda. He seemed to be seeking to force people to conform to the theoretical standards of conduct which he had laid down. But today as always, the Russians are easily recognizable as human beings like the rest of us, with the same human strengths and the same human frailties.

Powerful as the Soviet propaganda may be, may not the Soviet leaders, when they expected it to change human nature, may not they themselves have been victims of it? If they believed this phase of their propaganda, they expected far too much. They seem now belatedly to be conceding that they no longer hope to achieve the impossible. But if they abandon their effort to create their dream man, they can console themselves with the fact that all other efforts, which have sought substantially or quickly to change human nature on a mass scale, have also failed.

Measured against, and compared with, other propaganda campaigns in history—and some have gone on for centuries, in contrast with the 38 years of intensified Red effort—the Communist propaganda achievement must be conceded to be a major one. Within Russia and the satellites, the Red propaganda has of course been bolstered by an unprecedented combination of terror and incentives. But we in the West will make a great mistake, and such a mistake can prove very dangerous to us, if because of this combination which we so intensely detest, we therefore underrate the achievements of the propaganda.

For 25 years or perhaps longer, most Soviet leaders have perceived that the interests of the Soviet state demand the education of new generations equipped to cope with a multitude of specialized and practical problems. The Soviet system has now reached a point of development where it continues to regenerate itself with an adequate and expanding supply of able and dedicated young leaders and administrators.

From this Soviet need for highly trained men may evolve one of the great decisive questions of our century. It is now shaping up within the Soviet Union in these terms: can the Communists increasingly educate a whole people, and in the technical fields up to the highest level of their capabilities, without undermining the people's faith in Communism itself? Can they produce a generation that is creative and original in all fields except in politics and economics—and unquestioning and obedient in these?

Allen Dulles suggests a negative answer to these questions. He suggests that universal education, up to a high level, may prove to be the Achilles' heel of Communism. Traditionally in the West, education has emphasized the role of the individual. It has encouraged the open mind, the questioning mind. It has attempted to stimulate originality and creativeness. Such qualities have been regarded as vital for the progress of society as well as for the development of the individual's own highest powers. To protect the unorthodox thinker on our Western university faculties, we give the professor permanent tenure; after his early years, he can't be fired even if he specializes in opinions unpopular in his field of scholarship. We have had many experiences which demonstrate to us in the West that the unpopular theory of today may tomorrow turn out to be the key to wisdom.

How then can the Communists rival our progress if they stifle unpopular theory? Can they indeed develop the needed originality and resourcefulness in science and technology without losing their monolithic cohesion? Can they develop their productivity to levels which match ours and still maintain their dedication to a dogma that seems to us so obviously warped and cockeyed?

My studies and observations lead me to suggest the growing possibility of an affirmative answer to these questions. The Communists have sought to resolve their dilemma by combining high quality in scientific and technical training and research with intensive courses and training in Marxist-Leninist-Stalinist ideology. If they can succeed in this combination, they may have discovered a "formula" more dangerous to us than the hydrogen bomb. If they can succeed in this, then why should

Benton Reports

they not believe they can conquer the world with ideas rather than bombs? If they can succeed, then time would not necessarily seem to be on our side in the period of competitive coexistence that lies ahead.

In my judgment, they are succeeding to an alarming and even terrifying degree. They are succeeding not only with the graduates of the *tekhnikums* and higher institutes; they are also succeeding with the average Soviet citizen. I have reported in the section on "The Soviet Educational System" plenty of evidence that the Communists have established the goal to give their young people all the technical education they can absorb. Indeed, they are coming closer to the achievement of this goal than we are in the U.S. I neither saw nor heard evidence that this education is producing resistance to the regime, or even skepticism about it.

Harry Schwartz, famous and able Russian-speaking Soviet expert for the *New York Times*, interviewed 500 "men in the street" in the Soviet Union in the weeks just preceding my own visit. I ran into him in Helsinki as he was coming out and I was going in. Very few of the men he interviewed suggested that the form or structure of the Soviet government should be radically changed and of these not one thought it could be.

(This is much as it is in the United States: as with us, the Soviet citizen doesn't admit that he wants to change his form of government, any more than we in the U.S. would suggest that we want a Czar or a Soviet dictatorship or even a government like that of France or of England. Many of the people Schwartz interviewed grumbled about specific shortcomings—and this would be true in any country, and most certainly was true in my home town of Fairfield, Conn., particularly during the Roosevelt administration—but Schwartz's Russians, like our own Americans who grumble most, are not critical of the system under which they live.)

Schwartz reported that many of his 500 challenged facets of the Soviet propaganda which bore directly on problems with which they had had personal experience—such as farmers, let us say, objecting to the setup on the state farms—but few if any ever challenged the propaganda in areas outside their own experience—such, for example, as the Soviet propaganda castigating the United States because it opposes Red China's entry into the United Nations.

In my interviews I concentrated on government officials, and I came out with roughly the same end-result as that of Harry Schwartz. Some of those I met deplored America's "misunderstandings." Often they seemed to go out of their way to "set me straight," as it were, on both the theory and practice of Communism. Some were so absorbed by the manifest destiny of their arguments that they seemed to expect me to accept them.

I know there may be many possible explanations for the vigour of the Marxist arguments given me by high officials. One is fear. The top men with whom I talked had to assume that I meant to report on the conversations. Besides, other Russians were present at all my interviews within the U.S.S.R. except the two with the prorectors of the universities of Kiev and Moscow. Another explanation could be a very simple one—natural pride of country in the presence of a foreigner. Still another—and this one the experts call "careerism"—is that those with whom I talked feel as they do because they have a personal stake in the regime; they support it as naturally and easily as a successful American businessman supports free enterprise. Indeed, some Russian experts believe the degree of indoctrination among the Russian people is in inverse ratio to the educational and economic status. But there was, in my judgment, still another factor required to explain my interviews. This is the alarming factor. I think the officials really believe what they say. They believe in the superiority of Communism and the right-

eousness of its cause. The courses in indoctrination and the propaganda have worked. Either that, or the Russian officials are consummate actors, and I do not believe a complex economy like that of the U.S.S.R. can be run by actors.

As further confirming evidence of my conclusions, we have the impressions of our diplomats who deal with the Russians at the UN and elsewhere. I have been one of these diplomats, and I believed then, as I do now, that my Russian counterparts believed the Marxist-Leninist-Stalinist line. We also have the confirming evidence of the interviews with refugees from the Soviet Union—refugees who have jumped over the border to the West. Among these refugees, one would expect criticism of the Soviet system to reach its peak. Yet I am told that the interviews reveal that a large proportion flee to the West as a consequence of specific grievances, because of miscarriages of the system, and not because of complaints against the system itself. Few of the refugees seek a new system for Russia.

The very magnitude of the propaganda program in the U.S.S.R. is bound to have its impact on its captive audience. Even if he tries, the average Soviet citizen can't escape the official message. It is blared at him from every quarter and at all times. He may not wish to believe what he is told. He may even think he is not heeding the official exhortations. Nevertheless, he assimilates the message. His environment is saturated with it and his mind absorbs more of it than he realizes. He cannot discuss his doubts freely with his associates. He is inhibited in thinking for himself. At long last, unconsciously or perhaps despite himself, he identifies himself with the thought patterns foisted on him.

There is evidence that Soviet officials themselves are aware of this. One factory manager, reminded that the workers disregard the slogans with which their plant is festooned, agreed readily. "But," he remarked, "the words are present in their minds, although they don't know it."

Many American visitors to the Soviet Union are struck by the uniformity of the political questions asked them about the West. Right now, many of the questions focus on America's Chinese policy, which is being stressed in the Soviet propaganda. Such uniformity is obviously a product of the indoctrination. Many Western visitors are impressed, too, by the confidence many Soviet citizens gratuitously express in the superiority of their Soviet system. Of 13 United States Senators and Representatives who visited the Soviet Union in the last half of 1955, not one reported any evidence of collapse; most expressed surprise at the atmosphere of confidence and stability. No informed observer—even the most antagonistic—reported any symptoms of incipient revolt.

* * * * *

My over-all impression of the many Soviet leaders I met is (1) that they are able and unusual men who would rise to the top in any competitive society; (2) that they are surprisingly ignorant in certain key areas and that this is dangerous; (3) that they are highly indoctrinated and zealous men and that this too is dangerous; and (4) that they are tough and aggressive men, ready to make many sacrifices to achieve desired goals.

Last December Mr. Nutting, Minister of State in the British Foreign Office, told the U.S. National Association of Manufacturers at its annual convention that the "summit" conference last summer in Geneva had made one thing clear: that the leaders of the most powerful nations had abandoned war because it is suicidal. Unfortunately we of the West cannot be sure that this is true to the extent that we can reduce our armament budgets. Indeed, there are strong arguments for increasing them. We Americans must continue to build up the so-called "positions of strength" of the West. But we must also assume that Mr. Nutting may be right; indeed we pray he is right. If he is, we



SOVIET INTERNATIONALISM, 1955

Above: The Bulganin-Khrushchev team visited several foreign nations in an effort to solidify diplomatic relations, especially in the East. The photo shows the Soviet premier and party secretary with Prime Minister J. Nehru (right) of India

Below: Soviet sports teams invited the competition of western nations, both at home and abroad. A U.S. chess team went to Moscow in July. Shown here is a soccer match between the U.S.S.R. and France in Dynamo stadium, Moscow, in October

Bottom: The United States and the U.S.S.R. exchanged several delegations of business and professional experts. In the photograph Soviet newspapermen are interviewing Keith Funston (left), president of the New York Stock exchange, in October



Above: U.S. Ambassador Charles Bohlen and N. A. Bulganin strolling through a park during the latter's picnic for foreign diplomats and newspapermen in Moscow in August

Below: Engineers and workmen installing part of the Soviet exhibit at the conference on the peaceful uses of atomic energy held at Geneva, Switz., in 1955



are in for a long power struggle with the able and dedicated leaders of the Soviet Union. This is a struggle of a new type, to be waged with new weapons. It is a struggle for which the Western world is little prepared. It boils down to an effort by two great opposing forces to win the faith and confidence of the world's peoples.

A part of the pattern of this struggle, this emerging competitive coexistence, seems clear. To meet it and to come out on top, we of the U.S. must be prepared to extend help to the "uncommitted" millions of the earth's population. Such help must of course be keyed to the opportunities for economic and for political development and in line with our available resources. The concept of helpfulness, of good neighbourliness, of sharing our relative abundance, is not new for us, nor is it foreign to American traditions.

Of equal or perhaps even greater importance, we must dramatize, by example as well as precept, the vision of a society that is at once free, just and strong. If an uneasy truce in the use of force between nations is now in the offing, for the next decade or the next century, the competitive struggle in the field of ideas will remain. If we use such a truce constructively to improve America's position in this competitive struggle, the truce can deliver values to us which might make us impregnable.

We must seek with renewed vigour to show that our system can be of help to human beings everywhere in the development of their own freedoms and well-being. We must show that we are willing and able to help them develop the conditions of life in their own countries which will enable them to build up the highest standards attainable with their labour and resources. Apart from military policy and economic policy, I have often pointed out that there must be a third major facet to our foreign policy. This is to give to foreign peoples, to the best of our ability, the information they want and need, and the information we think they should have about us and the free world, and thus to encourage them and to help them in the realization of their own legitimate aspirations.

The Khrushchev-Bulganin trip to Burma and India helped to expose what I believe is "the wave of the future" in Russia's export policy. Russia cannot match us in the export of automobiles, tractors or business machines. She proposes to beat us with her ideas and her trained manpower. As Khrushchev left Burma he announced that the U.S.S.R. would build and equip a technological institute in Rangoon, as a gift to the Burmese people from the Russian people—and staff it, of course, with Russian technicians. Here is an example of how "The Voice of the Kremlin" can prove more dangerous than its armies.

We of the U.S. are now called on to compete with a Soviet system of education in technology and many specialties that milks the best out of all available brains—that literally forces its smartest boys and girls to get all the education they can absorb, and then channels them into the usages of the State. As the supply of highly trained Russian technologists continues to expand, focus will centre on competition with the free world in Asia, Africa and Latin America. In these areas the peoples have a tremendous range of practical problems to which trained men can provide practical answers: problems of agriculture, health, industrial production and communications. This is the language they want to talk. We can talk it better than the Russians, if we will so prepare ourselves. We must learn better to share what we know about the operation of an economic system—what we have learned which may in turn help them in their hoped-for growth. We must seek to show them, in their terms, that they are far more likely to realize their most cherished ambitions by the methods of freedom, and in association with the free nations, than by totalitarian methods or in totalitarian company.

We must demonstrate that their prosperity and their peace lie with us and not with the Communists.

This is no mere propaganda duel. This involves more than ideas, words and manpower. Intertwined into it is the all-important "propaganda of the deed"—our own actions at home and abroad.

The Communists—not ourselves—developed the doctrine that words can speak louder than deeds. Now their words indicate that they plan to supplement their propaganda with a much higher quota of deeds. This greatly enhances the power of their competitive threat. One highly trained and indoctrinated Russian engineer, teaching in the Russian dominated Rangoon Institute, can carry a greater competitive threat to us than thousands of Russian books and newspapers. Indeed, he can be even more threatening than the Russian export of many thousands of tons of steel.

The Russians now clearly are showing their long-term, confident conviction that education "by order" will defeat education "by will." This is one of the greatest challenges now facing the American people. It is but little understood by us, in part because it has received but little discussion. From the way we learn to face up to it, I like to hope, may come expanded opportunities for many of our young people. Today, perhaps fewer than one-half of our youth with the intellectual capacity to benefit from a college education are getting one. In the great reserve of untrained manpower we have our own potential technicians, engineers and leaders for the free world.

Our technical experts must also be trained in the liberal arts, so that they will understand our great traditions of democracy and freedom. Our own surplus of technologists, willing to serve overseas if opportunity calls, must serve not only as builders of dams and steel mills, but also as representatives of Western culture and of the American Dream. They may be far more important to us than the billions of dollars worth of arms which we ship abroad annually. They can prove decisive in the struggle of the next quarter century.

I have used education as a prime example of how we in the United States must improve our methods if we are to hold our own in the new competition. Our reply to the Russians must be: not only the right actions, but the right words—and enough words to describe our actions—and enough of the right actions at home as well as abroad. Foremost in the field of action at home is the need for trained manpower for service overseas. It is one way in which we must now prepare ourselves as we build our defenses of the future, for the further intensification of the duel for the minds of men.

We of the West believe that our freedom in the Western world is incomparably superior to Communism. We must welcome "competitive coexistence" as a status far preferable to the imminent danger of war. In 1955 the Soviet leaders of their own will and for their own purposes created tiny openings in the Iron Curtain which did not before exist. We must now seek to develop such openings into opportunities for improved relationships and for more constructive forms of interchange. We must seek to convert the competition of the future into free and open competition. We must not fear it or allow it to give us the jitters.

Above all, we must continue to strive to present, even to indoctrinated Communists, the spectacle of a good society which is a constant alternative to their own. By being our own best selves, by acting rightly and helpfully in the world, and by talking clearly and well, we shall pursue our best and most lasting hope of winning and holding the free world.

WILLIAM BENTON
Southport, Connecticut
December 15, 1955

1956 BRITANNICA BOOK OF THE YEAR



A Record of the March of Events of 1955

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TABLE OF CONTENTS

Feature Articles

Canada: The Land and the People

Dawn of the Space Age

William Benton Reports on the Voice of the Kremlin

Some first-hand observations on red propaganda techniques within the U.S.S.R. and Satellites

List of Illustrations and Acknowledgment of Copyright, **v**

Introduction, **viii**

Editors and Contributors, **ix**

Calendar, 1956, **xxii**

Calendar of Events, 1955, **1**

Britannica Book of the Year, **17**

Index, **761**

LIST OF ILLUSTRATIONS

(Acknowledgment of Copyright is to be found in the Parentheses.

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FEATURE ARTICLES

Canada: The Land and the People

Peace Tower, Ottawa (National Film Board; photo by Frank Royal)

Map (Prepared from source maps furnished by courtesy of the Department of Mines and Technical Surveys and the Canada Year Book Section, Dominion Bureau of Statistics)

Dog team near Churchill (National Film Board)

Toronto at night (National Film Board; photo by Chris Lund)

Cod fishing off Grand Bank (National Film Board)

Percé rock (National Film Board)

Freighter in Toronto harbour (Courtesy, Canadian Consulate General, Chicago; photo by National Film Board)

Mackenzie river delta (Royal Canadian Air Force)

Saskatchewan prairie (Courtesy, Canadian Consulate General, Chicago; photo by National Film Board)

Moose in Alberta (Courtesy, Canadian Consulate General, Chicago; photo by National Film Board)

Skiing in the Laurentians (Courtesy, Canadian Pacific Railway Co.)

Ship at Gaultois (Courtesy, Canadian Consulate General, Chicago; photo by National Film Board)

Waterfall, British Columbia (National Film Board)

Farmer and son plowing (Courtesy, Canadian Consulate General, Chicago; photo by National Film Board)

Noranda mines (National Film Board)

Granaries near Regina (Yousuf Karsh)

Leduc derrick (National Film Board)

British Columbia timber (Yousuf Karsh)

Montreal (National Film Board; photo by Frank Royal)

Paddlewheel steamboat (National Film Board)

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Thetford mines (Courtesy, Canadian Consulate General, Chicago; photo by Photographic Surveys Ltd., Montreal)

Crated automobile (National Film Board)

Street scene, Victoria (Yousuf Karsh)

Neon signs (National Film Board; photo by Chris Lund)

Portraits (10) (Yousuf Karsh)

Legislative assembly, Victoria (Courtesy, British Columbia Government Travel Bureau)

Chateau Frontenac (National Film Board)

Quebec street (National Film Board)

Priest before his church (National Film Board; photo by Gar Lunney)

Eskimo family (National Film Board)

Logging on Tamacine river (Courtesy, Canadian Consulate General, Chicago; Malak Studio photo)

Potato farm, Prince Edward Island (Yousuf Karsh)

Fish on wharf, Halifax (Yousuf Karsh)

Montreal tavern (Yousuf Karsh)

Ukrainian church (National Film Board)

Saskatchewan wheat farmer (Yousuf Karsh)

Hydroelectric project (National Film Board; photo by Gar Lunney)

Children of St. John's (Yousuf Karsh)

Dawn of the Space Age

Viking #2 (U.S. Navy photo)

Rocket propulsion systems (diagram) (Courtesy, Reaction Motors, Inc.)

Forces operating in a rocket (diagram)

Force of gravity (diagram)

Rocket trajectories (diagram)

Robert H. Goddard, 1882-1945 (4) (Courtesy, Mrs. Robert H. Goddard)

Circular velocity (chart)

Hero's engine

Jato unit

German V-2 rocket

WAC corporal (U.S. Army photograph)

Aerobee on trailer (Courtesy, Aerojet-General Corp.)

Two stage rocket in flight (U.S. Army photograph)

Corporal in flight (U.S. Army photograph)

Testing stand (U.S. Air Force photo)

NIKE missiles (Wide World)

Ship-launched Viking (U.S. Navy photo)

Terrier launching (U.S. Navy photo)

Two- and three-stage rocket (diagram)

Army rocket family (U.S. Army photograph)

Flight around the Moon (diagram)

Paintings (3) of the moon circling rocket, orbital refuelling and the space station (Drawn for *Encyclopaedia Britannica* by William House from sketches by the author and preliminary drawings by Frank Beatty)

Bell X-1 (U.S. Air Force photo)

Navy Douglas Skyrocket (U.S. Navy photo)

Bell X-1A (U.S. Air Force photo)

William Benton Reports on the

Voice of the Kremlin

The Bentons in Moscow (Courtesy, Sen. Benton; photo by Tass News Agency)

View of Moscow (Courtesy, Sen. Benton; photograph from *Izvestia*)

Tsar Kolokol bell (Courtesy, Sen. Benton; photograph from *Izvestia*)

Moscow subway (Sovfoto)

Slum area in Moscow (Wide World)

The Kremlin (Courtesy, Sen. Benton; photograph from *Izvestia*)

Statue of George Dolgoruki (Courtesy, Sen. Benton; photograph from *Izvestia*)

Agricultural exposition (Courtesy, Sen. Benton; photograph from *Izvestia*)

Catholic church in Moscow (Sovfoto)

Palace of science (Sovfoto)

Book stacks, Gorky library (Sovfoto)

Science lecture (Sovfoto)

Assembly hall (Sovfoto)

Old university buildings (Sovfoto)

Arithmetic lesson (Sovfoto)

Oral examination (Sovfoto)

Agriculture scientists (Sovfoto)

Collective farm school (Sovfoto)

Uniformed school children (Sovfoto)

Future leaders (Sovfoto)

Pravda pressroom (Sovfoto)

Propaganda loud-speaker (Sovfoto)

Machinist of Sverdlovsk (Sovfoto)

Collective farm broadcast (Sovfoto)

Election posters (Wide World)

MVD police (Courtesy, Robert F. Kennedy)

Newspaper matrices (Sovfoto)

Honour boards (Sovfoto)

Ukraine parade (Sovfoto)

Leningrad museum (Sovfoto)

Moscow telecast (Sovfoto)

Student art exhibit (Sovfoto)

Tschaikovsky museum (Sovfoto)

Boris Godunov (Sovfoto)

French art exhibit (Sovfoto)

Dmitri Shostakovich (Sovfoto)

Young ballet dancers (John Benton)

Bulganin and Khrushchev in India (Sovfoto)

U.S. ambassador at picnic (Sovfoto)

Soccer match (Sovfoto)

Soviet exhibit at Geneva (Wide World)

Soviet newspapermen in New York (Wide World)

Accidents

Pedestrian crossing stripes (Wide World) . . . 18

Automobile safety belt (European) . . . 18

Adenauer, Konrad (United Press) . . . 19

Advertisement of bank merger (Courtesy, The Chase Manhattan Bank, New York) . . . 21

Agriculture

U.S. delegation in U.S.S.R. (Sovfoto) . . . 24

Soviet farmer in Iowa (Wide World) . . . 25

Irrigation in Nebraska (Courtesy, U.S. Bureau of Reclamation; photo by L.C. Axthelm) . . . 27

Aircraft Manufacture

XV-1 Convertiplane (Courtesy, McDonnell Aircraft Corp.) . . . 31

Air Races and Records

Jacqueline Auriol (Wide World) . . . 32

Allergy

Ragweed pollen (Courtesy, Westinghouse Electric Corp.) . . . 36

Aluminum plant site in Montana (Courtesy, Anaconda Aluminum Co.) . . . 37

American Literature

The Eisenhower brothers (Philippe Halsman) . . . 41

Antarctica

Helicopter leaving the "Atka" (Wide World) . . . 45

The "Atka" moored (Wide World) . . . 45

Seaman chasing penguins (Wide World) . . . 45

Navigators checking position (Wide World) . . . 45

Wind generator 20 years old (Wide World) . . . 45

Archaeology

Reconstruction of Propylaea (Courtesy, *American Journal of Archaeology*) . . . 49

Peruvian figure (Courtesy, Smithsonian Institution) . . . 50

Architecture

Le Corbusier church (B. Moosbrugger)*. . . 53

Argentine church in ruins (Hank Walker)*	55	Cartoons—Continued		Diem, Ngo Dinh (United Press)	
Arizona antelope tagging (Willis Peterson)	56	"International TV Show" (Courtesy, D. R. Fitzpatrick, <i>St. Louis Post-Dispatch</i>)	450	Disasters	
Armies of the World		"I say, you chaps, just stop pumping for a moment and let's talk this thing over, huh?" (Courtesy, Ahmed, <i>The Hindustan Times</i>)	343	Udall tornado (Leonard McCombe)*	211
Survival course (Wide World)	59	"Is lucky you are working here, Comrade workers... Capitalist slave workers in U.S. work only 40 hour week... HERE is no such unemployment..." (Courtesy, George Lichty and the Chicago Sun-Times Syndicate)		Firemen removing survivor (United Press)	212
Operation Gyroscope (Wide World)	60	"Isn't He a Little Old For That?" (Courtesy, John R. Fischetti, NEA Service, Inc.)	387	Du Vigneaud, Vincent (Wide World)	14
Clean-up squad (Wide World)	61	"... Is stopping telling comrade kiddies about shortage of teachers in U.S. comrade teacher... is only encouraging them to slip over border..." (Courtesy, George Lichty and the Chicago Sun-Times Syndicate)			
U.S. veterans in Moscow (Sovfoto)	62	"It Ain't Easy..." (Courtesy, Reg Manning, McNaught Syndicate, Inc.)			
Art Exhibitions		"Lady, Beware" (Courtesy, Daniel Holland, <i>The Chicago Tribune</i>)			
Boston Arts festival (United Press)	63	"Look-Alikes" (Courtesy, Roy Justus, <i>The Minneapolis Star</i>)			
"White Tower Hamburger" (Collection of the Whitney Museum of American Art, New York; photograph by Oliver Baker)	64	"New Kremlin Official" (Courtesy, Don Hesse, <i>St. Louis Globe-Democrat</i>)			
Asian-African delegates (Pan-Asia from Black Star)	67	"One Babe That's Really Lost In The Woods" (Courtesy, Daniel Holland, <i>The Chicago Tribune</i>)	322		
Atomic Energy		"SI Señor! We're at War!" (Courtesy, James J. Dobbins, <i>The Boston Post</i>)	189		
Sub-surface explosion (Courtesy, U.S. Atomic Energy Commission)	69	"The Great Tug of War" (Courtesy, Roy Justus, <i>The Minneapolis Star</i>)	300		
Exhibit at Geneva (Wide World)	69	"The Natives Do Seem a Bit Unfriendly" (Courtesy, Richard Yardley, <i>The Baltimore Sun</i>)	671		
Operation "Cue" (United Press)	69	"Tinklers to Evers to Chance" (Courtesy, Green, <i>The Providence Journal</i>)	76		
Oak Ridge information centre (Courtesy, U.S. Atomic Energy Commission)	69	"Uncorked at Last" (Courtesy, Jerry Costello, <i>The Knickerbocker News</i>)	756		
"Sea Wolf" launching (Courtesy, U.S. Atomic Energy Commission)	69	"Well, And How Are All the Future Premiers Today?" (Courtesy, John R. Fischetti, NEA Service, Inc.)	536		
Microfeed control system (Courtesy, American Machine and Foundry Co.)	71	"Well, This Should Make My Position Clear" (Vicky, <i>The London Daily Mirror</i>)	216		
Austrian independence celebration (Wide World)	75	"Well, What-Ya Know, One for Me" (Courtesy, D. R. Fitzpatrick, <i>St. Louis Post-Dispatch</i>)	563		
Automobile Industry		"We're all set. Gladys!... Your father gave us his blessing, this rabbit's foot, and the names of a couple of friendly loan companies" (Courtesy, George Lichty and the Chicago Sun-Times Syndicate)	614		
General Motors cars at Frankfurt (Wide World)	75	"Your Health, Monsieur" (Courtesy, Bruce Shanks, <i>The Buffalo Evening News</i>)	279		
Mark II Continental (Courtesy, Ford Motor Co.)	77	Ceylon premier in London (European)	150		
Italian Fiat (European)	78	Charts			
Automobile racing disaster (Wide World)	79	Advertising, dollar expenditure, U.S.	20		
Aviation, Civil		Agriculture, gross farm income	26		
Turboprop airliner (Courtesy, Capital Airlines)	81	Baseball catcher's box	98		
Jet executive plane (Wide World)	81	Debt, U.S. national, 1916-54	204		
Larson D-1 agricultural plane (Courtesy, <i>The Swath</i> ; photo by W. T. Larkins)	81	Dental effects of fluoridation (Courtesy, <i>Journal of the American Dental Association</i>)	208		
San Juan airport (Courtesy, Hamilton Wright Organization)	81	Labour union membership	391		
Searchlight for La Guardia area (Courtesy, Westinghouse Electric Corp.)	81	Petroleum, world production	539		
London passenger lounge (Wide World)	81	Prices, wholesale and consumer, U.S.	567		
Aviation, Military		Prices and wages	568		
Prototypes of "Hercules" (Courtesy, Lockheed Aircraft Corp.)	83	Stock sales and prices (Courtesy, Standard and Poor's Corp.)	650		
Convair F-102A (United Press)	84	Stocks, industrial trading (Courtesy, Standard and Poor's Corp.)	652		
Celestial navigation trainer (N.R. Farbmán)*	85	Veterans in all U.S. hospitals	731		
Navy R3Y Tradewind (Courtesy, Convair, a Division of General Dynamics Corporation)	86	Chemistry			
Soviet experimental plane (Wide World)	87	Production of plastic wrapping material (Courtesy, The Dow Chemical Co.)	153		
French Trident (Wide World)	87	Chicago hotel fire (Wide World)	157		
		Child welfare			
		Evacuation of Indochinese orphans (Courtesy, International Cooperation Administration)	160		
		China			
		Propaganda picture (Wide World)	163		
		Returned prisoner (N. R. Farbmán)*	163		
		Col. Arnold released (Wide World)	163		
		U.S. turncoats (Black Star)	163		
		Power plant, Taiyuan (Eastfoto)	163		
		Peace appeal (Eastfoto)	163		
		Civil Defense			
		Alert on Times Square (Wide World)	170		
		President and cabinet in retreat (Wide World)	170		
		Radar island (Wide World)	170		
		Atomic bomb shelter (3) (United Press [2], Wide World [1])	170		
		Clothing Industry			
		Africans at fashion show (United Press)	173		
		Coast Guard utility boat (Courtesy, U.S. Coast Guard)	175		
		Coffin, Robert P. Tristram (Wide World)	509		
		Communists in Hyde Park, London (Le Goubin from Black Star)	183		
		Conant, James B. (Wide World)	6		
		Crime			
		Tenement dwellers watching gun battle (United Press)	192		
		Crockett, Davy			
		Re-enactment of the battle of the Alamo (Ralph Morse)*	193		
		Czechoslovakian gymnasts (Eastfoto)	195		
		Dams			
		Webster dam, Kansas (Courtesy, U.S. Bureau of Reclamation; photo by L.C. Axthelm)	197		
		Gorky dam, U.S.S.R. (Sovfoto)	198		
		Dancing school for children (Edwin Stein—Pix from Publix)	201		
		Detroit			
		Dry cleaning flag (Wide World)	209		

Eastern European Economic Planning Commission		Polish blast furnace (Sovfoto)	220
Education		Children's portraits (5) (Courtesy, Galerie St. Etienne, N.Y., and <i>Junior Arts & Activities</i> magazine)	224
Egypt		Troops running for cover (United Press)	229
		Statue of Rameses II (United Press)	230
Einstein, Albert (Fred Stein)		Eisenhower, Dwight D.	11
		Portrait (United Press)	231
		Convalescing (Wide World)	231
Elections, U.S.		Three persons in polling booth (Dora Jane Hamblin)*	232
		Electronic music maker (United Press)	234
		Espinosa, Ricardo (Wide World)	234
		Exploration and Discovery	
		Soviet arctic base (Sovfoto)	249
Eye, Diseases of the		"Gun barrel" vision (Ben and Sid Ross)	250
Fairs and Exhibitions		U.S. exhibit in Paris (United Press)	251
Faure, Edgar (Wide World)		Federal Power Commission	
		Palisades, Idaho, project (Courtesy, U.S. Bureau of Reclamation; photo by Phil Merritt)	256
Fencing match in New York (Wide World)		Figueres, José (United Press)	258
Fleming, Sir Alexander (United Press)		Floodwaters at Putnam, Conn. (Wide World)	261
Folsom, Marion B. (Wide World)		Football	
		Cleveland Browns v. College All Stars (Wide World)	264
Ford, Henry, II (United Press)		Foreign Aid	
		Floating dredge (Courtesy, International Cooperation Administration)	267
		British jets (United Press)	268
Formosa		92nd division soldiers (European)	275
		F-84 jets (Wide World)	275
		Beach sentry (Wide World)	275
		Tachen evacuation (Howard Sochurek)*	275
		Frederika, Queen (Wide World)	280
		French bus passengers (Wide World)	280
		French Union	
		Algiers riots (Wide World)	282
Frozen Food		Vegetable handlers (Yale Joel)*	284
		Furniture school in Formosa (Pan-Asia from Black Star)	286
Gaitskell, Hugh (Wide World)		Gem Stones	
		Synthetic diamond (Courtesy, General Electric Co.)	288
Geneva Conference		"Big Four" (Wide World)	1
Geography		Giant globe (Copyright, Babson Institute of Business Administration)	29
Gology		Rock fall at Niagara (Wide World)	29
Germany		Looking for news of missing relatives (United Press)	29
		Moscow conference (Wide World)	29
		Repatriates' first meal (Wide World)	29
		Weeping women (Ralph Crane)*	29
		"Thank you, Dr. Adenauer" (Ralph Crane)*	29
		Gold objects on display (3) (Courtesy, The Metropolitan Museum of Art)	30
Golf		Jack Fleck (N. R. Farbmán)*	30
Grandval, Gilbert (United Press)		Great Britain	
		Eden campaigning (United Press)	30
		The Churchills entertain (Fox Photos, Ltd.)	30
		Bus strike (Keystone Press Agency, Inc.)	30
		Griffith, Clark C. (Wide World)	51
		Gronchi, Giovanni (Wide World)	31
		Gymnast team from Sweden (Wide World)	31
Hampden, Walter (United Press)		Harlan, John M. (Wide World)	31
		Hawaiian volcano eruption (N. R. Farbmán)*	31
		Hearing aid and glasses combination (Peter Stackpole)*	31
		Hoover, Herbert (United Press)	31
		Horse trainer Tenney and "Swaps" (John Dominis)*	31
		Hospital opened in Los Angeles (Joe Hayworth—Pix from Publix)	31
Hotels		Fontainebleau, Miami (Gene Cook from Black Star)	3
		Housing in Munich, Ger. (Wide World)	3
		Hughes, Rowland (Wide World)	3
		Hull, Cordell (United Press)	5
Humour (7) (Photos of radio and television stars courtesy of their affiliated networks and the artists; caricature of Sid Caesar by A. Birnbaum; photo of Audrey Meadows by Maurice Seymour, N.Y.)			331-3
Hungarian national assembly (Eastfoto)			

LIST OF ILLUSTRATIONS

vii

Ice skating champion Ericsson (Wide World)	336	Museums— <i>Continued</i>		Railroads— <i>Continued</i>	
India		Hall of Geology (Courtesy, American Museum of Natural History, N.Y.)	467	Commuter protest (Wide World)	589
Prime Minister Nehru and Helen Keller (Wide World)	344	Music		Rayburn, Sam T. (Wide World)	2
International Trade		"Saint of Bleecker Street" (Courtesy, NBC)	469	Religion	
British trawler for U.S.S.R. (European)	361	Mme. Callas and process server (Wide World)	470	Heresy trial (United Press)	592
Ireland		Crazy Otto (Ralph Crane)*	471	Congressional prayer room (Wide World)	593
Stolen arms recovered (Wide World)	369	"Nashua" (Wide World)	15	Rivers and Harbours	
Iron and Steel		Nasser, Gamal (United Press)	2	Waterfront improvement, N.J. (United Press)	600
Detroit blast furnace (Courtesy, National Steel Corporation)	371	National Guard alert (United Press)	474	Roadside warning sign (Courtesy, North Carolina News Bureau)	602
Irrigation		Navies of the World		Roman Catholic cardinals (Wide World)	603
Cattail control (2) (Courtesy, The Dow Chemical Co.)	372	U.S.S. "Forrestal" (Wide World)	479	Rubber shock absorbers (Courtesy, The Firestone Tire and Rubber Co. and Wright Air Development Center)	605
Italian subway (Wide World)	377	Carrier landing (United Press)	479	Russell, Bertrand (United Press)	10
Jamaica		British sailors in Leningrad (Sovfoto)	479	Rye	
Princess Margaret on raft (Wide World)	378	Destroyers for Japan (United Press)	479	Radioactive plants (Courtesy, U.S. Atomic Energy Commission)	608
Japan		Nepal funeral (Wide World)	482	San Marino election posters (Wide World)	612
Repatriated prisoner (European)	379	Netherlands balloon race (Aero-Photo Nederland)	483	Sherwood, Robert E. (United Press)	520
New Year's crowd (United Press)	380	Newspapers and Magazines		Shigemitsu, Mamoru (Wide World)	11
Jet propelled platform (Courtesy, U.S. Dept. of Defense; official Navy photograph)	382	"Korean Educators" (Courtesy, Earl Seubert, <i>Minneapolis Star and Tribune</i>)	491	Shipbuilding	
Judaism		"Ooooff" (Courtesy, Earl Seubert, <i>Minneapolis Star and Tribune</i>)	491	"Empress of Britain" (Courtesy, Canadian Pacific Railway Co.)	619
Hebrew art show at Metropolitan (Courtesy, The Metropolitan Museum of Art)	385	"Rescued" (Courtesy, Edward C. Meyer, <i>St. Louis Globe-Democrat</i>)	491	Shows	
Kelly, Grace (Wide World)	3	"Audrey Hepburn" (Leonard McCombe)*	491	Champion bulldog (Wide World)	622
Khrushchev, Nikita (United Press)	3	"The Nautilus" (Ralph Morse)*	491	Skiing	
Korean demonstrators (Wide World)	389	"The Newborn" (Courtesy, Suzanne Szasz, Free Lance)	492	Airborne trolley car (Wide World)	625
Kusch, Polykarp (Wide World)	14	"Princess Margaret" (Leonard McCombe)*	492	Smithsonian Institution	
Lamb, Willis E., Jr. (Wide World)	15	"Toe Hold" (Courtesy, Earl Seubert, <i>Minneapolis Star and Tribune</i>)	492	The Eisenhowers visit the museum (Wide World)	626
Law		"Misty Harbor" (Courtesy, A. Aubrey Bodine, Baltimore Sunpapers)	492	Societies and Associations	
Opening of International court (United Press)	398	"Snatched from Icy Death" (Courtesy, George Wardwell, <i>Lewiston Journal</i> [Me.])	493	Shriners in Chicago (United Press)	634
Leeward Islands		"Emergency at Midnight" (Hank Walker)*	493	Softball action (Wide World)	638
Cheer for Princess Margaret (Wide World)	401	"Old Man and His Horse" (Courtesy, Thomas Abercrombie, <i>Milwaukee Journal</i>)	493	Standards, National Bureau of	
Library at Cincinnati (Albert Fenn)*	403	"Robert Coffin" (Courtesy, Earl Seubert, <i>Minneapolis Star and Tribune</i>)	493	Guests at "open-house" (Courtesy, National Bureau of Standards)	648
Livestock		"Bulldogger at Work" (Courtesy, Dave Mathias, <i>Denver Post</i>)	493	Stevenson, Adlai E. (United Press)	15
Champion Hereford (Post-Dispatch pictures from Black Star)	409	New York city children playing (Wide World)	496	Strikes	
Lumber treatment (Courtesy, Forest Products Division, Olin Mathieson Chemical Corp.)	413	Nixon, Richard Milhous (James Shepley)*	499	Washington traffic jam (Wide World)	655
McCormick, Robert R. (Wide World)	512	North Carolina		Sulphur shipment in bottle (Courtesy, Freeport Sulphur Co.)	657
Macfadden, Bernarr (Wide World)	512	Whale on the beach (Wide World)	502	Summerall, Charles P. (Wide World)	520
Machinery and Machine Tools		Oregon		Surgery underwater (John Malmin, <i>The Los Angeles Times-Mirror</i>)	658
High-speed lathe (Courtesy, General Electric Co.)	415	Rescue at sea (Victor Hauberg)	525	Swedish moose on the loose (Wide World)	660
Macmillan, Harold (United Press)	6	Palaeontology		Telephone	
McNeil, Hector (Wide World)	517	Dinosaur bones (Wide World)	532	Solar power (United Press)	669
McNutt, Paul V. (Wide World)	517	Panama		Transatlantic cable laying (United Press)	670
Malta ferry capsized (United Press)	418	Former president indicted (Wide World)	533	Texas	
Mann, Thomas (Fred Stein)	517	Panama Canal Zone		John Nance Garner and his chickens (United Press)	673
Maps		Soviet ship in canal (Wide World)	534	Theatre	
Agriculture, U.S.S.R. corn areas (Courtesy, <i>Successful Farming</i> , Meredith Publishing Co.)	28	Papagos, Alexandros (Wide World)	520	"Inherit the Wind" (Walter Sanders)*	677
Antarctica, route of the "Atka" (Courtesy, U.S. National Committee, International Geophysical Year 1957-58)	44	Pearson, Lester B. (Wide World)	7	Theorell, Hugo (Wide World)	14
Asian-African conference, participating nations	66	Perón, Juan D. (United Press)	14	Tibetan children on truck (Eastfoto)	678
Aviation, Civil, air distances (Courtesy, <i>Official Airline Guide</i>)	82	Petroleum		Track and Field	
Formosa and limits of Nationalist China	276	Fluid coker (Courtesy, Carter Oil Refinery)	540	Lazlo Tabori winning mile (European)	685
Israel troop strength	374	Refinery explosion (Wallace Kirkland)*	541	120 yd. high hurdles (Wide World)	685
Margaret Rose, Princess (United Press)	14	Philately		Lou Jones winning 400 m. (Wide World)	685
Marine Corps combat pack (Courtesy, U.S. Marine Corps; photo by Pfc. D. A. Multer)	421	Portuguese issue (United Press)	542	Perry O'Brien putting shot (Wide World)	685
Marriage in new M.I.T. chapel (United Press)	422	Philippine anniversary (Pan-Asia from Black Star)	543	Hans Visser broadjumping (Wide World)	685
Martin, Glenn L. (Wide World)	517	Photography		Bob Richards pole vaulting (Mark Kauffman)*	685
Maryland		"The Family of Man" (Post-Dispatch pictures from Black Star)	545	Tunisian leader and admirer (Wide World)	690
Helicopter with food for ice-bound island (Courtesy, U.S. Coast Guard)	425	High school prize winner (Courtesy, 1955 National High School Photographic Awards)	546	Turkey	
Meat surplus of Navy (Wide World)	428	Physics		New hotel in Istanbul (Archie Lieberman from Black Star)	692
Medical Rehabilitation of the Disabled	429	Experiment restaged (Arthur Shay)*	548	United Nations	
Stair-climbing wheelchair (Peter Stackpole)*	429	Pius XII (United Press)	7	Anniversary assembly (N. R. Farbman)*	697
Medicine		Plastic holding automobile (Andreas Feininger)*	552	French walkout (Wide World)	700
Heat test subject (Post-Dispatch pictures from Black Star)	430	Poland		United States	
Merchant Marine		Palace of culture (Eastfoto)	553	Landy denied commission (Wide World)	705
Korean fishing vessels (Courtesy, United Nations)	432	Poliomyelitis		Labour merger (Frank Alexander, Ransdell Inc.)	707
Meteorology		Dr. Salk and vaccine manufacture (6) (Albert Fenn*, Courtesy, Parke, Davis & Co. [2], United Press [2], Post Dispatch pictures from Black Star)	556	United States Air Force Academy	
"Eye" of hurricane (Wide World)	435	Emergency ward (Wide World)	556	Model of proposed site (Cal Bernstein from Black Star)	710
Curious clouds (Wide World)	436	Portuguese Overseas Territories		Urban Transportation	
Mexico		Beatings at Diu-India border (Wide World)	562	End of the 3rd award "El" (United Press)	724
Lady bullfighter (Litwin—Pix from Publix)	439	Prison riot (Wide World)	570	Utrillo, Maurice (Wide World)	520
Miranda, Carmen (Wide World)	517	Pulitzer Prizes		Venezuela president receiving sword (Wide World)	729
Missouri water tower rescue (Wide World)	449	"Cat On A Hot Tin Roof" (Wide World)	578	Vietnamese awaiting occupation troops (Wide World)	734
Morocco, French		Quarles, Donald A. (Wide World)	11	Wagner, John P. (Honus) (Wide World)	520
Native trooper drawing fire (John Sadovy)*	453	Radio and Television		Weeks, Sinclair (Wide World)	10
Motion Pictures		Mary Martin as Peter Pan (Courtesy, NBC)	581	Weightlifter Paul Anderson (Wide World)	742
Grace Kelly and Marlon Brando (United Press)	455	"Monitor" (Courtesy, NBC)	583	Williams, Tennessee (United Press)	6
Ernest Borgnine and Betsy Blair (Courtesy, United Artists Corp.)	456	Long distance waveguide (Courtesy, Bell Telephone Laboratories)	584	Women's Fashions	
Henry Fonda and Audrey Hepburn (Wide World)	457	\$64,000 question winner (Wide World)	585	Evening dress (Courtesy, Eleanor Lambert, Inc.)	749
Motor-boat race around N.Y. (Wide World)	459	Railroads		Two-piece suit (Courtesy, Eleanor Lambert, Inc.)	749
Munitions		Gravity switching yard (Courtesy, Association of American Railroads; Southern Pacific lines photo)	589	Fitted suit (United Press)	749
Missile "Falcon" (Courtesy, U.S. Dept. of Defense; official Air Force photo)	463	Ticket vending machine (Courtesy, Association of American Railroads)	589	Silk sheath (Sharland for <i>The New York Times</i>)	749
British tank (European)	464	"Aerotrain" (Wide World)	589	Dior show (Eugene L. Kammerman—Pix from Publix)	749
"The Thing" (Wide World)	464	Improved chair car (Courtesy, Association of American Railroads)	589	Yugoslavia	
Museums		"Twelfth Night" by Jan Steen (Courtesy, Museum of Fine Arts, Boston)	466	Soviet visitors at airport (Ralph Crane)*	757
				Zoology	
				"Alice" and "Trudy" (Loomis Dean)*	760

INTRODUCTION

SINCE its inception in 1938, millions of copies of the *Britannica Book of the Year* have been printed and distributed throughout the world. The aim of this annual is to report with objectivity national and international events and the activities of people significant in the news. And it is a commentary on the character of life in the United States that there are no official or unofficial censorship restrictions to colour the book's reflection of the present-day world. If the book lacks complete objectivity it cannot be laid to the coercion of an iron fist. Americans can be grateful that publishing, in this country at least, is free.

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This 19th issue of the *Britannica Book of the Year* offers a green section carrying three feature articles.

The first in the book is Pierre Berton's "Canada: The Land and the People"—an attempt to analyze the growth of this influential area of the world. It discusses the future possibilities of Canada and traces the history and characteristics of the remarkable people who live within its borders. Mr. Berton is managing editor of *Maclean's* magazine.

The possibility of space travel is one of the most controversial subjects of our time. The second special article is Commander R. C. Truax's "Dawn of the Space Age," a factual account of the development of the rocket. Commander Truax describes how a journey around the moon in a spaceship might be accomplished. He explores the possibilities of achieving the farthest reaches of space—even to the planets and the stars.

Commander Truax has designed and developed rocket power plants. He holds the Robert H. Goddard award in the field of liquid-propellant rockets. His efforts were instrumental in forming the Space Flight committee within the American Rocket society, of which he is vice-president. The recommendations of this committee were the basis of the recently announced government project to launch satellites to circle the earth.

The third feature and in many respects the most exciting—the last article to go to the printer this year—is William Benton's current report on life behind the Iron Curtain. Mr. Benton, publisher of the *Encyclopædia Britannica*, was able to visit the Soviet Union in October and November. He gives a first-hand report on avenues of communication in the Soviet Union. His valued article attempts to show the effect of Communist propaganda on the Russian people and those of the satellite countries and what the west might do to combat it. Senator Benton's trip to the Soviet Union, with Mrs. Benton and their son John, was a matter of extensive newspaper interest throughout the United States and the world.

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xi

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xiii

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xvii

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THOMAS V. HANEY. Member of the Staff, *The New York Times*, New York, N.Y.

U.E.B. **Secret Service, U.S.**
U. E. BAUGHMAN. Chief, United States Secret Service, Treasury Department, Washington, D.C.

V.B.B. **Business Review (in part)**
VIVA BELLE BOOTHE. Director, Bureau of Business Research, College of Commerce and Administration, The Ohio State University, Columbus, O. Author of *Seasonality of Employment in Ohio*; *Earnings in Ohio Industries*; etc.

V.BT. **Malaya, Federation of (in part)**
VERNON BARTLETT. Political commentator, *Straits Times*, Singapore; Southeast Asia correspondent, *Manchester Guardian*, Manchester, Eng. Author of *Report from Malaya*; *Struggle for Africa*, etc.

V.Pn. **Civil Defense, U.S.**
VAL PETERSON. Administrator, Federal Civil Defense Administration, Battle Creek, Mich.

V.T.E. **Austria (in part)**
VICTOR THOMAS EGGER. Director, London branch, Austrian publishers and printers. Broadcaster on politics and economics.

W.A.A. **Veterinary Medicine**
W. A. AITKEN, D.V.M. Editor in Chief, American Veterinary Medical Association publications, Chicago, Ill.

W.A.Dw. **Fencing**
WARREN A. DOW. Former Secretary, Amateur Fencers League of America.

W.A.Re. **Archaeology (in part)**
WILLIAM A. RITCHIE. State archaeologist, New York State Museum and Science Service, Albany, N.Y. Author of *The Pre-Iroquoian Occupations of New York State*.

W.B.Br. **Cartography**
WILLIAM B. BRIERLY. Geographer, Army Map Service, Washington, D.C. Author of *Special-Use Maps*.

W.B.Ds. **Christian Science**
WILL B. DAVIS, Manager, Committees on Publication, The First Church of Christ, Scientist, Boston, Mass.

W.B.Dy. **Boxing (in part)**
WILLIAM HENRY BARRINGTON DALBY. Writer and broadcaster on boxing. Administrative Steward, British Boxing Board of Control, London, Eng.

W.B.F. **Virginia**
WILLIAM B. FOSTER, JR. Reporter, *Richmond News Leader*, Richmond, Va.

W.B.Td. **Book Collecting**
WILLIAM BURTON TODD. Assistant to the Librarian, Houghton Library, Harvard University, Cambridge, Mass.

W.D.An. **Aviation, Civil (in part)**
WILLIAM DALE AUSTIN. Editor-Publisher, *The Swath* magazine, Loma Linda, Calif.

W.Dd. **Foreign Aid Programs, U.S.**
WILLIAM DIEBOLD, JR. Director of Economic Studies, Council on Foreign Relations, New York, N.Y. Author of *Trade and Payments in Western Europe*; *New Directions in Our Trade Policy*.

Wd.E. **Canada (in part)**
WILFRID EGGLESTON. Director, Department of Journalism, Carleton College, Ottawa, Can. Author of *Scientists at War*; etc.

W.Dk. **Blood, Diseases of the**
WILLIAM DAMESHEK, M.D. Professor of Medicine, Tufts University School of Medicine, Boston, Mass. Senior Physician and Hematologist, New England Center Hospital, Boston, Mass. Editor-in-Chief, *Blood—the Journal of Hematology*.

W.D.Mn. **Photography**
WILLARD D. MORGAN. Editor, *The Encyclopedia of Photography* (11 volumes). Author of *Synchroflash Photography*; co-author, *Stereo Realist Manual*; *The Leica Manual*; etc.

W.E.O. **Shows (in part)**
WILLIAM E. OGILVIE. Secretary-Manager, International Live Stock Exposition, Chicago, Ill. Author of *Pioneer Agricultural Journalists*.

W.E.Ss. **New Hampshire**
WAYNE EDSON STEVENS. Professor of History, Dartmouth College, Hanover, N.H.

- W.F.Bg.** Wyoming
WILLIAM FREDRICK BRAGG, JR. Assistant manager, Wyoming Travel Commission, Cheyenne, Wyo.
- W.F.Ky.** Motion Pictures (*in part*)
WILLIAM F. KELLEY. Manager and Secretary-Treasurer, Motion Picture Research Council, Inc., Hollywood, Calif. Editor of *Motion Picture Sound Engineering*.
- W.Ft.** Paraguay
WESLEY FROST. Former Professor of International Relations, Hamilton College, Clinton, N.Y. Former U.S. Ambassador to Paraguay.
- W.H.Is.** British West Africa (*in part*)
WILLIAM HAROLD INGRAMS. Former Adviser on Overseas Information, Colonial Office, London, Eng. Author of *Arabia and the Isles*; *Hong Kong*; etc.
- W.H.Jn.** Business Review (*in part*)
WALTER HENRY JOHNSTON. Assistant Editor, *Yorkshire Post*, Leeds, Eng. Translator of Hegel's *Science of Logic*.
- W.H.Tr.** Yachting
WILLIAM H. TAYLOR. Managing Editor, *Yachting*.
- W.H.V.A.** Rivers and Harbours (*in part*); etc.
W. H. VAN ALLEN. Chief of Information and Editorial Bureau, Department of Transport, National Harbours Board, Ottawa, Can.
- W.J.Bp.** Theorell, Axel Hugo Teodor
WILLIAM JOHN BISHOP. Former Librarian, Wellcome Historical Medical Library, London. Co-author of *Notable Names in Medicine and Surgery*.
- W.Ju.** Shows (*in part*)
WILL JUDY. Editor, *Dog World*, Chicago, Ill. Author of *Principles of Dog Breeding*; *Dog Encyclopaedia*; etc.
- W.L.Be.** Eye, Diseases of the
WILLIAM L. BENEDICT, M.D. Emeritus Professor of Ophthalmology, University of Minnesota Graduate School, Mayo Foundation, Rochester, Minn.
- W.Mr.** Organization of American States
WILLIAM MANGER. Assistant Secretary-General, Organization of American States.
- W.O.L.S.** Child Labour (*in part*)
WILLIAM OWEN LESTER SMITH. Former Professor of the Sociology of Education, University of London. Author of *To Whom Do Schools Belong?*; *Education in Great Britain*; etc.
- W.P.Ma.** Telegraphy
WALTER P. MARSHALL. President, The Western Union Telegraph Company, New York, N.Y.
- W.Pr.** Louisiana
WALTER PRICHARD. François Xavier Martin Professor of Louisiana History, Louisiana State University, Baton Rouge, La.
- W.P.S.** Genetics
WARREN P. SPENCER. Professor of Biology, College of Wooster, Wooster, O.
- Wr.B.H.** Theatre (*in part*)
WALTER BERTRAM HERBERT. Executive Director, Canada Foundation, Ottawa, Can.
- W.R.Br.** Standards, National Bureau of
WALLACE R. BRODE. Associate Director, National Bureau of Standards, Washington, D.C. Author of *Chemical Spectroscopy*, etc.
- W.R.Pr.** New York City
WILLIAM R. PEER. Executive Secretary to the Mayor of the City of New York.
- W.R.Sr.** Swimming
W. R. SCHROEDER. Managing Director, Helms Athletic Foundation, Los Angeles, Calif.
- W.S.Gy.** Anthropology
WILLIAM SIMPSON GODFREY, JR. Executive Secretary, American Anthropological Association; Assistant Professor, Beloit College, Beloit, Wis.
- W.T.A.** Tennessee
WILLIAM THOMAS ALDERSON. Associate Editor, *Tennessee Historical Quarterly*. Senior Archivist, Tennessee State Library and Archives, Nashville, Tenn.
- W.Tl.** Post Office (*in part*)
WALTER JAMES TURNBULL. Deputy Postmaster General, Post Office Department, Ottawa, Can.
- W.T.We.** Law (*in part*)
WILLIAM THOMAS WELLS. Member of the Magistrates' Courts Rules Committee. Former Member of the Lord Chancellor's Committee on the Practice and Procedure of the Supreme Court. Author of *How English Law Works*.
- W.V.M.** Kimpton, Lawrence Alpheus
WILLIAM V. MORGENSTERN. Director of Public Relations, The University of Chicago, Chicago, Ill.
- W.V.Pl.** Hong Kong (*in part*)
WILFRED VICTOR PENNELL. Associate Editor, *South China Morning Post*, Hong Kong.
- W.W.Bn.** Education (*in part*)
WILLIAM W. BRICKMAN. Associate Professor of Education and Chairman, Department of History of Education, New York University, New York, N.Y. President's Research Fellow, Brown University, Providence, R.I., 1950-51. Editor, *School and Society*. Author of *Guide to Research in Educational History*.
- W.Wd.** Quebec
WALLACE HARTLAND WARD. Associate Editor, *The Montrealer*, Montreal, Can. Co-author of *Canada's War At Sea*.
- W.W.Js.** Kentucky
WALTER W. JENNINGS. Professor of Economics, University of Kentucky, Lexington, Ky. Author of *Introduction to the Economic History of European Peoples*; *Introduction to the Economic History of the American People*; *A Dozen Captains of American Industry*; etc.
- W.W.Ms.** Protestant Episcopal Church
WILLIAM W. MANROSS. Librarian, the Church Historical Society, Philadelphia, Pa. Author of *History of the American Episcopal Church*.
- X.** ANONYMOUS.

1956

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JANUARY 1956

- 1 New Year's day.
- 3 Second session of 84th U.S. congress convenes.
- 4 Independence day, Burma.
- 6 Epiphany, or Twelfth Night.
- 17 250th anniversary, birth of Benjamin Franklin, U.S. philosopher, statesman and man of letters.
- 26 Australia day.
- 26 Anniversary of the Proclamation of the Republic, India.
- 27 200th anniversary, birth of Wolfgang Amadeus Mozart, Austrian composer.
- 29 Septuagesima Sunday.

FEBRUARY

- 2 Candlemas. Purification of the
2 Virgin.
2 Ground-hog day.
6 200th anniversary, birth of Aaron
Burri, U.S. lawyer and political
leader.
12 Quinquagesima Sunday.
12 Lincoln's birthday, 1809.
12 Georgia day, U.S.
13 Shrove Tuesday. Mardi gras.
14 St. Valentine's day.
15 Ash Wednesday.
19 First Sunday in Lent.
22 Washington's birthday, 1732.
26 Purim (Jewish festival).

MARCH

- 2 Texas Independence day.
6 150th anniversary, birth of Elizabeth Barrett Browning, British poetess, wife of Robert Browning.
12 Girl Scout day, U.S.
15 Ides of March.
17 St. Patrick's day, patron saint of Ireland.
18 Passion Sunday.
20 Equinox (3:21 P.M. Greenwich civil time), beginning of spring.
25 Palm Sunday.
25 Annunciation. Quarter day.
27 Jewish Passover, 1st day.
29 Maundy Thursday.
30 Good Friday.
30 Seward's day, Alaska.

APRIL

- 1 Easter Sunday.
1 All Fools' day.

THE year 1956 of the Christian Era corresponds to the year of Creation 5716-5717 of the Jewish calendar; to the year 1375-1376 of the Moham-
medan hegira; to the 180th year of the United States; and to the 188th
year of the *Encyclopædia Britannica*.

- 2 Easter Monday.
13 Thomas Jefferson's birthday, 1743.
14 Pan American day.
16 Independence day, Israel.
18 50th anniversary, great San Francisco earthquake and fire.
19 Patriots' day, U.S.
25 Anzac day, Australia and New Zealand.
26 Confederate Memorial day (also May 10, May 30, June 3).

MAY

- 1 Mayday. International labour festival.
- 6 Rogation Sunday.
- 10 Ascension day.
- 13 Mother's day. U.S.
- 16 Shabuoth (Jewish Pentecost), 1st day.
- 17 Constitution day. Norway.
- 19 Armed Forces day, U.S.
- 20 Pentecost (Whitsunday).
- 20 150th anniversary, birth of John Stuart Mill, British philosopher and economist.
- 21 Whitmonday.
- 21 Victoria day.
- 24 Empire day.
- 24 Partial eclipse of the moon, invisible at Washington, D.C. (date as of Greenwich civil time).
- 27 Trinity Sunday.
- 30 Memorial (Decoration) day, U.S.
- 31 Corpus Christi.
- 31 Trooping the colour in honour of Queen Elizabeth II's birthday. Her majesty was actually born on April 21, 1926.
- 31 Union day, Union of South Africa.

JUNE

- 8 Total eclipse of the sun, invisible at Washington, D.C. (date as of Greenwich civil time).
11 Kamehameha day, Hawaii.
14 Flag day, U.S.
17 Bunker Hill day, U.S.

- 17 Father's day, U.S.
21 Solstice (10:24 A.M. Greenwich
civil time), beginning of summer.
24 Midsummer day. Quarter day.
24 St. John's day.

JULY

- 1 Dominion day, Canada.
- 4 Independence day, U.S.
- 4 Independence day, Philippines.
- 5 Independence day, Venezuela.
- 9 Independence day, Argentina.
- 12 Orangeman's day, Northern Ireland.
- 14 Bastille day, France.
- 17 Tishah Biv (Jewish Fast of Ab).
- 21 Independence day, Belgium.
- 22 Feast of St. Mary Magdalene.
- 25 Constitution day, Puerto Rico.
- 26 100th anniversary, birth of George Bernard Shaw. Irish critic and playwright.
- 28 Independence day, Peru.

AUGUST

- 1 Lammas day.
1 Founding of the Confederation,
Switzerland.
6 Feast of the Transfiguration.
7 Mohammedan year 1376 begins at
sunset.
14 Independence day, Pakistan.
15 Assumption of the Blessed Virgin
Mary.

SEPTEMBER

- 1 17th anniversary, beginning of
World War II.
3 Labor day, U.S.
6 Rosh Hashanah (Jewish holiday
beginning year 5717), 1st day.
7 Independence day, Brazil.
15 Yom Kippur (Jewish day of Atone-
ment).
16 Independence day, Mexico.
17 Constitution day, U.S.
20 Sukkoth (Jewish Feast of Taber-
nacles), 1st day.

OCTOBER

- 4 Feast of St. Francis of Assisi.
12 Columbus day.
18 Alaska day, Alaska.
22 Labour day, New Zealand.
31 Halloween.

NOVEMBER

- 1 All Saints' day, Allhallows.
- 2 All Souls' day.
- 3 Independence day, Panamá.
- 5 Guy Fawkes day.
- 6 General election day.
- 7 The October Revolution, U.S.S.R.
- 11 Martinmas, or St. Martin's day.
- 11 Veterans (formerly Armistice) day.
- 11 Remembrance day, Canada.
- 18 Total eclipse of the moon, visible at Washington, D.C. (date as of Greenwich civil time).
- 22 Thanksgiving day, U.S.
- 29 Hanukkah (Jewish Feast of Dedication), 1st day.
- 30 St. Andrew's day, patron saint of Scotland.

DECEMBER

- 2 First Sunday in Advent.
- 2 Partial eclipse of the sun, invisible at Washington, D.C. (date as of Greenwich civil time).
- 5 Constitution day, U.S.S.R.
- 6 Feast of St. Nicholas.
- 6 Independence day, Finland.
- 8 Immaculate Conception.
- 16 Dingaan's day, Union of South Africa.
- 21 Solstice (9:00 P.M. Greenwich civil time), beginning of winter.
- 22 Forefathers' day (also Dec. 20, Dec. 21, Dec. 23), U.S.
- 25 Christmas. Quarter day.
- 26 Boxing day.
- 28 Childermas. Holy Innocents' day.
- 30 Rizal day, Philippines.
- 31 New Year's Eve (Hogmanay).

CALENDAR OF EVENTS • 1955

JANUARY

1 U.S. Foreign Operations administration began supplying direct financial aid to the states of south Vietnam, Cambodia and Laos in Indochina.

British government transferred to Egyptian control an 87-mi. pipeline from Suez to Cairo.

2 José Ramón Guizado took over as president of Panamá upon the assassination of José Antonio Remón.

3 U.S. state dept. declared 27% of the area of the U.S. off limits to soviet citizens.

U.S. civil service commission reported that 3,002 security risks had been dismissed from federal positions during the period May 28, 1953–Sept. 30, 1954.

4 Federal reserve board raised margin requirements on purchases of stocks from 50% to 60% of the purchase price.

Japanese government announced that the U.S. had agreed to pay \$2,000,000 compensation for the damage and injury to Japanese fishermen after the Bikini hydrogen bomb explosion in 1954.

U.S., Britain and France supported a demand by Israel in the UN Security council that Israeli ships be permitted to use the Suez canal without Egyptian interference.

5 International Bank for Reconstruction and Development announced the expulsion of Czechoslovakia, its only soviet-bloc member.

At the first meeting of the 84th congress Rep. Sam T. Rayburn (Dem., Tex.) was elected speaker of the house of representatives and Sen. Walter F. George (Dem., Ga.) was elected president pro tem. of the senate.

Yugoslavia and the U.S.S.R. signed a one-year trade agreement in Moscow.

Indonesian government declared a state of war in a group of the Molucca Islands in eastern Indonesia where rebels were in partial control.

6 Pres. Eisenhower in his annual state of the union message to congress appealed to it for unhesitating co-operation

with his administration in a common quest for peace, prosperity and freedom.

Trading on the New York Stock exchange rose to 5,300,000 shares, the highest volume since Sept. 5, 1939.

8 British government rejected a soviet request that it should join with the soviet government in circulating to other participants in the 1954 Geneva conference a Vietminh petition alleging violation of the armistice agreement by south Vietnam, France and the U.S.

Soviet government released two U.S. citizens who had been held in soviet labor camps.

French government disclosed a new plan to establish control over arms production in the member nations of the proposed western European union.

N.Y. state mental hygiene dept. reported that mental patients had shown improvement after being treated with two new drugs named thorazine and reserpin.

9 U.S. Atomic Energy commission announced plans to help private industry develop and operate experimental atomic power plants.

10 Pres. Eisenhower in a special message to congress asked for new powers to reduce foreign trade barriers, including a 3-year extension of the Reciprocal Trade Agreements act.

Council of the Organization of American States called on Nicaragua and Costa Rica to take steps to avoid any aggravation of tension between them.

UN Secy. Gen. Dag Hammarskjöld and Chinese Communist Premier Chou En-lai completed discussions at Peking regarding the release by China of U.S. airmen captured during the Korean war.

Chinese National defense ministry stated that Chinese Communist planes had carried out a day-long raid on the Nationalist-held Tachen Islands, 200 mi. north of Formosa.

11 Joseph E. Finnegan of New York was nominated to be director of the Federal Mediation and Conciliation service.

Pres. Eisenhower urged con-

gress to raise the pay of federal employees and to increase postal rates.

12 Costa Rican Pres. José Figueres in a radio broadcast accused Nicaraguan Pres. Anastasio Somoza of supporting a revolt against the Costa Rican government.

13 Pres. Eisenhower asked congress to inaugurate a military reserve plan, extend the selective service system and raise military pay, allowances and benefits by about \$942,000,000 a year.

14 Yugoslavia and Hungary signed their first trade agreement since 1948.

Organization of American States condemned the attack by foreign forces on Costa Rica and asked Nicaragua to take stronger measures to stop the flow of war equipment into Costa Rica from Nicaragua.

Senate voted 84 to 0 to continue the investigation of communism.

Senate banking and currency committee voted to conduct what was termed a friendly investigation of the stock market.

15 Ricardo Arias Espinosa was sworn in as president of Panamá after Pres. José Ramón Guizado was impeached for alleged participation in the assassination of Pres. José Antonio Remón.

Soviet government renewed its demands for four-power talks on the reunification of Germany.

16 U.S. government sold 4 fighter planes to Costa Rica in response to a request from the council of the Organization of American States.

17 Pres. Eisenhower sent to congress a budget for the fiscal year beginning July 1, 1955, which estimated expenditure at \$62,408,000,000 and revenue at \$60,000,000,000, leaving a prospective deficit of \$2,408,000,000.

18 Chinese Communist government announced the capture in an amphibious assault of Nationalist-held Yikiang Island, near the Tachen Islands.

General Motors Corp. announced a \$2,000,000 annual program to aid higher education.

Federal District Judge Luther Youngdahl dismissed for the second time two perjury indictments against Owen Lattimore, former U.S. state dept. adviser on the far east.

19 Pres. Eisenhower's press conference was filmed for television and news reels for the first time.

U.S. state dept. barred soviet citizens residing in the U.S. from photographing or sketching U.S. military installations, ports, power plants and other strategic areas.

20 Pres. Eisenhower in his annual economic report to congress forecast continuing U.S. economic expansion.

State of siege was declared throughout Guatemala after an unsuccessful uprising against the government.

Soviet government announced that industrial production in 1954 had increased by 13% over 1953.

Japanese air force received its first shipment, totalling 59 aircraft, under the U.S.-Japanese mutual defense assistance program.

21 Liberian Pres. William V. S. Tubman announced a loan of \$15,000,000 from the U.S. Export-Import bank for highway construction.

British government protested to Argentina against the establishment of an Argentine scientific base at Vahsel bay in the Weddell sea in the Falkland Island dependencies.

22 New Norwegian government headed by Einar Gerhardsen as premier assumed office in succession to that of Oscar Torp.

British government strongly protested to the Chinese Nationalist government the sinking of a British freighter during a Nationalist air attack on shipping in Swatow.

24 Pres. Eisenhower asked congress to authorize the use of U.S. armed forces to defend Formosa and the Pescadores islands.

25 Soviet government formally terminated the state of war between the U.S.S.R. and Germany.

Panamá and the U.S. signed a new treaty increasing U.S. payments for rights to the Panama Canal Zone from \$430,000 to

For elections and disasters of 1955, see under those headings in the text. For obituaries of prominent persons who died during 1955, see under the entry Obituaries.

JANUARY—Continued

\$1,930,000 a year.

Rebel invasion of northern Costa Rica was reported to have been ended when several hundred insurgents crossed into Nicaragua and surrendered for internment.

Budget Director Rowland R. Hughes ordered the withdrawal wherever possible of federal agencies from activities in competition with private business.

26 Pres. Paul E. Magloire of Haiti arrived in Washington, D.C., for an official visit to the U.S.

27 U.S. far east air force headquarters announced the dispatch of a fighter-bomber wing from Okinawa and the Philippines to Formosa for temporary duty.

Secy. of State John Foster Dulles barred visits to Communist China by relatives of 17 U.S. airmen imprisoned there.

Former Sen. John Sherman Cooper of Kentucky was nominated by Pres. Eisenhower to be U.S. ambassador to India.

28 U.S. government protested to Peru against the detention and fining of two U.S. vessels for allegedly infringing Peruvian fishing rights.

Senate approved by vote of 85 to 3 a joint resolution already approved by the house of representatives authorizing Pres. Eisenhower to use U.S. armed forces in the defense of Formosa and the Pescadores islands.

29 Chinese Communist radio demanded that the UN force U.S. withdrawal from Formosa and adjacent waters.

30 Adm. Felix B. Stump, U.S. Pacific fleet commander, stated at Taipei, Formosa, that his forces were prepared to begin the immediate removal of Chinese Nationalist troops and civilians from the Tachen Islands.

31 U.S. supreme court held that the legitimate theatre and professional boxing were subject to the federal antitrust laws.

Conference of the prime ministers of the Commonwealth of Nations countries opened at London, Eng.

Pres. Eisenhower submitted to congress a proposed national health program similar in many of its provisions to that rejected by congress in 1954.

FEBRUARY

1 Senate consented, by vote of 82 to 1, to the ratification by the U.S. of the southeast Asia collective defense treaty.

Princess Margaret, sister of Queen Elizabeth II of the United Kingdom, arrived at Port of Spain, Trinidad, for a month's tour of the British West Indies.

Social Democrat H. C. Hansen was appointed prime minister of Denmark in succession to Hans Hedtoft, deceased.

2 Central committee of the Soviet Communist party published a statement confirming that heavy industry would continue to have priority in the next stages of soviet development.

Egyptian Premier Gamal Abdel-Nasser confirmed that Egypt would withdraw from the Arab league collective security pact, if Iraq concluded a proposed defense agreement with Turkey.

Indian and Soviet governments signed at New Delhi an agreement for the construction in India of an iron and steel plant with an initial capacity of 1,000,000 tons.

3 Communist China rejected a UN invitation to send representatives to the UN Security council to discuss hostilities off the Chinese mainland.

U.S. commerce dept. reported that personal income before and after taxes had reached the record totals of \$286,500,000,000 and \$254,000,000,000, respectively, in 1954.

Prague radio announced that Czechoslovakia had ended the state of war with Germany.

Allied high commission in Germany published a law providing for the completion of allied plans for the deconcentration of I. G. Farben and the termination of active allied control of the property.

4 Pakistan's decision to become a republic but remain within the Commonwealth of Nations was announced at the conference of commonwealth prime ministers in London.

5 Premier Pierre Mendès-France of France and his cabinet resigned after the national assembly voted, 319 to 273, against his North African policy.

U.S. jet fighters shot down 2 of 8 attacking Communist jets over the Yellow sea between Communist China and Korea.

U.S. state dept. announced that the U.S. 7th fleet had been ordered to assist the Chinese Nationalists in the evacuation of the Tachen Islands.

6 Vice-Pres. and Mrs. Richard M. Nixon left Washington, D.C., by plane for a four-week good-will tour of the Caribbean.

Pres. Eisenhower in a letter to state governors urged that all states enact laws to give servicemen overseas effective opportunities to vote.

7 International committee of the Red Cross announced the election of Prof. Leopold Boissier of Switzerland as president, effective Sept. 1, 1955.

Soviet supreme council approved a 1955 budget estimating revenue at 590,192,000,000 rubles (\$147,548,000,000) and expenditure at 563,482,000,000 rubles (\$140,870,500,000).

8 Georgi M. Malenkov resigned as Soviet premier; on the nomination of Nikita S. Khrushchev, first secy. of the Soviet Communist party, Marshal Nikolai A. Bulganin was unanimously elected to succeed him by the supreme council.

Pres. Eisenhower proposed to congress a three-year \$7,000,000,000 emergency federal-state-local school construction program.

Pakistan announced the confiscation of 1,100,000 ac. of land from 124 wealthy families.

9 Marshal Georgi K. Zhukov was appointed Soviet minister of defense.

American Federation of Labor and the Congress of Industrial Organizations made public an agreement setting forth the details for their merger.

Senate consented, by vote of 64 to 6, to the ratification by the U.S. of the mutual defense treaty with Nationalist China.

Green H. Hackworth of the U.S. was elected president of the

International Court of Justice in succession to Sir Arnold McNair.

Chief court of Sind, Pakistan, held to be illegal the action of the governor general in dissolving the Pakistani constituent assembly.

10 British house of commons rejected, by vote of 245 to 214, a motion for the suspension of the death penalty for a five-year trial period.

11 U.S. state dept. announced that the evacuation of the Chinese Nationalists from the Tachen Islands had been completed.

12 U.S. Atomic Energy commission announced the sale to India of ten tons of heavy water for use in research on peaceful applications of atomic energy.

Lt. Gen. John W. O'Daniel, chief of the U.S. military mission, assumed charge of the organization and training of the south Vietnamese army.

Soviet government made public its plan for a ten-power non-UN conference on Formosa from which Nationalist China would be excluded.

13 Commission on the Organization of the Executive Branch of the Government headed by former Pres. Herbert C. Hoover recommended a sweeping federal employment program to attract and hold more high-calibre workers.

New Syrian cabinet was formed by Sabri el-Assali in succession to that of Faris el-Khuri.

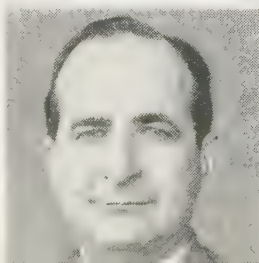
14 UN Security council suspended its efforts to halt the fighting between Nationalist and Communist China over small islands off the Chinese mainland.

15 Rumanian legation at Berne, Switz., was seized by six Rumanian anti-Communists.

U.S. Atomic Energy commission revealed that the hydrogen bomb tested by the U.S. in the Pacific in 1954 had polluted an area of 7,000 sq. mi. with radioactive materials.

The pictures on this page are left to right:

RAYBURN.....Jan.
FIGUERES.....Jan. 1
ESPINOSA.....Jan. 1
HUGHES.....Jan. 2
NASSER.....Feb.



FEBRUARY—Continued

16 General Electric Co. disclosed that its scientists had created artificial diamonds of industrial quality.

Gen. Nathan F. Twining, U.S. air force chief of staff, stated that the Chinese Communist air force was surpassed only by the air forces of the U.S.S.R., the U.S. and Britain.

17 Republican national committee voted to hold a streamlined four-day national convention in San Francisco, Calif., beginning Aug. 20, 1956.

British government announced that it had the ability to produce the hydrogen bomb and would do so.

Sir Godfrey Huggins, prime minister of the federation of Rhodesia and Nyasaland, was created a viscount by Queen Elizabeth II upon completing a record period of service (21 years, 165 days) as a common-wealth prime minister.

18 U.S. Atomic Energy commission began a new series of atomic tests, termed Operation "Teapot," at its proving grounds in Nevada.

Sen. Wayne L. Morse of Oregon, who had resigned from the Republican party in 1952 and since sat as an independent, registered as a member of the Democratic party.

Chilean naval base in Deception Island in the British Falkland Island dependencies, was officially inaugurated by Defense Minister Tobias Barros.

Pres. Celal Bayar of Turkey arrived in Karachi, Pakistan, on an official visit.

19 Southeast Asia Collective Defense treaty came into force with the deposit of ratifications at Manila by the eight signatory nations.

French national assembly refused, by vote of 312 to 268, to approve a new cabinet headed by Socialist Christian Pineau.

The pictures on this page are, left to right:

KHRUSHCHEV.....Feb. 8
BEN-GURION.....Feb. 21
HARLAN.....March 16
BYRD.....March 28
KELLY.....March 30

20 Chinese Communist government announced that it was increasing the face value of its currency 10,000 times.

Eric A. Johnston, special U.S. envoy to the middle east, opened negotiations at Jerusalem on the U.S.-sponsored plan to develop Jordan and Yarmak river resources to benefit jointly the states of Israel, Jordan, Lebanon and Syria.

21 Communist forces in Korea were accused at a meeting of the military armistice commission of illegally bringing MIG jet fighters into North Korea.

David Ben-Gurion, premier of Israel from 1948 to 1953, rejoined the Israeli cabinet as defense minister.

22 Pres. Eisenhower submitted to congress a ten-year federal-state-local highway construction program which would cost a total of \$101,000,000,000.

23 French national assembly voted, 369 to 210, to confirm Radical leader Edgar Faure as premier.

Democratic proposals for a federal income tax reduction of \$20 a person were denounced as highly irresponsible by Pres. Eisenhower.

Council of the Southeast Asia Treaty organization opened its first meeting at Bangkok, Thailand.

Pres. Eisenhower stated that the U.S. would stop the testing of atomic weapons only under a workable disarmament agreement with effective international inspection.

24 Bank of England raised its rates on loans to banks from 3½% to 4½% as an anti-inflation measure.

Mutual security treaty between Turkey and Iraq was signed at Baghdad.

U.S. court of appeals at Washington, D.C., held invalid a regulation of the Federal communications commission limiting to five the number of television stations which a single individual or corporation could own or control.

Council of the Organization of American States requested Costa Rica and Nicaragua to set up a peace commission to settle their future disputes.

25 Chinese Nationalist government disclosed the evacuation and abandonment of the Nanki Island group.

House of representatives approved a bill deferring corporation and excise tax reductions from April 1, 1955, to April 1, 1956, and containing a provision for a flat \$20 per person income tax reduction.

Subcommittee of UN disarmament commission opened a conference at London on disarmament and atomic control questions.

26 U.S. Secy. of State Dulles conferred at Rangoon with Burmese Premier U Nu on Southeast Asia Treaty organization developments.

Prof. Cecil F. Powell, British physicist and Nobel prize winner, estimated that the U.S. had 4,000 atomic bombs and the U.S.S.R. 1,000.

27 West German bundestag approved the Paris agreements providing, among other things, for the termination of the allied occupation and the admission of western Germany to NATO and the projected western European union.

28 Egyptian and Israeli forces fought a serious engagement in the Gaza area.

Permanent council of the Greece-Turkey-Yugoslavia treaty organization held its first meeting at Ankara, Turkey.

MARCH

House of representatives passed by vote of 223 to 113 a compromise bill approved by the senate increasing the salaries of congressmen and federal judges by an average of 50%.

Bruno Pontecorvo, British atomic scientist who disappeared in 1950, revealed that he had been working in the U.S.S.R. since his disappearance.

George W. Perkins was nominated by Pres. Eisenhower to be permanent U.S. representative on the council of NATO.

2 Norodom Sihanouk, king of the Indo-Chinese state of Cambodia, abdicated in favour of his father, Prince Suramarit.

U.S. post office dept. began withholding delivery to private U.S. subscribers of *Pravda* and

Izvestia, the leading soviet newspapers.

Soviet government ordered the expulsion of the Rev. Georges Bissonnette, a U.S. Roman Catholic priest stationed in Moscow.

3 Arkady A. Sobolev was named to succeed Andrei Y. Vishinsky, deceased, as chief Soviet delegate to the UN.

G. Keith Funston, president of the New York Stock exchange, told the senate banking and currency committee at the opening of its investigation of the stock market that he was not alarmed by recent stock market advances.

Haiti and the U.S. signed a treaty of friendship, commerce and navigation at Port-au-Prince.

U.S. state dept. announced that it had proposed to Sweden and Switzerland that the neutral nations supervisory commission in Korea be abolished because of the obstructionist tactics of the other members (Czechoslovakia and Poland).

4 UN Security council urged Egypt and Israel to avoid further violence.

Central committee of the Hungarian communist party passed a resolution severely criticizing Premier Imre Nagy.

5 Pres. Eisenhower named Gen. of the Army Omar N. Bradley (ret.) as head of a seven-man commission to survey the problem of veterans' pensions.

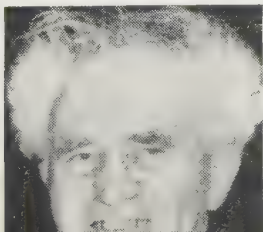
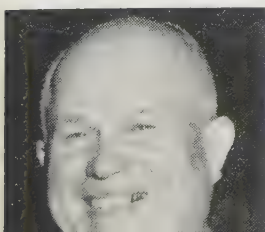
U.S. Atty. Gen. Herbert Brownell, Jr., made public revised procedures for the administration of the federal employee security program.

6 Egypt, Saudi Arabia and Syria announced agreement on measures to strengthen the Arab structure politically, militarily and economically.

Ford foundation disclosed the appropriation of \$50,000,000 to increase the salaries of faculty members of private U.S. colleges and universities.

7 Gen. Maxwell D. Taylor was appointed U.S. commander in chief in the far east and head of the UN far east command.

U.S. supreme court held, 4 to 3, that a foreign government which sued in a U.S. court could



MARCH—Continued

not use the legal immunity of a sovereign to shield it from counterclaims of U.S. citizens.

Albanian news agency announced the rejection by Albania of a U.S. offer of surplus food.

8 Secy. of State Dulles stated in a nationwide address that the U.S. defense of Formosa was not necessarily confined to the static defense of Formosa and the Pescadores islands alone.

Pres. Eisenhower named Dillon Anderson of Texas to be his special assistant for national security affairs.

9 U.S. Foreign Operations administration announced approval of a \$100,000,000 program of economic and technical aid to Cambodia, Laos and south Vietnam in the fiscal year ending June 30, 1955.

10 Pres. Eisenhower affirmed the intention of the U.S. to continue its efforts in the defense and development of western Europe, if the 1954 Paris agreements on Germany were ratified.

Soviet government and communist party issued a decree giving collective farm leaders more authority to decide local agricultural policy.

U.S. Export-Import bank extended a credit of \$60,000,000 to Argentina to buy equipment in the U.S. for a new steel mill.

U.S. state dept. authorized the issuance of visas to 11 soviet student and youth newspaper editors to visit the U.S.

11 Italian senate completed parliamentary action on a bill approving ratification of the 1954 Paris agreements on western Germany.

Gen. Lyman L. Lemnitzer was nominated to be commander of the U.S. 8th army and of U.S. army forces in the far east.

12 Creation was announced of a preparatory committee headed by the dalai lama for establishing an expanded Tibetan autonomous region within the national framework of Communist China.

13 U.S. Foreign Operations administration revealed that the U.S. was turning over an additional \$48,000,000 to Nationalist China to aid in the defense of Formosa.

Hoover commission urged a sharp curtailment of federal lending services in favor of private interests.

John E. Peurifoy, U.S. ambassador to Thailand, was named U.S. representative on the South-

east Asia Defense Treaty council.

14 Nepalese Crown Prince Mahendra Bir Bikram Shah Dev was proclaimed king of Nepal following the death of his father, King Tribhuvana.

15 Senate rejected Democratic proposals for a reduction in individual federal income taxes.

International Bank for Reconstruction and Development announced a loan of \$24,000,000 to the East African High commission to help finance a modernization and development program for railways, harbours and road transport facilities in Kenya, Tanganyika and Uganda.

16 Secret record of the Yalta and Malta conferences in 1945 was made public by the U.S. government.

Pres. Eisenhower indicated at a press conference that the U.S. would use tactical atomic weapons in the event of war.

Aneurin Bevan was ordered expelled from the British parliamentary Labour party by vote of 141 to 112, on charges of disloyalty to Clement R. Attlee, the party leader.

Senate confirmed by vote of 71 to 11 the nomination of John M. Harlan to be an associate justice of the U.S. supreme court.

Pres. Eisenhower nominated Allen Whitfield of Iowa as a member of the U.S. Atomic Energy commission.

17 U.S. Surgeon General Leonard A. Scheele revealed that the U.S. death rate had averaged a record low of 9.2 per 1,000 population in 1954.

18 Pres. Eisenhower asked congress for an emergency appropriation of \$12,000,000 to develop plans to meet a hydrogen bomb attack.

Ichiro Hatoyama was re-elected premier of Japan by vote of 254 to 160 of the Japanese diet.

West German bundesrat approved ratification of the 1954 Paris agreements on western Germany, thereby completing the necessary German parliamentary action.

International Bank for Reconstruction and Development announced a loan of \$54,500,000 to Australia to finance imports of equipment for the development of agriculture, transportation, electric power and industry.

19 Pres. Eisenhower named Foreign Operations Administrator Harold E. Stassen to the newly created post of special assistant on disarmament problems, with cabinet rank.

20 French national assembly approved by vote of 392 to 211 a 1955 budget of 3,090,500,000,000 fr. (\$8,800,000,000).

21 Soviet foreign ministry announced agreement by the U.S.S.R. and seven east European states on the details of a unified military command to be created if western Germany were re-armed.

Pakistani federal court overruled the decision of a provincial court that Gov. Gen. Ghulam Mohammed had exceeded his powers in dissolving the constituent assembly.

22 U.S. commerce dept. reported that the incomes of 41% of U.S. families had totalled at least \$5,000 in 1953.

23 House of representatives adopted by voice vote a code of fair practices for house investigations.

Egypt was asked by Abba Eban, Israeli delegate to the UN, to renounce useless hostility and join Israel in a code for peace in the middle east.

24 Turkey began construction of its first hydroelectric project, the Demirkopru dam near Izmir; it was scheduled to be completed in 1958.

Iraq and the Iraq Petroleum company and associated companies concluded an amended agreement changing the formula in their 1951 agreement for calculating oil prices.

25 Communist China announced that six more of its divisions were being withdrawn from North Korea.

Conference committee of the senate and house of representatives removed from the bill extending corporate and excise tax rates a provision in the house-approved version for an income tax reduction of \$20 a person.

26 U.S. won the unofficial national team championship in the Pan-American games which closed at Mexico City, Mex.

Pakistani cabinet approved plans for the merger into a single province of the four provinces and ten princely states of western Pakistan.

27 French senate completed parliamentary ratification of the 1954 Paris agreements on western Germany.

Italian Premier Mario Scelba and Foreign Minister Gaetano Martino arrived at Washington, D.C., for a 12-day goodwill visit to the U.S.

New state of emergency was proclaimed by Pakistani Gov. Gen. Ghulam Mohammed, who assumed supreme power.

28 White house announced the designation of Rear Adm. Richard E. Byrd to lead a U.S. expedition to the antarctic in connection with the International Geophysical year (1957-58).

29 UN Security council unanimously condemned Israel for an attack on Egyptian forces in the Gaza area.

30 Defense Secy. Charles E. Wilson issued orders imposing severe limitations on speeches and published material of military personnel and requiring replacement of military public information directors by civilians.

Motion picture "On the Waterfront" received the award of the Academy of Motion Picture Arts and Sciences as the best picture of 1954; awards for best starring performances went to Marlon Brando and Grace Kelly.

National executive committee of British Labour party upheld the expulsion of Aneurin Bevan but permitted him to remain a member of the party after accepting an apology from him.

UN Security council called upon Egypt and Israel to cooperate in reducing border tension.

Pres. Eisenhower signed a bill extending to April 1, 1956, corporate and excise tax rates at existing levels.

31 Armed forces of the Cao Dai religious sect formally joined the national army of south Vietnam.

Pres. Eisenhower signed a bill providing for an increase of \$745,000,000 a year in military pay and allowances.

APRIL

1 Senate consented by vote of 76 to 2 to the ratification by the U.S. of the 1954 Paris agreements on western Germany.

U.S., British and French high commissioners in Germany protested the action of the east German government in imposing an 11-fold increase in road tolls into western Berlin.

India and Communist China signed a protocol at Lhasa, Tibet, transferring to China the postal, telegraph and public telephone services in Tibet operated by India.

West German Lufthansa air line began regular passenger service on internal German routes.

2 U.S. state dept. announced the lifting of a ban on the departure from the U.S. of 76 Chinese students.

Council for Financial Aid to

APRIL—Continued

Education reported that a nationwide survey had revealed that half the colleges in the U.S. were operating at a deficit.

3 Hoover commission proposed a series of reforms which it said would save \$151,000,000 a year in government transportation activities.

4 Israel requested an urgent meeting of the UN Security Council to consider new charges against Egypt.

Adm. Arthur W. Radford, chairman of the U.S. joint chiefs of staff, told a senate subcommittee that a reduction in the manpower of U.S. armed forces was possible because atomic weapons had become conventional.

Representatives of Britain, Egypt and the UN signed an agreement for technical assistance to the Sudan.

Britain and Iraq signed in Baghdad a new agreement for defense co-operation to replace the treaty of alliance of 1930.

5 Sir Winston Churchill resigned as prime minister of the United Kingdom.

Union of South Africa announced its decision to withdraw from the UN Educational, Scientific and Cultural organization because of its alleged interference in South African racial problems.

U.S., Britain and France jointly cautioned the U.S.S.R. and Austria against bilateral commitments on the proposed Austrian state treaty.

Sen. Harley M. Kilgore (Dem., Va.), chairman of the senate judiciary committee, announced that a subcommittee of his committee would make a full-scale investigation of monopoly and antitrust practices.

Attempt to overthrow the Imam Ahmad, ruler of the Arabian kingdom of Yemen, was reported to have failed.

6 Unicameral Luxembourg parliament approved the 1954 Paris agreements on western Germany, by vote of 48 to 3, as did the Belgian senate, by vote of 142 to 2.

Queen Elizabeth II of the United Kingdom named Sir Anthony Eden to succeed Sir Winston Churchill as prime minister.

Treaty of friendship between Egypt and India was signed at Cairo, Egypt.

Atomic guided missile designed for use against aircraft was launched from a B-36 plane over the atomic proving grounds

in Nevada, at a height of about 40,000 ft.

7 Hussein Ala was named to succeed Gen. Fazlollah Zahedi, resigned, as premier of Iran.

British Prime Minister Eden announced the designation of Defense Minister Harold Macmillan to succeed him as foreign secy.; Selwyn Lloyd replaced Macmillan as defense minister and the earl of Home replaced Viscount Swinton as commonwealth relations secy.

8 Secy. of State Dulles notified Edward J. Corsi that his assignment as special asst. on refugee and immigration problems would be ended.

9 Soviet government in notes to Britain and France stated that the Soviet supreme council was being asked to annul the Soviet treaties of alliance with those two countries.

Pres. Eisenhower ordered the formation of a Civil Defense Coordinating board headed by Civil Defense Administrator Val Peterson to co-ordinate the civil defense activities of federal agencies.

10 Hoover commission recommended the creation of a U.S. administrative court to handle the judicial phases of tax, labour and trade regulation matters.

South Vietnam Premier Ngo Dinh Diem established a civil guard to replace the police and security forces, which were controlled by rebellious religious sects.

11 U.S. supreme court, by vote of 5 to 3, held to be invalid the divorce law of the Virgin Islands, which permitted divorces after six weeks' residence.

India in a note to Portugal complained of mass arrests, detention without trial and ill-treatment of nonviolent persons seeking the transfer to India of the Portuguese enclave of Goa.

12 Antipoliomyelitis vaccine developed by Jonas E. Salk was revealed to be effective against paralytic polio upon the basis of field trials in 44 states.

East German government announced the arrest by security police of 521 agents alleged to be working for the U.S. and British secret services.

13 Pres. Eisenhower approved a draft of agreement between the North Atlantic Treaty powers providing for the sharing of information on atomic weapons.

French Premier Faure announced that France would limit atomic research to the civil uses of atomic energy.

14 U.S. supreme court closed oral arguments on proposals to implement its decision barring segregation in public schools.

Argentine government suspended the teaching of Roman Catholic religion and morals in all government-supported schools.

Mexico and the U.S. signed an agreement at Mexico City designed to reduce the illegal entry of Mexican workers into the U.S. and to improve arrangements for their temporary employment there.

15 International Bank for Reconstruction and Development submitted to its 56 members a draft charter for the proposed International Finance Corp. to aid in the building of industries in underdeveloped countries.

Austria and the U.S.S.R. reached an understanding in a conference at Moscow on the disputed points of the proposed Austrian state treaty.

U.S. Atomic Energy commission reported to congress that comprehensive investigations had failed to show any harmful effects from atomic tests in Nevada.

Pakistani Gov. Gen. Ghulam Mohammed issued an order summoning a constituent assembly to draw up a constitution for Pakistan.

16 Soviet foreign ministry condemned western-sponsored alliances in the near and middle east as a threat to Soviet security.

Pres. Eisenhower directed the establishment within the state dept. of a semiautonomous International Co-operation administration to administer a long-range foreign economic aid program.

17 Hoover commission asserted that billions of dollars could be saved through more efficient disposal of federal surplus property.

International Bank for Reconstruction and Development submitted to the Syrian government a report recommending a five-year development program costing \$530,000,000.

18 Andras Hegedus was elected to replace Imre Nagy as premier of Hungary.

Indonesia Pres. Achmed Sukarno opened a conference of 29 Asian and African states at Bandung, Indonesia.

19 Argentina and Uruguay resumed diplomatic relations, broken off since 1953.

British Chancellor of the Ex-

chequer R. A. Butler presented to the house of commons a budget for the fiscal year beginning April 1, 1955, which estimated revenue at £4,710,150,000 and expenditure at £4,561,875,000.

20 Pres. Eisenhower in a special message to congress requested authorization of \$3,530,000,000 for foreign military and economic aid in the fiscal year ending June 30, 1956.

National guard forces throughout the U.S. and in Hawaii, Alaska and Puerto Rico were mobilized in a surprise alert.

21 U.S. government announced that the U.S.S.R. had agreed to return to the U.S. an additional 62 small naval vessels obtained under lend-lease during World War II.

22 Federal reserve board increased stock margin requirements from 60% to 70%.

French and Tunisian representatives signed at Paris a protocol outlining the terms on which Tunisia would be given internal autonomy.

British war office announced the appointment of Gen. Sir Gerald Templer as chief of the imperial general staff effective in Nov. 1955.

Louis E. Wolfson conceded at the annual meeting of the shareholders of Montgomery Ward & Co. in Chicago that he had failed to win control of the company in a bitter proxy fight.

Chinese Communist Premier Chou En-lai and Indonesian Foreign Minister Sunario signed an agreement at Bandung on the question of the dual nationality of overseas Chinese resident in Indonesia.

23 Chinese Communist Premier Chou En-lai in a press statement at Bandung said that his government was willing to negotiate directly with the U.S. on the relaxation of tension in the far east, particularly Formosa.

24 Hoover commission reported that more efficient management could produce a saving of \$340,000,000 a year in federal food and clothing purchases.

25 Pres. Eisenhower announced plans for an atomic-powered merchant ship to tour the world in the interest of peace.

John Edgar Hoover, director of the Federal Bureau of Investigation, reported that more major crimes had been recorded in the U.S. during 1954 than in any other year.

Argentine government signed an agreement with the Standard

APRIL—Continued

Oil Co. (Calif.) providing for the exploitation of petroleum deposits in southern Patagonia.

26 Egyptian and Israeli forces exchanged artillery fire for three hours south of Gaza.

27 U.S. public health service ordered the temporary withdrawal from use of Salk antipoliomyelitis vaccine produced by Cutter Laboratories of Berkeley, Calif.

The U.S. and the Philippines signed an agreement in Manila providing for U.S. aid in equipping and training a new Philippine army division.

28 James B. Conant, U.S. high commissioner in Germany, was nominated to be the first U.S. ambassador to the German Federal Republic.

Bitter street fighting broke out in Saigon between south Vietnam government forces and the Bin-Xuyen and Hoa-Hao dissident religious sects.

29 Malayan government declared two large areas in Pahang and Trengganu to be free of terrorists.

Christian Democrat Giovanni Gronchi was elected to succeed Luigi Einaudi as president of Italy at a joint session of the Italian parliament.

30 John B. Hollister of Ohio was named by Pres. Eisenhower to head the International Co-operation administration, successor agency to the Foreign Operations administration.

University of California announced the discovery of a new chemical element, No. 101, named mendelevium.

South Vietnam revolutionary committee formed from various political groups adopted a resolution declaring chief of state Bao Dai to be deposed.

MAY

Premier Ngo Dinh Diem was reported to be in control of south Vietnam's army after a struggle with supporters of chief of state Bao Dai.

West German Chancellor Adenauer and French Foreign Minister Antoine Pinay in a joint statement after a two-

day conference announced that they had reached agreement on all points, including the Saar.

2 Leaders of the American Federation of Labor and the Congress of Industrial Organizations agreed upon a constitution to govern their combined organizations.

Columbia university announced the award of the 1954 Pulitzer prizes, including one to Tennessee Williams for his play *Cat on a Hot Tin Roof* and one to William Faulkner for his work *A Fable*.

British air base at Habbaniya, Iraq, was transferred to Iraqi command in accordance with the new Anglo-Iraqi agreement.

Pres. Eisenhower presented the Legion of Merit to Field Marshal Luang Pibul Songgram, premier of Thailand, for service to the UN and the cause of freedom.

International Bank for Reconstruction and Development reported that it had granted loans totalling \$2,214,358,464 between 1947 and March 31, 1955.

3 French Foreign Minister Pinay and Saar Chief Minister Johannes Hoffmann signed a revised economic convention on the Saar.

Venezuela announced its decision to withdraw from the International Labour organization.

4 Group of private Japanese businessmen signed a \$168,000,000 trade pact with official representatives of Communist China.

5 Federal republic of Germany became a sovereign state with the deposit by France and Britain of instruments of ratification of the 1954 Paris agreements.

Nuclear explosion atop a 500-ft. tower battered but did not destroy a model community built at the atomic proving grounds in Nevada.

Kabul radio announced that the Afghan government had ordered general mobilization as a precaution against attack by Pakistan.

Chilean government rejected a British proposal to submit the question of sovereignty over antarctic territories to the International Court of Justice.

6 U.S. Surgeon General Scheele stated that federal clearances of Salk antipoliomyelitis vaccine had been temporarily halted.

7 Council of the Western European union met in formal session for the first time at Paris.

Presidium of the Soviet supreme council approved the abrogation of Soviet friendship treaties with Britain and France.

Ford foundation announced the allocation of \$15,000,000 for grants for research on the prevention, cause and cure of mental illness.

8 U.S. Surgeon General Scheele announced the recommendation of the U.S. public health service that the use of Salk antipoliomyelitis vaccine be suspended until all current supplies were retested for safety.

9 German Federal Republic was formally admitted to NATO as its 15th member at a meeting of the north Atlantic council in Paris.

Pres. Eisenhower signed an executive order transferring the activities of the Foreign Operations administration to the state and defense depts.

Canadian Trades & Labour congress and Canadian Congress of Labour agreed through a unity committee on the details of their merger plan.

10 U.S., Britain and France in identical notes to the U.S.S.R. proposed a conference of heads of state accompanied by their foreign ministers.

U.S. far east air forces announced that U.S. jet fighters had shot down two Communist jets after being attacked over international waters off North Korea.

11 Western European Union council agreed to oversee the administration of the Saar under a Franco-German compromise agreement.

Pres. Eisenhower nominated Andrew D. Orrick to succeed Ralph Demmler, resigned, as a member of the U.S. Securities & Exchange commission.

Argentine government announced rejection of a British proposal to submit the dispute over antarctic territories to the International Court of Justice.

12 Four persons were killed in severe rioting in the British colony of Singapore allegedly led by Communists.

Marshal Vasili D. Sokolovskii, chief of staff of the Soviet armed forces, was revealed to have sent friendly greetings and best wishes to Pres. Eisenhower on the 10th anniversary of the meeting of the soviet and U.S. armies on the Elbe river.

U.S. justice dept. filed a suit in New York, N.Y., charging the American Newspaper Publishers Assn. and five other groups with conspiring to monopolize newspaper and periodical advertising.

13 Gen. Maxwell D. Taylor was named to succeed Gen. Matthew B. Ridgway as U.S. army chief of staff; Gen. Lyman L. Lemnitzer was named to succeed Taylor as commander in chief of the U.S. far east command and of the UN command.

French Premier Faure stated that informal discussions with U.S. Secy. of State Dulles and British Foreign Secy. Macmillan had produced complete agreement on policy in Indochina.

14 U.S.S.R. and Albania, Bulgaria, Czechoslovakia, eastern Germany, Hungary, Poland and Rumania signed a mutual defense treaty at Warsaw; Marshal of the Soviet Union Ivan S. Koniev was named to head the unified military command.

Soviet Foreign Minister Molotov indicated Soviet acceptance of the invitation of the U.S., Britain and France to a conference of heads of government.

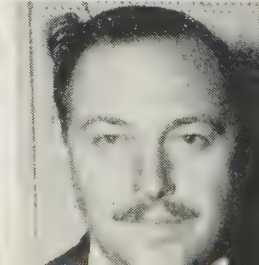
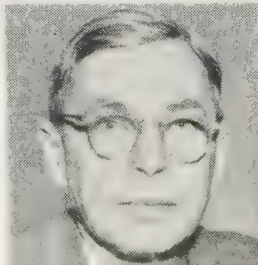
15 French forces completed the evacuation of the north Vietnam port of Haiphong.

Foreign ministers of the U.S., U.S.S.R., Britain and France signed a state treaty for Austria at Vienna.

U.S. Atomic Energy commission completed the 1955 series of atomic test explosions at the Nevada proving grounds; there was a total of 14 explosions in the series.

The pictures on this page are left to right:

MACMILLAN.....April
FAURE.....April
CONANT.....April
GRONCHI.....April
WILLIAMS.....May



MAY—Continued

16 King Baudouin of Belgium arrived in Leopoldville for a 27-day visit to the Belgian Congo.

17 U.S. government formally invited 10 soviet farm experts to visit Iowa and other farm states as official visitors.

U.S. Atomic Energy commission and the defense dept. announced that a small atomic underwater device had been successfully exploded in the eastern Pacific.

18 U.S. commerce dept. reported that U.S. residents had spent \$1,360,000,000 on foreign travel in 1954.

Pres. Eisenhower denied reports that the U.S.S.R. had overtaken the U.S. in air power.

19 French cabinet approved measures for increasing the strength of French armed forces in Algeria.

Pres. Eisenhower vetoed as unfair and too expensive a bill providing for an average salary increase of 8.8% for postal workers.

Federal Trade commission reported after a four-month study that business mergers were being consummated at three times the 1949 rate.

20 Kenya government announced the launching of intensified military operations against Mau Mau terrorists after the breakdown of negotiations for mass surrender.

Lester B. Pearson, Canadian secy. of state for external affairs, announced an agreement under which the U.S. would pay the full cost of the construction and operation of the distant early warning line of radar stations in the Canadian far north.

21 Israeli and Egyptian forces clashed near Kisufim in the disputed Gaza area.

23 General assembly of the Presbyterian Church in the

U.S.A. approved the ordination of women as Presbyterian ministers.

U.S. supreme court reversed convictions for contempt of congress of two witnesses who had invoked the first and fifth amendments and of a third who had invoked the fifth amendment in refusing to answer questions on Communism by the house un-American activities committee.

24 U.S. public health service pronounced safe all Salk antipoliomyelitis vaccine which had already been used or re-cleared except two lots produced by one manufacturer.

Senate sustained the veto by Pres. Eisenhower of the bill increasing the salaries of postal workers.

Peking radio announced that soviet authorities had completed the transfer of Port Arthur to Communist China in accordance with the 1954 Sino-Soviet agreement.

25 Sikh sect launched a new campaign for the formation of a Punjabi-speaking state in India.

Pres. Eisenhower nominated Rear Adm. Arleigh A. Burke to succeed Adm. Robert B. Carney as U.S. chief of naval operations, effective Aug. 17, 1955.

British expedition headed by Charles Evans was reported to have scaled Mt. Kanchenjunga (28,146 ft.) on the Nepal-Sikkim border, the highest unclimbed mountain in the world.

26 Soviet delegation headed by Communist Party Secy. Nikita S. Khrushchev and Premier Nikolai A. Bulganin arrived in Belgrade for conferences with Yugoslav Pres. Tito.

Senate banking and currency committee reported that its study of the stock market had disclosed an increase in unhealthy speculative activity since the fall of 1954.

Soviet government formally expressed its agreement with the proposal of the U.S., Britain and France for a conference of heads of government.

British Conservative party made important gains in parliamentary elections; Conservatives and associates won 345 seats, Labour party 277, Liberals 6 and Sinn Fein 2.

27 Pres. Eisenhower recommended that congress take speedy action to hasten the flow of deserving immigrants to the U.S.

Richard A. Mack of Florida was nominated to succeed Frieda B. Hennock as a member of the Federal Communications commission, effective June 30, 1955.

28 Three men—Laszlo Tabori of Hungary and Brian Hewson and Chris Chataway of Britain—ran the mile in less than four minutes for the first time at an international meet in London, Eng.

29 Law was promulgated to reform the Argentine constitution so as to allow the disestablishment of the Roman Catholic Church.

30 Said el-Mufti formed a new Jordanian cabinet to replace that of Tewfik Abulhuda.

31 U.S. supreme court in a unanimous decision directed the states to end racial segregation in public schools within a reasonable time.

Queen Elizabeth II of the United Kingdom proclaimed a state of emergency because of a nationwide railway strike.

Four U.S. jet pilots who had been held for more than two years were released by Communist China.

JUNE

René Mayer of France was elected to succeed Jean Monnet, also of France, as chairman of the high authority of the European Coal and Steel Community.

International Bank for Reconstruction and Development announced a loan of \$70,000,000 in various currencies for the development of Sicily and southern Italy.

U.S. state dept. revealed that representations had been made to Communist China for the release of 63 U.S. citizens still held in China.

2 U.S.S.R. and Yugoslavia issued a joint declaration of friendship and co-operation at Belgrade.

3 Conventions granting internal autonomy to Tunisia were signed in Paris by French Premier Faure and Tunisian

Premier Tahar ben Ammar.

Pakistani Prime Minister Mohammad Ali announced the restoration of parliamentary government in the province of East Pakistan.

4 Canadian Pacific Airlines inaugurated a new intercontinental service between Vancouver, B.C., and the Netherlands via the north pole and Greenland.

5 Hoover commission in a divided report recommended the continuation of U.S. aid to foreign countries.

6 Ford Motor Co. and the United Automobile Workers (C.I.O.) signed a three-year labour agreement providing cash benefits for laid-off workers and other contract improvements.

U.S. supreme court held, 7 to 2, that John P. Peters of Yale university had been wrongfully dismissed on loyalty grounds from his post as a U.S. government consultant.

7 Indian Prime Minister Nehru arrived in Moscow for a state visit to the Soviet Union.

Douglas Aircraft Co. announced that it had under construction a 500-m.p.h. jet transport plane which would be ready for service by 1959.

8 U.S. Atomic Energy commission was revealed to have informed congress that it was making rapid strides toward the development of an atomic-powered aeroplane.

9 U.S. public health service placed major blame for the breakdown of the mass antipolio inoculation program on the incompatibility of the original Salk formula with mass production methods.

British royal commission recommended major land reforms in Kenya, Tanganyika and Uganda and a pattern for future economic development.

U.S. government barred Rumanian officials in the U.S. from photographing airports, industrial centres and military installations.

10 Pres. Eisenhower approved a compromise bill giving an average salary increase of 8% to U.S. postal workers.

Lt. Gen. Isaac D. White was nominated by Pres. Eisenhower

The pictures on this page are, left to right:

PEARSON.....May 20
BURKE.....May 25
PIUS XII.....June 16
GRANDVAL.....June 20
BRUCKER.....June 22



JUNE—Continued

to be commander of the U.S. 8th army and of U.S. army forces in the far east.

11 Queen Elizabeth II at the request of the Union of South Africa government extended the term of Gov. Gen. Ernest G. Jansen for five years from Jan. 1, 1956.

Pres. Eisenhower in a speech at Pennsylvania State university stated that he would ask congress to authorize an expanded program of U.S. aid to other countries in establishing atomic reactors for peaceful research.

12 Austrian state treaty was ratified by the presidium of the Soviet supreme council.

13 West German Chancellor Adenauer arrived in Washington, D.C., for discussions with Pres. Eisenhower and Secy. of State Dulles.

Soviet Union in notes to the U.S., Britain and France accepted their suggestion that a conference of heads of government be held in Geneva, Switz., July 18-21, 1955.

General Motors Corp. and the United Automobile Workers (C.I.O.) signed a three-year labour agreement similar to that between the union and Ford Motor Co.

14 Moscow radio announced that the U.S.S.R. would supply atomic research equipment, scientists and technical information to Bulgaria and Hungary.

International Bank for Reconstruction and Development approved a loan to Austria of about \$10,000,000 in various currencies for the Lünsersee hydroelectric project at Vorarlberg.

15 Two Roman Catholic priests were deported to Rome, Italy, by the Argentine government.

U.S. civil defenses against hydrogen bomb warfare were tested in a simulated attack; Pres. Eisenhower signed a declaration of simulated state of national emergency at his secret headquarters.

Indonesia denied Dutch charges that 23 Dutch prisoners arrested for alleged subversive activity had been subjected to inhuman torture.

Britain and the U.S. signed agreements providing for co-operation in the civil use of atomic energy and in the use of atomic information for mutual defense purposes.

16 Pope Pius XII excommunicated all those who had vio-

lated the rights of the Roman Catholic Church in Argentina.

Heavy fighting developed between the south Vietnam national army and rebel Hoa-Hao forces on a wide front in western Cochinchina.

Senate approved by voice vote and sent to the White House a bill extending selective service to June 30, 1959.

17 Senate consented, by vote of 63 to 3, to the ratification by the U.S. of the Austrian state treaty.

Argentine Pres. Perón announced that a revolt against the government had been crushed, but proclaimed a state of siege.

Pres. Eisenhower in a nationwide broadcast at the close of the three-day hydrogen bomb alert appealed to the public to support the military reserve bill proposed by him.

18 Egyptian government rejected an Israeli proposal for a meeting of ambassadors or chiefs of staff to discuss measures to reduce tension in the Gaza area.

French foreign ministry announced the suspension of trade relations with Rumania as a reprisal against the continued imprisonment in Rumania of five French civilians.

19 Hoover commission recommended that the U.S. government adopt measures used by private business to control spending.

20 Pres. Eisenhower in an address at a conference in San Francisco, Calif., marking the 10th anniversary of the UN, asked for a new kind of peace with the atom as a productive servant.

French cabinet approved the appointment of Gilbert Grandval as French resident general in Morocco in succession to Francis Lacoste.

Pres. Eisenhower revealed the details of an agreement between the U.S. and Belgium under which both the U.S. and Britain would retain their options on the output of nuclear materials produced in the Belgian Congo.

21 Pres. Eisenhower signed a bill extending the Reciprocal Trade Agreements act to June 30, 1958.

22 Wilber M. Brucker of Michigan was nominated to succeed Robert T. Stevens, resigned, as army secy.

Soviet Foreign Minister Molotov in a speech at the UN session at San Francisco appealed to the people of the U.S. to join the Soviet people in preventing

a third world war.

Coalition government of Italian Premier Mario Scelba resigned after a dispute within the Christian Democratic party over land tenancy.

Indian Prime Minister Nehru and Soviet Premier Bulganin signed a joint declaration in Moscow affirming that Soviet-Indian relations rested on a firm foundation of friendship and mutual understanding.

23 Malayan government announced that it had rejected an offer by Communist terrorists to negotiate a cease-fire at a conference of all interested parties.

24 Pres. Eisenhower authorized the U.S. Atomic Energy commission to increase the allocation of enriched uranium to friendly nations from 100 to 200 kg. (440 lb.) of fissionable material.

White House announced that Soviet planes had shot down a U.S. naval patrol aircraft over international waters in the Bering strait area.

Queen Elizabeth II and the duke of Edinburgh arrived in Norway on a state visit.

Third interim report of the International Armistice Control commission stated that both north and south Vietnam had obstructed the transfer of refugees.

25 Soviet Foreign Minister Molotov expressed regret for the shooting down of a U.S. naval plane in the Bering strait area and expressed the willingness of the U.S.S.R. to pay one-half the damage.

26 Hoover commission urged the creation of a civilian-operated defense supply and service administration to supply the three U.S. armed services.

27 British government made a strong protest to Greece against recent broadcasts by the Athens radio inciting the inhabitants of Cyprus to revolt.

28 Pres. Eisenhower signed a bill giving more than 1,000,000 U.S. employees pay increases averaging 7.5%.

Hoover commission urged the reorganization of the Central Intelligence agency and made eight other specific recommendations to improve the U.S. intelligence system.

Council on Intergovernmental Relations submitted to Pres. Eisenhower a report urging a reduction in the overlapping of federal, state and local taxes.

U.S. Atty. Gen. Brownell announced that the U.S. was dropping its prosecution of Owen Latimore on charges of perjury.

Prince Musaid bin-Abdur Rahman of Saudi Arabia, a mediator in the dispute between Afghanistan and Pakistan, announced that his final proposals had been rejected by the Afghan government.

29 Premier U Nu of Burma arrived in Washington, D.C., for an official visit.

State of siege in Argentina was lifted by a decree of Pres. Perón.

Hoover commission rejected proposals to sell federal power facilities to private companies but urged congress to ban any further government construction of steam power plants or transmission lines.

30 West German government accepted a Soviet invitation to discuss the establishment of diplomatic, economic and cultural relations.

Both houses of congress approved a compromise bill appropriating \$31,882,815,726 for U.S. armed forces in the fiscal year beginning July 1, 1955.

The U.S. and western Germany signed at Bonn an agreement covering military aid to be furnished by the U.S. for the equipment of western German armed forces.

Pres. Eisenhower signed a bill authorizing for another 12 months an increase of \$6,000,000,000 in the public debt.

JULY

1 Pakistani Prime Minister Mohammad Ali confirmed Pakistan's decision to adhere to the defense agreement between Iraq and Turkey.

U.S. senate consented to the ratification by the U.S. of the revised treaty between the U.S. and Panamá regarding the Panamá canal.

A British cruiser arrived at Gdynia, Pol., in the first visit by a British naval vessel to a Communist-controlled port since the end of World War II.

2 Pres. Eisenhower and Burmese Premier U Nu in a joint statement affirmed their dedication to the ideal of peace and friendly co-operation among nations based on international justice and morality.

3 Egyptian shore batteries fired on the British vessel "Anshun" near Ras Muhammed at the southern end of the Sinai peninsula.

4 Britain was revealed to have agreed to transfer to South African control the royal navy base at Simonstown, Union of South Africa.

South Vietnam Premier Ngo

JULY—Continued

Dinh Diem announced complete victory over the rebel Hoa-Hao religious sect.

5 Board of directors of General Motors Corp. voted to split its 91,960,366 shares of common stock 3 for 1, subject to shareholder approval.

Argentine Pres. Perón in a radio speech absolved opposition parties of all blame for the June 16 revolt and asked for a political truce.

Peking radio announced that Communist China and the U.S.-S.R. had signed an agreement for the exchange of scientific and technical information.

Chinese Communist Vice Premier Li Fu-chun explained China's curtailed five-year plan at the second annual meeting of the national people's congress in Peking.

6 New Italian coalition cabinet headed by Christian Democrat Antonio Segni was sworn in by Pres. Giovanni Gronchi.

Senate unanimously consented to the ratification by the U.S. of four revised conventions signed at Geneva, Switz., in 1949 setting new standards of treatment for prisoners of war and civilian captives.

Polish and east German governments issued a joint statement declaring that the frontier between Poland and Germany had been definitely and irrevocably fixed on the Oder and Neisse rivers.

7 Civil aviation agreement between the U.S. and western Germany was signed at Washington, D.C.

Congress passed and sent to the White House a bill authorizing the appropriation of \$3,285,800,000 for foreign military and economic aid in the fiscal year beginning July 1, 1955.

U.S. state dept. accepted a soviet offer to pay one-half the damages for an attack on a U.S. navy patrol plane over the Bering sea.

8 Soviet Union informed the UN Economic and Social council of its intention to rejoin the World Health organization.

Peking radio broadcast a communiqué announcing that Communist China had agreed to a \$338,000,000 economic aid program for north Vietnam.

U.S. commerce and labour depts. announced that in June 1955 the number of persons employed in the U.S. had risen above 64,000,000 for the first

time.

9 Declaration signed by nine distinguished scientists, including Bertrand Russell and Albert Einstein, called upon mankind to renounce war and warned that hydrogen bomb warfare might result in the extermination of the human race.

10 Scores of persons were arrested by Argentine police after a resurgence of demonstrations against Pres. Perón.

British government announced plans to establish in 1957 a winter station on the inland antarctic ice sheet.

Three U.S. prisoners of war who chose communism at the end of the Korean war were returned from Communist China to U.S. control.

11 Britain was revealed to have sold two destroyers to Israel.

U.S. air force academy was opened in ceremonies at its temporary site at Lowry air force base near Denver, Colo.

Pres. Eisenhower announced the cancellation of the so-called Dixon-Yates private power contract.

Soviet Premier Bulganin reported to the central committee of the Soviet communist party that the fifth five-year plan had been fulfilled in May 1955, eight months ahead of schedule.

12 Pres. Ho Chi-minh of north Vietnam arrived in Moscow on a state visit.

Soviet government issued a statement calling for the step-by-step reunification of Germany within the framework of an all-European collective agreement.

13 Marion B. Folsom of New York was nominated by Pres. Eisenhower to succeed Mrs. Oveta Culp Hobby as secy. of health, education and welfare.

International Bank for Reconstruction and Development granted a loan of \$5,900,000 to Panamá to finance a highway rehabilitation program.

Britain and Malta concluded discussions at London on future constitutional and economic relationships.

14 Afghanistan became a member of the International Bank for Reconstruction and Development and the International Monetary fund.

Soviet government announced that Nikita S. Khrushchev, first secy. of the Soviet communist party, and Marshal Georgi K. Zhukov, Soviet defense minister, would attend the conference at Geneva, Switz., of U.S., British, French and Soviet government

leaders.

U.S. senate unanimously adopted a resolution expressing the hope that the Communist satellite nations of eastern Europe might soon regain the right of self-determination.

15 Pres. Perón informed Argentine congress that he had resigned as head of the Peronista party but would remain as chief of state.

Soviet Premier Bulganin, at the first press conference ever held by a head of the Soviet government, asserted that the U.S., Britain, France and the U.S.S.R. could and must resolve their differences at the forthcoming Geneva conference.

Four British destroyers arrived at Split, Yugos., to take part in the first combined exercises to be held with a Yugoslav squadron.

16 South Vietnam Premier Ngo Dinh Diem stated in a broadcast that his government was prepared to accept the principle of general elections in all Vietnam provided elections in north Vietnam were really free.

17 French gendarmerie used tanks in efforts to halt severe rioting in Casablanca, French Morocco.

18 Conference of the heads of government of the U.S., Britain, France and the U.S.S.R. opened at Geneva, Switz.

House of representatives passed by vote of 372 to 31 and sent to the senate a bill to liberalize federal social security benefits for women and disabled and self-employed persons.

Moscow radio announced at the conclusion of conferences between Pres. Ho Chi-minh of north Vietnam and soviet officials that the U.S.S.R. had agreed to provide 400,000,000 rubles in economic aid to north Vietnam.

19 Soviet Premier Bulganin at the Geneva conference asked for a delay in the unification of Germany.

20 U.S. treasury dept. revealed that the U.S. government incurred a deficit of \$4,192,000,000 in the fiscal year ended June 30, 1955.

Federal grand jury in Detroit, Mich., indicted the United Automobile Workers (C.I.O.) on charges of violating the Federal Corrupt Practices act in supporting Democratic candidates in the 1954 primary and general elections.

21 U.S.S. "Sea Wolf," second U.S. atomic-powered submarine, was launched at Groton, Conn.

Pres. Eisenhower proposed at the Geneva conference that the U.S.S.R. and the U.S. exchange complete blueprints of their military establishments and open each other's countries to unlimited aerial inspection by the other.

Senate investigations subcommittee opened hearings on allegations that Air Force Secy. Harold E. Talbott had improperly used his position for private business purposes.

22 Britain and western Germany signed a civil aviation agreement at London.

23 Indonesian Premier Ali Sastroamidjojo resigned after a dispute with army leaders.

Heads of government concluded their conference at Geneva, Switz., with a directive instructing their foreign ministers to meet in Geneva in Oct. 1955.

24 Soviet Premier Bulganin and Communist Party Secy. Khrushchev arrived in east Berlin on a visit to eastern Germany.

25 Pres. Eisenhower in a nation-wide radio and television broadcast stated that the Geneva conference showed that the whole world wanted peace.

Britain was revealed to have agreed to sell two destroyers to Egypt.

India ordered Portugal to close its legation at New Delhi because of Portugal's refusal to negotiate concerning the transfer to India of Portuguese India.

British Chancellor of the Exchequer R. A. Butler announced a new series of restrictions on credit designed to reduce domestic consumption and increase exports.

26 Senate passed by voice vote and sent to the White House a bill designed to increase the U.S. trained and ready military reserve from 800,000 to 2,900,000 men.

Representatives of the U.S., Britain and France in identical notes to south Vietnam Premier Ngo Dinh Diem recommended that he reply favourably to a Vietminh request for pre-electoral consultations.

27 British Prime Minister Eden announced that Soviet Premier Bulganin and Communist Party Secy. Khrushchev would visit Britain in the spring of 1956.

Yugoslav Pres. Tito declared that he would not permit U.S. supervision of military equipment granted to Yugoslavia under the U.S. aid program.

Austria formally regained its

JULY—Continued

sovereignty with the deposit by France of its instrument of ratification of the Austrian state treaty.

Senate gave final approval to a compromise bill to create a 12-member bipartisan committee on governmental security.

28 Bulgarian government admitted the shooting down of an Israeli passenger aircraft the day before.

Both houses of congress approved a compromise bill appropriating \$2,703,341,750 for foreign military and economic aid in the fiscal year beginning July 1, 1955.

29 White House announced a U.S. plan to launch small unmanned earth-circling satellites as part of U.S. participation in the International Geophysical year (1957-58).

30 Both houses of congress approved a compromise bill raising the federal minimum wage from 75 cents an hour to \$1.

International Bank for Reconstruction and Development made a loan of \$18,200,000 to Guatemala for road development.

31 Pakistani government reduced the value of the Pakistani rupee by one-third.

AUGUST

1 Pres. Eisenhower accepted the resignation of Air Force Secy. Harold E. Talbott.

Chinese Communist government announced its decision to release 11 imprisoned U.S. airmen.

Railway was opened connecting southern Rhodesia with the Mozambique port of Lourenço Marques.

Nepal and Communist China signed an agreement at Kathmandu, Nepal, establishing normal diplomatic relations.

2 House of representatives, by vote of 187 to 168, gave final congressional approval to a bill authorizing 45,000 new public housing units before July 31, 1956.

3 1st session of the 84th congress adjourned sine die,

with the senate following the house of representatives into adjournment at 12:05 a.m., E.D.S.T.

Bulgarian government admitted that the Israeli aircraft shot down over Bulgarian territory had been fired upon by Bulgarian fighter planes.

Federal reserve board raised the discount rates of the Atlanta, Boston and Chicago federal reserve banks to 2% and that of Cleveland to 2¼% as an anti-inflation measure.

U.S. Export-Import bank granted a credit of \$60,000,000 to finance Japanese purchase of U.S. cotton.

4 Soviet Premier Bulganin stated that he doubted the workability of Pres. Eisenhower's proposal for the mutual inspection of the military establishments of the U.S.S.R. and the U.S.

U.S. Atomic Energy commission announced that the U.S.S.R. had resumed the testing of nuclear weapons.

Federal Power commission granted a 50-year licence to the Idaho Power company to build and operate three low hydroelectric dams in the Hell's canyon area of the Snake river.

11 U.S. airmen released by the Chinese Communist government arrived in Hong Kong from Peking, China.

Soviet government announced that it would enter the 1956 Olympic games at Melbourne, Austr., even though it had broken off diplomatic relations with Australia in 1954.

5 Maj. Gen. Iskander Mirza was appointed acting governor general of Pakistan by Queen Elizabeth II.

6 South Korean government demanded that the neutral nations supervisory commission leave South Korea within a week.

7 Top soviet leaders gave a lawn party for the Moscow diplomatic and press corps at an estate near Moscow.

Pakistani Prime Minister Mohammad Ali resigned after losing the leadership of the Moslem league to Finance Minister Chaudry Mohammed Ali.

U.N. Secy. Gen. Dag Hammarskjöld in his annual report

to the UN general assembly stated that the world might be approaching an era of lessened international tension in which the UN would play a greater role.

8 International Conference on the Peaceful Uses of Atomic Energy opened at Geneva, Switz., with representatives of 72 nations, including the U.S.S.R., in attendance.

9 Pres. Eisenhower approved the Reserve Forces act of 1955 but stated that it fell short of the reserve program which he had requested of congress.

Commerce Secy. Sinclair Weeks and Labor Secy. James P. Mitchell in a joint report stated that U.S. employment in July 1955 had reached the record total of 64,995,000.

10 South Vietnamese Premier Ngo Dinh Diem rejected an offer from north Vietnam to discuss general elections to reunite Vietnam.

France and Libya signed a treaty of friendship and a political agreement providing for the evacuation of French troops from the Fezzan area.

11 Chaudry Mohammed Ali was sworn in as prime minister of Pakistan.

Pres. Eisenhower appointed Asst. Defense Secy. Donald A. Quarles of New Jersey to succeed Harold E. Talbott as air force secy.

New Indonesian coalition cabinet was formed by Burhanuddin Harahap of the Moslem Masjumi party.

Chairman Lewis L. Strauss of the U.S. Atomic Energy commission disclosed that the U.S. had been working for some time on the problem of controlling the power released by the hydrogen bomb and putting it to peaceful use.

12 Pres. Eisenhower signed a bill increasing the federal minimum wage from 75 cents an hour to \$1.

Rumanian Premier Gheorghe Gheorghiu-Dej announced that soviet troops would remain in Rumania until U.S. forces left Europe and the western military alliance was dissolved.

13 Members of the underground Irish Republican army raided a British army

depot at Arborfield, Eng.

Soviet government announced that it would reduce its armed forces by 640,000 men as a result of the relaxation in international tension.

14 Portuguese troops were reported to have fired upon a group of Indian demonstrators near the border between Goa and India.

15 Iran and the U.S. signed a treaty of friendship, economic relations and consular rights at Tehran.

North Korea urged the calling of two conferences to discuss the unification of Korea, one between North and South Korea and the other a far eastern conference with broad participation of Asian countries.

16 Sudanese parliament unanimously approved a resolution calling for the evacuation of British and Egyptian troops from the Sudan within 90 days.

17 Adm. Arleigh A. Burke took office as U.S. chief of naval operations.

Pres. Eisenhower signed an executive order promulgating a definitive code of conduct for U.S. armed services personnel while prisoners of war.

18 UN command protested the shooting down of an unarmed U.S. training plane in the Korean demilitarized zone by Communist anti-aircraft fire.

Syrian parliament elected Shukri el-Kowatli to succeed Hashem el-Atassi as president of Syria.

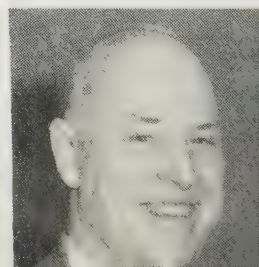
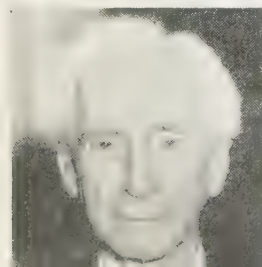
Organization of Central American States opened its first formal conference at Antigua, Guatemala.

19 Pres. Eisenhower ordered duties on imported bicycles increased by 50%.

Gov. Gen. Sir Alexander Knox Helm of the Sudan proclaimed a state of emergency in the three southern Sudanese provinces fol-

The pictures on this page are, left to right:

RUSSELL.....July 9
FOLSOM.....July 13
DIEM.....July 10
BULGANIN.....Aug. 4
WEEKS.....Aug. 5



AUGUST—Continued

lowing a mutiny by members of the Sudan defense force.

Philip R. Rodgers was designated to serve as chairman of the National Labor Relations board.

20 Pres. Eisenhower designated as major disaster areas Connecticut, Massachusetts, Pennsylvania, South Carolina, all flooded areas of New Jersey and the Woonsocket, R.I., area following severe floods.

Severe disorders instigated by terrorists broke out in the Algerian *département* of Constantine.

Asst. Secy. of State Samuel C. Waugh was named president of the U.S. Export-Import bank, effective Oct. 1.

Soviet Agriculture Minister I. A. Benediktov revealed that the soviet grain harvest in 1955 would fall considerably short of a reduced goal of 114,000,000 metric tons.

21 Egyptian Sudan Affairs Minister Salem denied reports that Egypt was inciting southern Sudanese against the north Sudan.

U.S. commerce dept. published figures estimating U.S. private investments abroad at \$26,600,000,000 at end of 1954.

22 Secy. of Commerce Weeks issued a strict code imposing severe limitations on the outside activities of officers, employees and unpaid advisers of the commerce dept.

Representatives of Britain, Canada, Czechoslovakia, France, the U.S. and the U.S.S.R. began a series of meetings in Geneva, Switz., to consider the technical aspects of guaranteeing the peaceful uses of atomic energy.

Chairman Strauss of the U.S. Atomic Energy commission declared that the U.S. appeared to be clearly ahead of the U.S.S.R. in the development of atomic power.

The pictures on this page are, left to right:

QUARLES	Aug. 11
SHIGEMITSU	Aug. 29
FREDERIKA	Sept. 6
EISENHOWER	Sept. 24
FORD	Sept. 29

23 British twin-jet bomber flew from London to New York and back in the record time of 14 hr. 21 min. 45.4 sec.

17 Asian, Arab and African countries joined in an appeal to UN Secy. Gen. Hammarskjöld to use his good offices to halt the fighting in Algeria and Morocco.

Pres. Eisenhower inspected flood-stricken areas in the northeastern U.S. and conferred with federal and state officials.

24 Prague radio announced the decision of the Czech government to reduce its armed forces by 34,000 men.

Egypt withdrew from talks with Israel concerning means to lessen tension in the Gaza border area.

Chinese Communist state council ordered a tightening of grain rationing in all municipal areas.

25 Federal fund of nearly \$1,000,000,000 was made available for emergency loans to repair or replace defense plants damaged or destroyed by floods in the northeastern U.S.

Pres. Eisenhower in a report to congress revealed that U.S. aid to friendly nations had enabled them to raise the equivalent of 180 army divisions, 280 air force squadrons and 550 combat vessels.

26 Secy. of State Dulles in a major policy speech proposed a program to end hostilities between Israel and its Arab neighbours.

South Korea became a member of the International Bank for Reconstruction and Development and the International Monetary fund.

27 Australia's tennis team regained the Davis cup from the U.S. by winning the first 3 out of 5 matches.

Olympic committees of west and east Germany were revealed to have agreed to enter an all-German team in the 1956 Olympic games.

28 National Labor Relations board issued a 3-to-2 ruling deciding not to punish a labour organization accused of unfair labour practices against its own employees.

29 Conference between Greece, Turkey and the

U.K. on the problems of the eastern Mediterranean, including Cyprus, opened at London.

Japanese Foreign Minister Mamoru Shigemitsu began conferences in Washington, D.C., with Secy. of State Dulles.

30 Soviet officials revealed that arrangements were being made for a large-scale exchange of tourists with the U.S.

31 French government announced the appointment of Gen. Boyer de Latour du Moulin, resident general in Tunisia, to succeed Gilbert Grandval as resident general in French Morocco.

UN truce commission announced the acceptance by Egypt of cease-fire proposals in the Gaza border area.

New legislative council of the federation of Malaya was inaugurated at Kuala Lumpur by British High Commissioner Sir Donald MacGillivray.

SEPTEMBER

Argentine congress passed legislation putting the city of Buenos Aires in a state of siege.

Israel announced that its planes had shot down two Egyptian jet fighters in the disputed Gaza area.

U.S. government ordered Hungary to halt all propaganda activities in the U.S.

The U.S.S.R. was revealed to have granted loans to Yugoslavia totalling the equivalent of \$84,000,000.

U.S. public health service released another 3,348,000 shots of Salk antipolio vaccine.

2 French government announced its decision to send another nine army battalions to Algeria.

3 Albania and Poland announced plans for reducing the strength of their armed forces.

Soviet and Yugoslav representatives signed in Moscow an agreement for the re-establishment of air service between the U.S.S.R. and Yugoslavia.

4 UN truce headquarters announced that both Egypt and Israel had given unconditional agreement to an urgent

appeal for enforcement of a general cease-fire in the Gaza area.

5 27 Soviet-held prisoners, including 2 U.S. citizens, were released at Berlin after arrival from Moscow.

6 Strength of the Neutral Nations Supervisory commission in Korea was reduced by more than 50% by agreement between the UN command and North Korea.

Severe anti-Greek rioting broke out in Istanbul and Izmir, Turkey, and martial law was declared in those cities and Ankara.

Communist China announced its readiness to issue exit permits to 12 out of 41 U.S. civilians held by it.

King Paul I and Queen Frederika of Greece arrived in Belgrade, Yugos., on a state visit.

7 French authorities in Morocco announced the formation of temporary protection units composed of armed civilians to reinforce army and police forces.

U.S. commerce and labour depts. reported that U.S. employment had reached 65,488,000 in Aug. 1955, exceeding 65,000,000 for the first time.

8 Pres. Eisenhower designated John W. Gwynne to be chairman of the Federal Trade commission and named Sigurd Anderson of South Dakota to be a commission member.

UN Security council unanimously called on Egypt and Israel to agree forthwith on tighter border controls to prevent renewal of clashes in the Gaza area.

British High Commissioner Sir Donald MacGillivray broadcast an offer of amnesty to communist guerrillas in Malaya.

Permanent council of NATO met in Paris to discuss recent anti-Greek demonstrations in Turkey.

9 Organization of American States announced that the U.S., Argentina, Brazil and Chile had agreed to send a mission to investigate a border dispute between Ecuador and Peru.

Federal Power commission ruled that it had authority to



SEPTEMBER—Continued

control natural gas production within a state, if any of it was to be sold in another state.

10 Communist China was revealed to have agreed to release the remaining U.S. civilians held by it.

11 Egyptian government issued new regulations for the control of shipping entering the gulf of Aqaba at the head of the Red sea.

12 American Foundations Information service reported the probable existence of 7,300 charitable, welfare and research foundations in the U.S., of which 4,162 held assets valued at more than \$4,700,000,000.

Turkish Premier Adnan Menderes charged in a speech to the grand national assembly that communists had led recent anti-Greek demonstrations in Turkey.

13 The U.S.S.R. and western Germany agreed to establish diplomatic relations.

New Syrian cabinet was formed by Said Ghazzi to replace that of Sabri el-Assali.

French government named Roger Seydoux to be its first high commissioner in Tunisia.

14 Australian Prime Minister Robert C. Menzies introduced in the house of representatives the report of a royal commission on soviet espionage activities in Australia.

15 Government of Cyprus banned the underground terrorist organization known as Eoka.

Soviet government rejected West German Chancellor Adenauer's claim to speak for all Germany and his right to seek revision of German borders.

Soviet embassy in Washington, D.C., accepted an invitation for 10 soviet housing officials to visit housing projects in the U.S.

16 All of Argentina was placed under martial law as rebel forces claimed control of southern Argentina and Córdoba province.

17 First all-Tunisian cabinet under new home rule agreements with France, headed by Tahar ben Ammar as premier, was approved by the bey of Tunis.

Soviet Premier Bulganin announced Soviet willingness to return to Finland the Porkkala naval base; also that the Soviet government proposed to conclude a treaty giving east Germany the same sovereign status as west Germany.

18 Argentine government declared Buenos Aires an open city and appealed to rebel forces not to bomb it.

Soviet government announced an amnesty for Russians who collaborated with Germans during World War II.

National Geographic society announced the discovery of a large blue-green area on the planet Mars which was thought to be living vegetation.

British foreign office confirmed that two former foreign office officials—Donald MacLean and Guy Burgess—had spied for the U.S.S.R. before disappearing into soviet-dominated territory in 1951.

19 Government of Argentine Pres. Perón was overthrown by rebel forces.

New Lebanese government was formed by Sayed Rashid Karamah to replace that of Sami Solh.

Finland and the U.S.S.R. formally renewed at Moscow their mutual defense alliance for a period of 20 years.

20 José Maza of Chile was elected president of the UN general assembly at the opening of its 1955 session, which voted 42 to 12 to defer until 1956 a decision on whether Communist China should hold China's place in the UN.

The U.S.S.R. and eastern Germany signed in Moscow a series of agreements designed to enhance the power and authority of the German Democratic Republic (east) government.

North Vietnamese national assembly elected Pham Van-dong as premier to succeed Ho Chi-minh, who retained the office of president.

21 U.S. agriculture dept. reported a record loss of \$799,061,464 on federal farm price support operations during the fiscal year ended June 30, 1955.

22 The United Kingdom's first television program financed by advertising was telecast from London.

Provisional Argentine Pres. Eduardo Lonardi declared the civil war at an end and dissolved the Argentine congress, which had been controlled by members of the Peronista party.

Oil was discovered for the first time in Israel, near Huleikat in the Negev region.

23 West German bundestag unanimously approved the establishment of diplomatic relations with the U.S.S.R.

UN general assembly, by a vote of 28 to 22, declined to put

the question of self-determination for Cyprus on its agenda for debate.

24 Pres. Eisenhower suffered a heart attack at his summer vacation headquarters in Denver, Colo.

Former Argentine Pres. Perón was reportedly authorized by the provisional government to leave Argentina for asylum in Paraguay.

U.S. Atomic Energy commission reported that the U.S.S.R. had recently set off another nuclear explosion.

25 Libyan government announced that it had agreed to establish diplomatic relations with the U.S.S.R.

Field Marshal Sir John Harding, retiring chief of the British imperial general staff, was appointed governor and commander in chief of Cyprus.

U.S. government recognized the new Argentine government headed by Provisional Pres. Lonardi.

French Premier Faure stated in a radio speech that France intended to keep Algeria as an integral part of France.

26 Stocks on the New York Stock exchange in heavy selling suffered an estimated dollar loss of about \$14,000,000,000—the heaviest in its history; shares traded totalled 7,720,000, the highest figure since July 21, 1933.

Former king Norodom Sihanouk of Cambodia accepted office as premier for a trial period of three months following a complete victory by his Popular Socialist Community in general elections.

27 Egypt was reported to have informed the British government of its plans to obtain arms from the U.S.S.R.

28 Argentine provisional government announced a general amnesty for both civilians and members of the armed forces.

Foreign ministers of the U.S., Britain and France announced at the conclusion of a meeting in New York, N.Y., that they had agreed that at their forthcoming meeting with Soviet Foreign Minister Molotov priority should be given to the reunification of Germany within the framework of a plan for European security.

29 Pres. Henry Ford II of the Ford Motor company announced a \$500,000,000 expansion program for the company for 1956.

White House Press Secy. James C. Hagerty announced that U.S. government leaders

had decided that delegation of Pres. Eisenhower's powers would be unnecessary, unless there were unexpected complications in his illness.

Indonesia began its first national elections since winning independence from the Netherlands.

Decision was published of the presidium of the soviet supreme council to release 9,626 German war prisoners still held in the U.S.S.R.

Peking radio announced plans for the withdrawal from North Korea of an additional six Chinese communist divisions.

30 French delegation retired from a session of the UN general assembly after the assembly, by a vote of 28 to 27, put the question of Algeria on its agenda for debate.

Pres. Eisenhower signed two routine documents—the first official action taken by him since sustaining a heart attack.

U.S. justice dept. was revealed to have abandoned its efforts to deport Harry Bridges, Pacific coast longshoremen's leader.

OCTOBER

1 Sultan Mulay Mohammed ben Arafa of Morocco delegated his powers to his cousin and flew to Tangier international zone.

French government ordered the withdrawal of its delegation to the UN general assembly.

Chivu Stoica was named premier of Rumania in succession to Gheorghe Gheorghiu-Dej, who became first secy. of the Rumanian Workers' (Communist) party.

U.S. aircraft carrier "Saipan" arrived at Tampico, Mex., for flood relief operations.

2 Former Argentine Pres. Perón arrived at Asunción, Paraguay, after a flight from Buenos Aires in a Paraguayan aircraft.

Egypt and Israel withdrew their military forces from El Auja de militarized zone on the Sinai peninsula frontier.

3 UN general assembly voted 31 to 18, to place the question of Netherlands New Guinea on its agenda.

4 Brooklyn Dodgers won their first world series, defeating the New York Yankees baseball team, 4 games to 3.

British Chancellor of the Exchequer R. A. Butler reported that in Sept. 1955 the sterling area's gold and dollar reserve had dropped to the lowest level since May 1953.

OCTOBER—Continued

5 Konstantinos Karamanlis was named by King Paul I to form a new Greek cabinet replacing that of Field Marshal Alexandros Papagos, deceased.

Argentina's supreme court and attorney general were dismissed by Provisional Pres. Lonardi.

6 West German cabinet established a civilian defense council to direct the west German armed forces.

Argentine foreign ministry announced the dispatch of a note to the Paraguayan government requesting that former Pres. Perón should not be permitted to remain in Paraguay.

7 Group of French reservists called for duty in north Africa mutinied at Rouen, Fr.

U.S. government announced that it had called upon eight leading military, scientific and industrial figures to make a broad reappraisal of disarmament policy.

British Prime Minister Eden announced a decision to reduce the strength of the British armed forces by about 100,000 men by March 31, 1958.

Soviet Foreign Minister Molotov in a letter to a Soviet Communist publication admitted that in a speech earlier in the year he had erred on a point of Communist theory.

U.S.S. "Saratoga," the most powerful warship in the world (59,600 displacement tons), was named and symbolically launched at the New York naval shipyard, Brooklyn, N.Y.

9 Indian government made public a controversial plan for substantial realignment of India's political framework into 16 states.

10 Pres. Eisenhower named Harold S. Vance of Indiana to be a member of the U.S. Atomic Energy commission.

Daniel A. Solod, soviet ambassador to Egypt, made public the decision of his government to offer technical assistance to underdeveloped Arab and Asian countries.

Adm. Jerauld Wright, NATO commander in the Atlantic, stated that the U.S.S.R. had the largest submarine fleet in history and more submarines than all other nations combined.

U.S. state dept. announced that the U.S. would send a mission to the European Coal and Steel Community.

11 Iran announced that it would join the middle east-

ern defense alliance of Iraq, Turkey, Britain and Pakistan.

U.S. Securities and Exchange commission published a detailed survey showing that the assets of uninsured corporate pension funds totalled \$11,200,000,000 on Dec. 31, 1954.

Gen. Alfred M. Gruenther, supreme commander of the Allied powers in Europe, declared that the defense forces of NATO members were behind schedule in quantity and quality.

12 U.S. state dept. made public a letter from Pres. Eisenhower to Soviet Premier Bulganin offering conditionally to accept the soviet plan for reciprocal arms inspection.

Field Marshal Viscount Montgomery, deputy supreme commander of the Allied powers in Europe, asserted in a lecture in London that the present NATO organization for war was unsuited to modern times.

13 Pan American World Airways placed the first order by a U.S. air line for jet-propelled commercial aircraft, ordering 20 Boeing 707 Stratoliners and 25 Douglas DC-8s costing a total of \$269,000,000.

About 350 industrial enterprises seized by the soviet government at the end of World War II as former German property were delivered to Austria under the provisions of the Austrian state treaty.

Soviet Union was revealed to have offered a loan to Egypt to assist in the construction of the Aswan dam on the Nile river.

14 Cuba and Australia were elected by the UN general assembly to two-year terms as nonpermanent members of the UN Security council.

France and northern Vietnam signed a one-year trade agreement at Hanoi.

All political units of western Pakistan were unified into a single province known as West Pakistan.

New China news agency revealed that Communist China had signed a three-year trade agreement with Egypt.

15 Four-member council of the throne was formed in Rabat, French Morocco, and the Moroccan throne was declared to be vacant.

16 French residency general in Morocco charged that French troops had been fired upon from the Spanish zone of Morocco.

Israeli and Egyptian troops were reported to have clashed in the Sinai peninsula opposite El Ajua demilitarized zone.

Prototype of a Boeing commercial jet air liner flew from Seattle, Wash., to Washington, D.C., in the record time of 3 hr. 58 min.

17 Pres. Eisenhower extended the federal flood relief program to additional areas of Connecticut, New Jersey and New York hit by new floods.

Lt. Gen. Randolph M. Pate was named commandant of the U.S. marine corps, effective Jan. 1, 1956.

Kabaka Mutesa II of the British protectorate of Buganda in East Africa returned to his country from two years' exile in England.

18 French national assembly approved by a vote of 308 to 254 the program of Premier Faure for moderate reforms in Algeria.

Discovery was announced of a new atomic particle—the antiproton—at the University of California.

19 U.S. defense dept. released a documentary review showing that during World War II virtually all U.S. military leaders had favoured soviet participation in the war against Japan.

Soviet government announced that it would continue to control allied military traffic between west Berlin and western Germany.

20 Hugo Theorell of Sweden was named the winner of the 1955 Nobel prize in medicine for his work on the nature and action of oxidation enzymes.

First shipment of Czech arms to Egypt arrived at Alexandria on board a Soviet vessel.

Egypt and Syria signed a military agreement in Damascus providing for the establishment of a joint military command and war council.

21 Pres. Eisenhower at a conference with U.S. Atty. Gen. Brownell approved a justice dept. program designed to reduce the backlog of cases in federal courts.

22 Soviet Premier Bulganin made public a letter to Pres. Eisenhower praising the latter's stand on disarmament.

23 People of the Saar rejected by a vote of more than 2 to 1 a statute placing the Saar under the neutral control of the Western European union.

24 Argentine Provisional Pres. Lonardi ordered the dissolution of the Peronista party.

South African Delegate W. C. du Plessis walked out of a meeting of a special committee of the UN general assembly to protest discussion of South African ra-

cial policies.

Austria became free of foreign troops with the departure from Klagenfurt of a British unit.

25 British Prime Minister Eden announced the appointment of Marshal of the R.A.F. Sir William Dickson to the newly created post of chairman of the British joint chiefs of staff.

26 South Vietnam was proclaimed a republic by Premier Ngo Dinh Diem, who became its first president.

British Chancellor of the Exchequer Butler introduced a supplementary budget reducing housing subsidies and other government expenditures and increasing the sales tax and the tax on business profits.

British Prime Minister Eden announced that British-led Arab troops had ousted Saudi Arabian forces from the Buraimi oasis in southeastern Arabia.

27 Halldór Kiljan Laxness of Iceland was named the winner of the 1955 Nobel prize for literature by the Swedish royal academy.

Egypt and Saudi Arabia signed a five-year mutual defense agreement at Cairo.

Foreign ministers of the U.S., Britain, France and the U.S.S.R. met in Geneva, Switz., to consider the three-point agenda drawn up by the heads of their governments in July 1955.

International Cooperation administration announced approval of a \$15,000,000 development assistance program for Guatemala.

28 Austrian parliament completed action on a constitutional law pledging the permanent neutrality of Austria.

Malayan government announced that a wide area in central Malaya had been declared free of terrorists.

29 Heinrich Welsch was appointed interim premier of the Saar by the Saar parliament pending new parliamentary elections.

Pres. Eisenhower issued a statement giving full support to the policies of Agriculture Secy. Ezra T. Benson.

30 Sultan Mulay Mohammed ben Arafa formally renounced all rights to the Moroccan throne and urged support for his exiled predecessor, Mohammed ben Yusef.

31 Princess Margaret, sister of Queen Elizabeth II of the U.K., announced that she had decided not to marry Group

OCTOBER—Continued

Capt. Peter Townsend.

Secy. of State Dulles announced that the U.S. would lift its restrictions on travel by U.S. citizens to the U.S.S.R. and its east European satellites other than Albania and Bulgaria.

Pres. Carlos Castillo Armas of Guatemala arrived in Washington, D.C., for a state visit.

NOVEMBER

Secy. of State Dulles and Generalissimo Francisco Franco of Spain reaffirmed after a conference in Madrid the spirit of collaboration between the U.S. and Spain.

Burma and Poland were revealed to have signed a three-year trade agreement.

2 Rear Adm. Richard E. Byrd (ret.) was placed in charge of all U.S. activities in the antarctic.

Vincent du Vigneaud of the U.S. was announced as the winner of the 1955 Nobel prize for chemistry; the physics prize went to Polykarp Kusch and Willis E. Lamb, also of the U.S.

3 Israeli Knesset, by a vote of 73 to 32, confirmed David Ben-Gurion as premier at the head of a coalition cabinet.

Shellfire continued in the El Auja demilitarized zone after a night battle between Egyptian and Israeli forces.

U.S. public health service was revealed to have developed a vaccine promising substantial immunity against "cold-type" infections.

The Cocos Islands in the Indian ocean were formally transferred from British to Australian sovereignty.

Office of the UN high commissioner for refugees was designated as the winner of the 1954 Nobel peace prize; the award for 1955 was deferred.

4 Emperor Haile Selassie of Ethiopia promulgated a new constitution granting the Ethiopian people the right to vote for the first time.

5 French government formally recognized Mohammed ben Youssef as sultan of Morocco.

6 Trustees of the Ford foundation announced that common stock of the Ford Motor company would go on public sale for the first time in Jan. 1956.

Secy. of State Dulles and Yugoslav Pres. Tito conferred at Brioni Island in the Adriatic sea.

7 Defense dept. gave the dept. of the army complete responsibility for purchasing and handling all food required by the U.S. armed forces.

U.S. supreme court held, by a vote of 6 to 3, that U.S. civilians could not be tried by court-martial for crimes committed while in military service; in a unanimous decision it banned racial segregation in public parks, playgrounds and golf courses.

8 Soviet foreign minister Molotov at the Geneva conference of foreign ministers rejected reunification of Germany on any but Soviet terms.

UN general assembly after a record total of 21 ballots failed to choose between the Philippines and Yugoslavia for a seat on the UN Security council.

U.S. Public Buildings Commissioner Peter A. Strobel resigned after denying charges that he had used his position to further the interests of his private engineer-consultant firm.

9 French government named André Dubois, Paris prefect of police, as French resident general in Morocco.

Union of South Africa withdrew from the UN general assembly in protest against continued UN inquiries into its racial segregation policies.

British Prime Minister Eden offered his own services and those of his government in settling the dispute between Israel and the Arab states.

10 Soviet Foreign Minister Molotov made a formal detailed attack on Pres. Eisenhower's plan for aerial inspection and exchange of military information between the U.S.S.R. and the U.S.

12-member bipartisan committee on government security was named to review the entire U.S. government loyalty-security program and recommend ways to end abuses.

Britain and Egypt announced

an informal agreement on the regulation of shipping movements in the gulf of Aqaba at the head of the Red sea.

11 Pres. Eisenhower left Fitzsimons Army hospital in Denver, Colo., and flew to Washington, D.C.

Brazilian army seized control of the government in a bloodless coup; senate speaker Nereu Ramos was designated as provisional president, until Pres.-elect Juscelino Kubitschek would assume office Jan. 31, 1956.

British military experts issued a report proposing a sweeping reorganization of the British army, including the creation of a British foreign legion.

12 Soviet Communist Party Secy. Khrushchev revealed that the U.S.S.R. had developed a twin-jet medium bomber with a range of about 3,100 mi.

French government announced its decision to resume the shipment of arms to Egypt.

13 Provisional Argentine government of Maj. Gen. Eduardo Lonardi was overthrown and Maj. Gen. Pedro Aramburu was sworn in as provisional president.

14 Poland and Yugoslavia signed a number of economic and technical co-operation agreements at Warsaw.

John G. Graham admitted in Denver, Colo., that he had planted a time bomb which blew up a United Air Lines passenger aircraft with loss of 44 lives, including his mother, whose life he had insured.

Temporary executive offices were set up for Pres. Eisenhower in Gettysburg, Pa.

15 Adlai E. Stevenson formally announced that he would seek renomination in 1956 as the presidential candidate of the Democratic party.

U.S. state dept. announced that it had cancelled a visa for Archbishop Boris of the Russian Orthodox Church because the U.S.S.R. had insisted upon privileges not accorded to U.S. clergymen in the U.S.S.R.

Pres. Eisenhower stated that the U.S. would play its full part in working for a peaceful settlement of the dispute between Israel and the Arab states.

16 Conference of the foreign ministers of the U.S., Britain, France and the U.S.S.R. at Geneva, Switz., ended without any agreement on any of the points on its agenda.

Sultan Mohammed ben Youssef returned to Rabat, French Morocco, after more than two years of exile.

Abba Eban, Israeli ambassador to the U.S., formally requested the U.S. to sell Israel specific types of arms on the most lenient conditions.

17 Premier Hussein Alaoui of Iran was shot and slightly wounded by a Moslem religious fanatic in the Shah mosque in Tehran.

18 Mexico made its final payment to the U.S. under the claims convention of 1941.

Pres. Eisenhower designated Boyd Leedom to serve as chairman of the National Labor Relations board and appointed Stephen S. Bean of Maryland to be a member of the board.

Britain and Belgium signed 10-year atomic energy agreement in London.

Soviet Premier Bulganin and Communist Party Secy. Khrushchev arrived at New Delhi, India, for an official good will visit.

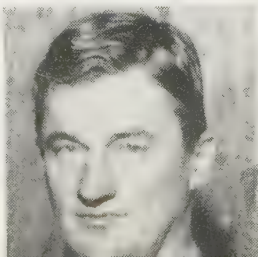
19 Princeton's football team defeated Dartmouth, 6 to 0, to win the Ivy league title; Ohio State defeated Michigan, 17 to 0, for the Big Ten title; Oklahoma defeated Nebraska, 41 to 0, for the Big Seven title; University of California at Los Angeles defeated Southern California, 17 to 7, for the Pacific coast conference title.

20 Gov. Theodore R. McKeldin of Maryland ordered the immediate desegregation of the Maryland national guard.

Jordanian Deputy Prime Minister Hazza el-Majali announced that Jordan would remain outside the Middle East Treaty organization at least temporarily.

The pictures on this page are left to right:

PERON.....Oct.
THEORELL.....Oct.
MARGARET.....Oct.
Du VIGNEAUD.....Nov.
KUSCH.....Nov.



NOVEMBER—Continued

21 Federation of Malaya and British officials declared the resumption of all-out war against Communist guerrillas in the Malay peninsula.

UN general assembly adopted, by a vote of 43 to 6, a resolution calling for a special conference, to be held at an appropriate time, to consider the advisability of a review of the UN charter.

22 Kingdom of the Yemen was revealed to have granted to a U.S. company the first oil and mineral concession in Yemeni history.

Pres. Eisenhower presided over the first meetings of the cabinet and the national security council since sustaining a heart attack.

Japanese government announced the cessation of all cotton textile exports to the U.S. pending the adoption of control measures.

Members of the Middle East Treaty organization announced the establishment of a permanent political, military and economic organization with headquarters in Baghdad, Iraq.

23 U.S. Atomic Energy commission announced that the U.S.S.R. had recently set off its largest nuclear blast.

24 30-day state of siege was proclaimed throughout Brazil with the approval of congress.

25 50th anniversary of the accession of King Haakon VII was celebrated throughout Norway.

Interstate Commerce commission ordered the termination of racial segregation by Jan. 10, 1956, on trains and buses crossing state lines.

Pres. Eisenhower accepted the resignation of Hugh M. Cross as the chairman of the Interstate Commerce commission.

26 U.S.S.R. confirmed that it had recently exploded its most powerful hydrogen weapon.

State of emergency was proclaimed in the British Mediterranean colony of Cyprus by the governor, Field Marshal Sir John Harding.

French government announced its decision to send substantial military reinforcements to Algeria.

University of Mississippi's football team defeated Mississippi State, 26 to 0, to win the southeastern conference title; Georgia Tech defeated Georgia, 21 to 3; Army defeated Navy, 14 to 6.

27 King Saud of Saudi Arabia arrived in India for a 17-day state visit.

University of Oklahoma's football team was designated in the Associated Press poll as the best team in the U.S. in 1955, followed by Michigan State, Maryland, University of California at Los Angeles and Ohio State.

Si Bekkai was named by Sultan Mohammed ben Youssef to form a Moroccan government.

28 Union of South Africa entered into agreements with the International Bank for Reconstruction and Development and a U.S. investment banking syndicate to borrow \$50,000,000 for economic development.

29 Government of French Premier Faure was defeated on a vote of confidence, 318 to 218, in the French national assembly.

Maj. Gen. P. A. Dibrova, Soviet commandant in Berlin, asserted at a meeting with Maj. Gen. Charles L. Dasher, Jr., the U.S. commandant, that the Soviet occupation of east Berlin had ended.

French delegation returned to the UN general assembly after the latter dropped the question of Algeria from its agenda for the current session.

30 Russell C. Harrington of Rhode Island received an interim appointment as U.S. commissioner of internal revenue.

French cabinet decided to dissolve the French national assembly before the end of its term for the first time in 78 years.

viet contention that the four-power rule of Berlin had terminated.

Soviet Premier Bulganin and Communist Party Secy. Khrushchev arrived in Rangoon, Burma, on an official visit.

West German Foreign Minister Heinrich von Brentano rejected suggestions for bilateral negotiations with the U.S.S.R. on German unification.

2 French government decided to hold new parliamentary elections on Jan. 2, 1956.

Nationalist China announced that it would oppose with utmost determination the proposed admission to the UN of Albania, Bulgaria, Hungary, Outer Mongolia and Rumania.

3 Britain and Egypt signed an agreement in Cairo granting to the Sudan the right to determine its future.

UN general assembly rejected proposals to include nonmember nations in its projected survey of the effects of atomic radiation.

Yogi Berra of the New York Yankees was named the most valuable player in the American baseball league in 1955 by the Baseball Writers Assn. of America.

4 Cleveland Browns defeated the Pittsburgh Steelers, 30 to 7, to win their sixth straight eastern conference title in the National Football league.

5 Pres. Luis Batlle Berres of Uruguay arrived in Washington, D.C., on a state visit.

American Federation of Labor and the Congress of Industrial Organizations were formally merged under the presidency of George Meany.

Presidential Press Secy. James C. Hagerty announced that British Prime Minister Eden would visit Pres. Eisenhower in late Jan. 1956.

Georgia board of regents rejected a request by Gov. Marvin Griffin that the Georgia Tech football team be barred from playing in the Sugar Bowl Jan. 2, 1956, because its opponent, the University of Pittsburgh, had a Negro player.

6 U.S., Britain, France and the U.S.S.R. formally recognized the perpetual neutrality of Austria.

Secy. of State Dulles charged that Soviet leaders visiting India were attempting to incite that country to the use of force against the Portuguese in Goa.

7 Clement R. Attlee resigned the leadership of the British Labour party and was made an earl by Queen Elizabeth II.

A.F. of L.-C.I.O. established an industrial union dept. headed by Walter Reuther to promote the interests of industrial unions.

Argentine newspaper La Prensa was formally returned to its owners by the provisional government.

8 Hugh Daugherty of Michigan State was named the 1955 football coach of the year by the American Football Coaches Assn.

Roy Campanella of the Brooklyn Dodgers was named the most valuable player in the National baseball league in 1955 by the Baseball Writers Assn. of America.

9 East German government announced that its own border police had replaced Soviet troops guarding its frontiers.

Ray Robinson regained the world middleweight boxing title by knocking out Carl Olson in Chicago, Ill.

10 Pres. Eisenhower's doctors found his condition good and his convalescence normal but reported that they had noticed signs of fatigue.

Australian Prime Minister Menzies' government greatly strengthened its control of the house of representatives in national elections.

Charles J. Lowen, Jr., received a recess appointment as administrator of the U.S. Civil Aeronautics administration, succeeding Frederick B. Lee.

French government decided to postpone elections for the French national assembly in Algeria.

11 Former Pres. Herbert C. Hoover called for the establishment by congress of a new office of administrative vice-president to take over some of the secondary tasks of the presidency.

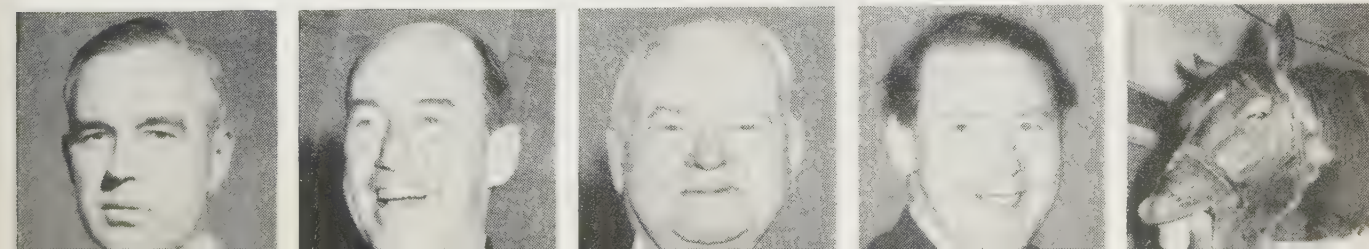
Israeli forces captured a network of fortified Syrian positions dominating the northeast corner of the sea of Galilee.

The pictures on this page are, left to right:

LAMB.....	Nov. 2
STEVENSON.....	Nov. 15
HOOVER.....	Dec. 11
GAITSKELL.....	Dec. 14
NASHUA.....	Dec. 15

DECEMBER

1 U.S., British and French governments rejected a So-



DECEMBER—Continued

Los Angeles Rams defeated the Green Bay Packers, 31 to 17, to win the western conference title in the National Football league.

12 Ford foundation announced a record grant of \$500,000,000 to 4,157 privately supported U.S. colleges, universities and hospitals.

13 Indian Prime Minister Nehru and Soviet Premier Bulganin issued a joint communiqué in New Delhi declaring that disarmament was the only means of establishing world peace.

Plan for the admission of 18 new members to the UN failed when Nationalist China vetoed the admission of Outer Mongolia and the U.S.S.R. vetoed 13 non-Communist nations.

Otto John, west German intelligence official who defected to east Germany in 1954, returned to western Germany.

14 Hugh Gaitskell was named to succeed Clement R. Attlee as leader of the British Labour party.

UN resolved the deadlock over the admission of new members and elected to membership Albania, Austria, Bulgaria, Cambodia, Ceylon, Finland, Hungary, Ireland, Italy, Jordan, Laos, Libya, Nepal, Portugal, Rumania and Spain; Japan and Outer Mongolia were excluded.

15 Generalissimo Franco of Spain declared that Spain would not permit the establishment of a western democratic system of government in the Spanish zone of Morocco.

Nashua, champion U.S. race horse of 1955, was sold for \$1,251,200 to a syndicate of bidders by the estate of William Woodward, Jr.

Soviet Premier Bulganin and Communist Party Secy.

Khrushchev arrived in Kabul, Afghanistan, on an official visit.

U.S.S.R. vetoed in the UN Security council a resolution recommending that Japan be considered for UN membership in 1956.

16 North Atlantic council declared that Soviet tactics in the middle east and growing Soviet military strength offered a new challenge to the free world.

U.S. government accused Communist China of violating its agreement to release 14 U.S. civilians still in Chinese prisons.

UN general assembly approved, by vote of 56 to 7, Pres. Eisenhower's proposal to promote world disarmament through a free aerial inspection and an exchange of military blueprints.

17 U.S. and British governments assured Egypt of aid in financing the construction of the proposed \$1,300,000,000 High Dam at Aswan on the Nile river.

18 Saar parliamentary elections were won by pro-German parties favouring the union of the Saar with western Germany.

Moscow radio announced that the U.S.S.R. had granted a loan of \$100,000,000 to Afghanistan.

19 Sudanese house of representatives adopted a resolution declaring the Sudan's independence and requesting that it be recognized at once by Britain and Egypt.

Jordanian Premier Hazza el-Majali resigned following rioting over a proposal that Jordan join the Middle East Treaty organization.

Pres. Eisenhower accepted the resignation of Nelson A. Rockefeller as his special assistant for psychological strategy.

Afghan Premier Mohammed Daud Khan stated at a news

conference that receipt of Soviet aid would not alter Afghanistan's policy of neutrality.

20 UN general assembly elected Yugoslavia to the UN Security council under a compromise arrangement whereby Yugoslavia would resign after one year and be replaced by the Philippines.

British Prime Minister Eden announced a substantial reshuffling of his cabinet; Selwyn Lloyd became foreign secy. in place of Harold Macmillan, who became chancellor of the exchequer to replace R. A. Butler, who was named lord privy seal and leader of the house of commons.

21 King Hussein of Jordan swore in a caretaker government headed by Ibrahim Hashem to hold office pending new parliamentary elections.

Finances of the Ford Motor company were disclosed in full for the first time in a registration statement filed with the U.S. Securities and Exchange commission preliminary to the first public sale of the stock of the company.

22 Paraguayan government was reported to have put down an uprising against it.

Gov. Goodwin J. Knight of California declared a state of emergency in northern California as a result of severe floods which were sweeping the area.

24 Pope Pius XII in his annual Christmas message gave support to proposals for international disarmament based in part on the renunciation of nuclear weapons.

Pres. Eisenhower declared flooded sections of western Nevada a major disaster area and ordered federal aid speeded there.

25 Communist China and eastern Germany signed in Peking a treaty of friendly co-operation and a protocol for cultural co-operation.

26 Saudi Arabia was revealed to have placed its armed forces with those of Egypt and Syria under a single commander, Maj. Gen. Abd el-Hakim Amer of Egypt.

Cleveland Browns defeated the Los Angeles Rams, 38 to 14, to win the National Football league title.

27 U.S. automobile fatalities over the Christmas week-end were announced to have reached the record total of 609.

28 Pres. Tito of Yugoslavia arrived in Cairo, Egypt, on a state visit.

Pres. Eisenhower flew from Washington, D.C., to Key West, Fla., for a medically advised rest.

Soviet supreme council approved a 1956 budget providing for expenditure of 569,600,000,000 rubles.

29 Peace negotiations collapsed between Malayan officials and Communist guerrilla leader Chin Peng.

Soviet Communist Party Secy. Khrushchev in a speech to the supreme council sharply attacked Pres. Eisenhower's plan for mutual aerial inspection and exchange of military information.

30 U.S. government reaffirmed that U.S. foreign policy had as one of its aims the peaceful liberation of captive peoples.

U.S. production of passenger cars in 1955 was estimated at the record figure of 7,940,862 by trade sources; truck production totalled 1,247,799.

Volume of trading on the New York Stock exchange for 1955 reached 649,602,291, the highest since 1933.

31 British government banned all further export of surplus war material.

Football Bowl Games, Dec. 31, 1955

Gator Bowl (Jacksonville, Fla.)—Vanderbilt (Tenn.), 25; Auburn (Ala.), 13.

Salad Bowl (Phoenix, Ariz.)—Border Conference All-Stars, 13; Skyline Conference All-Stars, 10.

Jan. 2, 1956

Rose Bowl (Pasadena, Calif.)—Michigan State, 17; U.C.L.A., 14.

Sun Bowl (El Paso, Tex.)—Wyoming, 21; Texas Tech, 14.

Tangerine Bowl (Orlando, Fla.)—Juniata (Pa.), 6; Missouri Valley, 6.

Prairie View Bowl (Houston, Tex.)—Prairie View A. & M. (Tex.), 59; Fisk (Tenn.), 0.

Cotton Bowl (Dallas, Tex.)—Mississippi, 14; Texas Christian, 13.

Sugar Bowl (New Orleans, La.)—Georgia Tech, 7; Pittsburgh, 0.

Orange Bowl (Miami, Fla.)—Oklahoma, 20; Maryland, 6.



BOOK OF THE YEAR

Abyssinia: *see* ETHIOPIA.

Academy of Arts and Letters, American: *see* SOCIETIES AND ASSOCIATIONS, U.S.

Academy of Political and Social Science, American: *see* SOCIETIES AND ASSOCIATIONS, U.S.

Accident Insurance: *see* INSURANCE.

Accidents. The death toll from accidents in the United States in 1954 was 90,000. There were 9,050,000 nonfatal injuries, about 320,000 of which resulted in some form of permanent disability. Information available through Aug. 1955 indicated that the 1955 accidental death toll would be higher than in 1954.

The annual accidental death toll in recent years has been exceeded only by deaths from heart disease, cancer and vascular lesions of the central nervous system. However, a study by the American Medical association revealed that accidents rob the nation of more working years than any disease. The reason is that most accident victims are struck down before or during their productive life, while disease deaths occur when the working years are largely past.

The 43rd National Safety congress, held in Chicago, Ill., in Oct. 1955, marked 43 years of the organized national safety movement, of which the hub has been the National Safety council and affiliated local safety organizations.

Safety work is carried on continuously by progressive industries and by a large number of organizations, both governmental and private, operating in their particular fields of activity, such as industry, street traffic, school, home and farm.

Serving as a clearinghouse for all accident prevention activity, the National Safety council attempts to discover the facts of accident occurrence; to devise or help devise engineering, edu-

cational and enforcement measures for prevention; to assist in determining engineering requirements for the safe design, construction and use of machines and equipment; to help formulate model safety legislation; to participate in planning and executing training and educational programs; to disseminate information widely to interested groups and to the general public, and to encourage and assist the establishment and functioning of community and state safety organizations. The council operates under a federal charter.

Work Safety.—At the end of the first eight months of 1955 the occupational death toll was virtually unchanged from 1954. Deaths of this type in 1954 totaled 14,000.

Most progressive industries were engaged in vigorous safety efforts in 1955. Many of them carried their activities beyond the plant gates, both as a community obligation and because they realized that off-the-job accidents seriously disrupt in-plant operations.

Associations and other employer groups emphasized accident prevention programs in their service to members, and this was proving to be one of the most effective ways to reach the small business. Since at least 70% of the businesses with 100 employees or less were not being reached by organized safety programs, more energetic efforts were being directed to this field where the greatest hope for further substantial reductions of the occupational accident toll lay.

Labour organizations and governmental agencies, such as state and national labour departments, also were making important contributions in the war on accidents.

Traffic Safety.—During the first eight months of 1955, there were 23,470 motor vehicle deaths in the United States, an increase of 5% over the comparable period of 1954. On a mileage basis the traffic accident picture was much more favorable.



PEDESTRIAN CROSSING STRIPES of both parallel and diagonal patterns at the intersection of Seventh Ave. and 42nd St., New York city. The parallel type was deemed more effective and adopted for general use in the city in 1955

Mileage was up about 7%, resulting in a mileage death rate (deaths per 100,000,000 mi.) of about 5.8—a record low for the period.

The tremendous growth of motor vehicle ownership and travel since World War II gave rise to an accident problem which taxed the existing facilities to cope with it. In Dec. 1954 the president of the United States gave the support of the highest office in the land to S-D (Safe-Driving) day in an effort to prove that a co-ordinated effort for 24 hours could achieve a dramatic reduction in deaths. The decline in deaths achieved on the one day would have amounted to about 6,000 if applied to the entire year. Another S-D day was held on Dec. 1, 1955.

In the 1954 National Traffic Safety contest, Washington won the grand award among states. Other states which won first place in their divisions were: Connecticut among eastern states; Virginia among southern states; Minnesota among midwestern states; and Pennsylvania among the eight largest states, which are grouped separately because of their peculiar traffic problems growing out of large population and mileage.

Wausau, Wis., won the grand award among cities for the second consecutive year. Other cities which won first place in their population groups were: Chicago, Washington, Cincinnati, Denver, Oklahoma City, Phoenix, Ariz., St. Joseph, Mo., and Rocky River, O.

Farm Safety.—Four more states organized state farm safety committees in 1954, bringing to 35 the number of states with functioning farm accident prevention organizations. Fifteen states had full-time farm safety specialists. These committees and individuals worked through many public and private agencies to spread information on the farm accident problem and methods to solve it.

For the twelfth consecutive year, the president of the United States proclaimed a National Farm Safety week, in July 1955, which focused attention on accidents to rural residents.

School and Child Safety.—Accidents rank first as a cause of death to children and young people from 1 to 24 years of age.

Principal Types of Accidental Deaths in U.S., 1903-1954

Year	Motor-Vehicle	Falls	Burns*	Drown-ings†	Rail-road	Fire-arms	Poison Gases	Poison (Excep Gases)
1903-1912 av. . .	1,200	†	†	9,000	10,700	2,100	†	†
1913-1922 av. . .	9,600	13,500	9,200	7,900	8,900	2,600	†	3,000
1923-1927 av. . .	21,700	15,500	8,800	7,400	7,300	2,900	2,900	2,700
1928-1932 av. . .	30,900	17,800	7,800	7,700	6,100	3,100	2,400	2,600
1933-1937 av. . .	36,313	21,442	7,314	6,950	5,538	2,883	1,641	2,141
1938-1942 av. . .	33,549	23,100	7,106	6,550	5,068	2,565	1,502	1,831
1943-1947 av. . .	28,458	23,820	8,192	6,708	4,882	2,477	1,978	1,875
1948 (5th rev.) . .	32,259	24,800	7,668	6,500	3,976	2,270	2,002	1,711
1948 (6th rev.) . .	32,259	22,000	6,800	6,500	3,800	2,330	2,020	1,600
1949	31,701	22,308	5,982	6,684	3,571	2,326	1,617	1,631
1950	34,763	20,783	6,405	6,131	3,667	2,174	1,769	1,581
1951	36,996	21,376	6,788	6,489	3,631	2,247	1,627	1,492
1952	37,794	20,945	6,922	6,601	3,189	2,210	1,397	1,451
1953	38,300	20,600	6,600	6,600	3,200	2,250	1,300	1,450
1954	36,000	19,900	6,300	6,200	2,700	2,200	1,300	1,400

Source: National Office of Vital Statistics, except that railroad estimates prior to 1933 are based on data from Interstate Commerce Commission. From 1903 to 1932 the other figures are estimates based on data for states in the official registration area. From 1933 to 1948 (5th revision) the figures are those published by NOVS plus National Safety Council estimates of falls in agricultural accidents and drownings in water transport accidents. 1949 to 1952 figures are NOVS totals. 1948 (6th revision), 1953 and 1954 figures are NSC estimates.

*Includes burns by fire and deaths resulting from conflagration, regardless of nature of injury; also burns by chemicals, steam, hot substances in 1948 (5th revision) and earlier years.

†Includes drownings in water transport accidents.

‡Comparable data not available.

Nevertheless, it is in this age group that the most dramatic reductions in the accidental death rate have been made.

For children under 5 years of age, the accidental death rate in 1955 for all types of accidents was about half the rate at the turn of the century, while the motor vehicle rate alone was nearly one-fourth lower than the 1928-32 average rate, the highest on record. For children 5 to 14 years old the 1954 total rate was 51% less than the 1903-12 average, while the motor vehicle rate was about half the 1923-27 average, the peak for this age group.

Home Safety.—The 1954 death toll in home accidents in the United States was 27,500. The majority of the fatalities were among the very young and the elderly persons. Falls were the chief cause. Estimates for 1955, based on the first eight months, indicated that home fatalities in 1955 would be fewer than in 1954.

There was a growing sentiment in the medical profession to view accident prevention, especially in the field of pediatrics and child care, as an important concern and obligation of physicians. Local and state health departments gave increased attention to accident prevention work, with emphasis on home safety.

Canada.—In Canada there were 8,642 accidental deaths in 1953 (the latest year for which complete figures were available as of late 1955). This was a slight increase in number, but a reduced average of 58.6 deaths per 100,000 population. As in the United States, accidents ranked fourth as a cause of death to



BRITISH VERSION of the automobile safety strap demonstrated in 1955

persons of all ages. Motor vehicle accidents were the most important type in Canada in 1953, causing 3,121, or about 36%, of all accidental deaths. Falls were second with 1,469 deaths. Other leading causes were: drowning, 1,202; burns, 477; railroad, 313 and poison gases, 194. (See also DEATH STATISTICS; DISASTERS.)

(M. E. Hr.)

ACTH: see ALLERGY; ENDOCRINOLOGY.

Aden. British colony and protectorate on south coast of Arabia. Governor in 1955: Sir Tom Hickinbotham.

Colony.—Area: 108 sq.mi., including Perim Island (5 sq.mi.) and Kuria Muria Islands (about 28 sq.mi.). Pop. (1946 census): 80,876; Perim 2,346; Kuria Murias about 2,200; (1955 census) 138,441 (Arabs 75.2%; Indians and Pakistanis 11.4%; Somalis 7.7%).

Language: Arabic; also Indian languages, Somali. Religion: Moslem 91.3%, Hindu 3.5%. Chief towns (pop. 1955): Aden (Crater, etc.) 99,285; Sheikh Othman 29,879. Kuria Murias are administered for Aden by the British Persian Gulf residency.

Protectorate.—Area: 112,000 sq.mi., including Socotra Island 1,400 sq.mi. Language: Arabic. Religion: Moslem.

Western Area.—Audhali, Fadhlī, Haushabi, Lahej (Abdali), Lower Aulaqi, Upper Aulaqi, Lower Yafai, Upper Yafai confederation (sultanates), Dhali (amirate), Beihan (sharifate), Akra, Alawi, Dhubi, Hadhrami, Kuteibi, Maflahi, Mausatta, Shueib (sheikhdoms). Total pop. (1954 est.): 450,000. Headquarters of adviser and British agent: Lahej (pop. about 12,000). Premier chief, western, Ali Abdulkarim, sultan of Lahej; British agent, G. K. N. Trevaskis.

Eastern Area.—Shihr and Mukalla (Qu'aiti), Seiyun (Kathiri), Kishr and Socotra (Mahri), Bir Ali (Wahidi), Balhaf (Wahidi) sultanates; Irka and Haura sheikhdoms. Total pop. (1954 est.): 350,000 (Socotra I. 12,000). Chief towns: Mukalla (port; headquarters of resident adviser and British agent); Saiun; Tamridah (Socotra). Premier chief, eastern, Sir Salih bin Ghalib al-Qu'aiti, sultan of Shihr and Mukalla; British agent in 1955, Col. J. E. H. Boustead.

Kamran (area 22 sq.mi.; pop. about 2,200) is in the Red sea off the Yemen coast. Governor: governor of Aden ex officio; commissioner in 1955, Lieut. Col. R. G. W. E. Alban.

History.—There was a continuation of rebel activity, supported by Yemeni influences across the frontier, in the western protectorate during early 1955. But the situation improved after action by the security forces which were reinforced in July by troops from Great Britain. At the beginning of the year a second unofficial member was added to the colony's executive council, and in July the terms of proposed constitutional changes in the colony were announced after discussion with members of the legislature. They included the holding of elections for four members of the legislative council (there having been no elected members before), of whom three would be chosen by constituencies and one by the Aden municipal council.

(J. J. Ty.)

Certain Moslem associations decided to boycott the elections, claiming inadequate provisions for direct representation. Henry Hopkinson, United Kingdom minister of state for colonial affairs, visited the colony and protectorate in January.

Education.—(1954) *Colony:* Schools: primary 32, pupils 7,233, teachers (1953) 221; secondary (including 1 technical college with 150 students) 14, pupils 2,177, teachers (1953) 15. Teachers' training classes 2, students 19. Aden college provides postsecondary education for men. *Protectorate:* Schools (excluding private): primary 105, pupils 7,062; secondary 6, pupils 524.

Finance and Trade.—Monetary unit: East African shilling, valued in 1955 at 14 cents U.S. Budget (1954–55 est.): revenue £2,319,879; expenditure £2,318,332. Foreign trade (1954): imports £64,900,000; exports £44,300,000. Principal products (1953): salt, 244 metric tons; salted fish.



CHANCELLOR ADENAUER PRAYING in the only Roman Catholic church of Moscow during his visit to the U.S.S.R. in 1955

Adenauer, Konrad (1876–), German lawyer and statesman, was born at Cologne, Jan. 5. He was educated at the Gymnasium St. Aposteln, Cologne, and at the universities of Freiburg im Breisgau, Munich and Bonn. In 1906 he was elected councillor and deputy mayor of Cologne, becoming lord mayor (*Oberbürgermeister*) in 1917. A leading member of the Catholic Centre party, he was a member of the Prussian *herrenhaus* from 1917 to 1918 and Prussian *staatsrat* from 1918 to 1933 (president, 1928–33). He was dismissed by the nazis from the position of lord mayor in July 1933 and a year later was imprisoned for a short time during a drive against Catholic leaders. He was again imprisoned in 1944 after the attempt on Adolf Hitler's life. The U.S. occupation authorities made him mayor of Cologne in the spring of 1945, but in October the British, who had taken over the area, dismissed him, forbidding him to take part in politics; however, this prohibition was soon removed. A foundation member of the Christian Democratic union in Sept. 1945, he was president (1948–49) of the parliamentary council of the three western zones which drafted the constitution of the German Federal Republic. He became chancellor of the republic on Sept. 15, 1949.

Adenauer's chancellorship was marked by the substantial economic recovery of the republic and by renewed German participation in external politics. Having triumphantly won the general election of Sept. 6, 1953, he remained federal chancellor. By signing in Paris, on Oct. 23, 1954, a series of agreements with the western powers, Adenauer succeeded in restoring German sovereignty, getting the right to rearm and obtaining membership in the North Atlantic Treaty organization (NATO) for the German Federal Republic. However, by signing the Franco-German agreement on the Saar, he made a sacrifice to save western European union.

On May 5, 1955, at Bonn, he presided over the ceremony of the formal attainment of sovereignty by the German Federal Republic. Four days later, in Paris, he attended a meeting of the NATO council at which the German Federal Republic joined the organization as its 15th member. In June he visited the United States, where he received an honorary degree from Harvard university. He also had discussions with Pres. Dwight D. Eisenhower in Washington, D.C., and subsequently met in New York city the foreign ministers of France, the United Kingdom and the United States. On his way back he stopped in Lon-

don and visited Sir Anthony Eden. During Sept. 9-13 he was on an official visit to Moscow and agreed to the Soviet proposal of establishing diplomatic relations between the U.S.S.R. and the German Federal Republic.

Adult Education: *see* EDUCATION; LIBRARIES.

Advertising. Advertising expenditures in the United States in 1955 kept pace with the growth of business. It was possible that total advertising volume would reach \$9,000,000,000, as it was increasing at the rate of more than 10% over the approximately \$8,200,000,000 spent in 1954.

A comparison between the growth of advertising since 1935 and the increase in the gross national product showed that each had increased approximately 400%. Moreover, since 1935 the relationship of advertising expenditures to gross national product had remained practically constant, standing at 2.3% in 1935 and 2.2% in 1954.

The Magazine Advertising bureau, in releasing at midyear data on national advertising since 1939, indicated that there had been a tremendous increase in such advertising both in terms of dollar investments and the number of companies using one or more national advertising media. In dollar totals, advertising volume increased from \$333,000,000 to \$1,429,000,000 in 1954, and the total number of advertisers rose from 936 in 1939 to 2,615 in 1954. There was also an increase of about 300% since before World War II in the number of nationally advertised brands, this contributing to the growing importance of advertising.

For the first seven months of 1955 national advertising expenditures were \$705,087,357 for space in general and farm magazines and newspaper sections, and for time on radio and television networks. This compared with \$631,532,761 for the like period in 1954, a rise of almost 12%.

Gains were made in almost all industrial classifications. The largest category, foods, accounted for advertising expenditures of \$114,678,669, compared with \$102,174,884 in 1953.

Advertising Agencies.—There was a marked restlessness among accounts of advertising agencies during the year, resulting in many shifts that sometimes ended long relationships. For example, the Coca-Cola company decided to leave the D'Arcy Advertising company after an association of 49 years, and gave its business to McCann-Erickson, Inc. The business involved direct billings in excess of \$10,000,000, with about \$5,000,000 more in co-operative advertising. There were many other shifts, involving liquor, watch, floor covering, soup, chemical and other accounts, and terminating relationships of up to 40 years. It was believed by students of the agency business that these

Table I.—Leading Advertising Agencies in 1954

Agency	Billing	Agency	Billing
J. Walter Thompson Co. . .	\$103,575,367	Foote, Cone & Belding, Inc. . .	\$42,361,111
Young & Rubicam, Inc. . .	99,447,762	William Esty Co., Inc.	40,990,000
Batten, Barton Durstine & Osborn, Inc.	90,698,001	Benton & Bowles, Inc.	39,250,000
McCann-Erickson, Inc. . . .	53,388,712	Leo Burnett Co.	34,876,000
		N. W. Ayer & Son, Inc. . . .	34,665,000

shifts were caused by upheavals in industry, resulting in new methods of distribution; the management of advertising firms by committee, a more difficult basis of stable agency-client relationships; deaths of pioneers in industries who had remained loyal during their lives to the agencies with which they had been associated; shifting in leadership among brands; and failures among agencies in replacing and training capable personnel.

A measurement of actual expenditures for space and time made during 1954 in national advertising in newspapers, magazines and radio and television broadcast advertising is shown in Table I. The figures representing their billings were for national advertising placed by clients spending \$25,000 or more in at least one of the four media classifications.

Agencies were beginning to see business opportunities in the development of atomic energy, and at least five were giving special attention to this field.

Television and Radio.—Data provided by the bureau of the census as a part of the current population survey showed that 32,106,000 households had television sets, or 67.2% of the 47,888,000 households in the U.S. Of the households with television 96.5% owned one set and 3.5% owned more than one set.

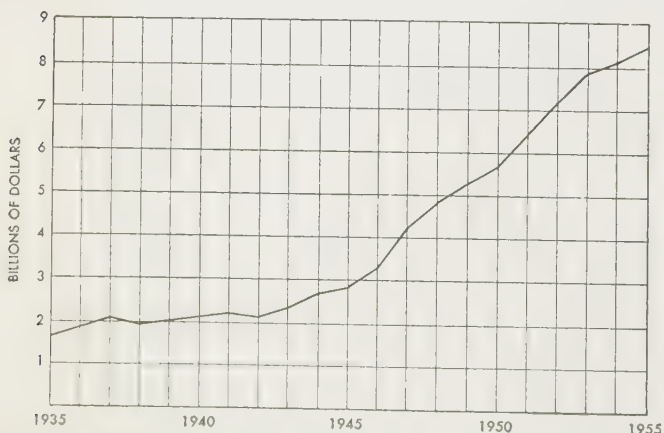
Data supplied by the Publishers Information bureau showed that television network advertising totalled \$227,172,548 in the first seven months of 1955, compared with \$173,797,990 in the comparable period of 1954. Biggest increases were in the classifications of foods and toiletries. During the same periods television advertising expenditures on network radio were dropping to \$60,548,735 from \$84,093,760. The automotive and smoking classifications remained relatively constant in this medium, however.

Colour television did not make such fast progress as had been hoped. However, its promoters declared that by 1965 all television sets manufactured would be equipped to receive colour and that 65,000,000 sets would be in operation, more than half equipped for colour. They said that lack of colour programming and sponsorship in 1955 was caused chiefly by the lack of colour receivers. It was estimated that about 7,500,000 television receiving sets of all kinds and 12,000,000 radio sets would be sold in 1955.

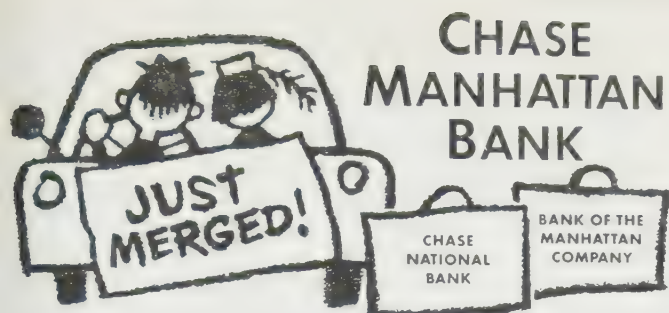
The subject of paid versus free television was debated warmly during the year. Paid or toll television is that proposed by certain interests to be supplied to television set owners for a fee, perhaps as much as \$2.50 a week, such programs to be without commercials. The main proponents of pay television were manufacturers of devices to be used in such systems, while the opponents included the television networks and the National Association of Radio and Television Broadcasters. Arguments were presented before the Federal Communications commission, with the commission inviting the public to comment by mail. More than thousands of messages were received. No decision was expected from the commission before the end of the year. Meanwhile surveys taken by three research firms showed that television commercials were generally well received by the public.

Newspapers.—The Bureau of Advertising, American Newspaper Publishers association, declared in midyear that national newspaper advertising was running at the rate of \$650,000,000 a year, and that for the first seven months of 1955 it showed a 9.9% gain over the similar 1954 period.

The 10 largest advertisers in newspapers in 1954 were announced by the Bureau of Advertising as shown in Table II, the expenditures noted excluding co-operative advertising.



DOLLAR EXPENDITURE for all mediums of U.S. advertising, 1935-55. The figure for 1955 is an estimate. (Source: *Printers' Ink*)



NEWSPAPER ADVERTISEMENT announcing the 1955 merger of two New York city banks

Newsprint consumption in the United States remained at an all-time high, the newspapers reporting to the American Newspaper Publishers association using 384,679 tons in August, a rise of 6.6% over the same month in 1954. The amount for the first eight months was 3,360,187 tons, up 7.6% over the comparable 1954 period. Prospective rises in the cost of newsprint alarmed publishers, and they warned that such increases might cause some papers to suspend publication.

Magazines.—Expenditures in general and farm magazines as compiled by Publishers Information bureau showed that in the first seven months of 1955 a total of \$360,358,671 was invested, compared with \$336,176,905 in the same period of 1954. Large gains were registered in the foods, automotive and industrial materials classifications. The bureau reported that magazines carried \$550,267,000 of advertising in 1954.

Magazines in 1955 continued to make substantial gains in circulation, often accompanying the reports of these gains with new rate cards announcing higher advertising rates. The *Saturday Evening Post*, *Sports Illustrated*, *Fortune*, *Christian Herald*, *McCall's*, *Esquire*, *Reader's Digest International Editions* were among many that raised rates. *Look* sought to level the peaks and valleys in its advertising volume by instituting an advertising rate structure that allowed discounts for continuous use of full-page advertisements or their equivalent in half pages, the space to be used in 26 consecutive issues of this biweekly publication.

A study conducted by Alfred Politz Research, Inc., showed that readership of consumer magazines was almost three times as great in homes that had television as in those without it.

In what was called by Curtis Publishing company "the most notable change in magazine ownership in recent years," that company sold its *Country Gentleman-Better Farming* to *Farm Journal*. The former publication had 2,566,314 circulation, going back 102 years. The latter had 2,870,380 circulation.

Other Media.—Donald C. McGraw, president of the McGraw-Hill Publishing company, told the Associated Business publications that the current advertising volume of \$372,000,000 in business publications should increase to \$515,000,000 by 1965. He warned against complacency over past successes.

A new weekly magazine, *Petroleum Week*, was launched, and a magazine with controlled circulation, *Package Engineering*, was announced for publication in Jan. 1956. Many business publications announced increases in circulation and advertising rates.

Direct mail volume for the first five months of 1955 passed the \$500,000,000 mark, according to the Direct Mail Advertising association. This represented a gain of 3.5% over the same

period of the year before.

Legal Aspects.—Government took an increasing interest in advertising during the year. The antitrust division of the department of justice charged conspiracy and collusion in restraint of trade and in violation of the Sherman act against several advertising groups, including the American Association of Advertising agencies, the American Newspaper Publishers association, Associated Business publications, Periodical Publishers association, Agricultural Publishers association and Publishers Association of New York. Court appearances to answer the government's complaint were postponed various times following the filing of the complaint in May.

The Federal Trade commission announced that it would try to block the merger of *Farm Journal* and *Country Gentleman-Better Farming*, alleging that the merger "eliminated the only competitor with national advertising and circulation in the monthly farm magazine field."

The commission issued guides for advertisers that banned cigarette advertising which claimed smoking cigarettes had medical approval, or which made reference to effect of smoking on nose, throat, nerves or any other part of the body.

Advertising in Other Countries.—Commercial advertising on television made its debut in Great Britain on Sept. 22. Britons got their first look in a four-hour telecast by the new London station of the independent television authority. The commercial plugs were much milder than those used in the United States, as well as briefer, the maximum time for advertising on a one-hour program being six minutes. It was not expected that television would cause a major shift in the allocation of advertising expenditures among other media.

Advertising in Canada remained vigorous. Government data issued at midyear showed that advertising agencies numbered 91, having increased by three in 1954. The volume of business handled by them amounted to \$156,163,289, a rise of \$11,823,981 over the figure for 1953. The number of employees increased by 10% to 3,173 and their compensation to \$15,220,278 from \$13,630,975. Payrolls took 61.9% of gross revenue. Percentage of distribution of commissionable billings by media in 1954 was as follows: publications, 56.4%; other visual, 4.5%; production, art work, printing, etc., 17.3%; radio, 15.4%; television, 5.5%; other, 0.9%.

BIBLIOGRAPHY.—Philip Ward Burton, *Principles of Advertising* (New York, 1955); Albert Wesley Frey, *How Many Dollars for Advertising* (New York, 1955); Harry Walker Hepner, *Modern Marketing* (New York, 1955); Charles L. Whittier, *Creative Advertising* (New York, 1955). (R. A. BN.)

Aeronautics: see AVIATION, CIVIL; AVIATION, MILITARY.

Afghanistan. An independent kingdom in central Asia, Afghanistan is bounded north by the U.S.S.R., west by Iran, south and southeast by Pakistan and east by China. Area: about 251,000 sq.mi. Pop. (1953 est., no census ever taken): 13,000,000. Races: Pashtu or Pakhtu 60%, Tajik 30.7%, Uzbek 5%, Hazara (Mongoloid) 3%. Languages: Pashtu and Persian. Religion: Sunni (Hanafi) Moslem. Chief towns (pop., 1953 est.): Kabul (cap.) 310,000; Kandahar 195,000; Herat 150,000; Mazar-i-Sharif 100,000. King, Mohammed Zahir Shah; prime minister in 1955, Mohammed Daud Khan.

History.—Pakistan-Afghan relations in 1955 remained marred by the continued support given by the Kabul government to the Pashtu (or Pakhtu) people of the former North-West Frontier province of Pakistan in their so-called demand for self-determination. The Kabul government does not recognize the 1893 Durand line as the Afghan-Pakistani international frontier.

On March 29 the prime minister broadcast a speech over Kabul radio which amounted to open incitement of the Afghan people against Pakistan. This speech was followed in the course

Table II.—Leading Newspaper Advertisers in 1954

Advertiser	Expenditure	Advertiser	Expenditure
General Motors Corp. . . .	\$37,391,415	General Foods Corp. . . .	\$9,351,441
Ford Motor Co.	17,999,652	Procter & Gamble Co. . . .	7,251,400
Chrysler Corp.	11,787,596	Lever Bros. Co.	6,803,797
Colgate-Palmolive Co. . . .	10,990,682	National Distillers	
Distillers Corp.-		Products Corp.	6,718,375
Seagram's Ltd.	9,815,375	Schenley Industries, Inc. . . .	6,157,000

of the next two days by demonstrations in Kabul, Kandahar and Jalalabad during which Pakistani missions were wrecked and looted and Pakistani flags were pulled down. The government of Pakistan was, therefore, compelled to close its diplomatic and consular missions and withdraw their staffs. A "general mobilization" of Afghan armed forces was ordered in Kabul at the beginning of May, in reply to which Gen. Mohammed Ayub Khan, Pakistani minister of defense and commander in chief, commented that if any inroads were made into Pakistan territory Afghanistan would be taught a lesson to be remembered for life. Attik Khan Rafik, Afghan minister to Karachi, was recalled to Kabul. Mikhail V. Degtyar, Soviet ambassador to Kabul, was reported to have promised Afghanistan "total military aid" in the event of Pakistani aggression. This acute tension resulted in offers of mediation by Islamic powers, but Gen. Iskander Mirza, then the Pakistani minister of the interior, made it clear that his country would maintain the Durand line. On June 30, when opening the session of the Afghan national assembly, King Zahir pledged his country's support for the idea of an autonomous Pashtunistan.

On Sept. 13 the Afghan foreign minister, Mohammed Naim Khan, rehoisted the Pakistan flag on the Pakistani embassy in Kabul with full ceremonial honours and in the presence of Col. A. S. B. Shah, the Pakistani ambassador. Chaudhri Mohammed Ali, the Pakistani premier, said on Sept. 15, in the constituent assembly, that relations between the two countries had taken a turn for the better. This improvement, however, did not continue for long. When, on Sept. 30, the Pakistani constituent assembly passed a bill merging western Pakistan into a single province, the Afghan government protested against this violation of the rights and wishes of the Pashtu people. Attik Khan Rafik was again recalled from Karachi (October).

At the beginning of November a few thousand armed Afghan tribesmen entered Pakistan along a 100-mi. stretch of frontier about 300 mi. N.E. of Quetta. A Pakistani army spokesman said that militarily there was no threat in the presence of these tribesmen. He added, however, that there was evidence that this so-called invasion was inspired by Kabul with the moral and material support of the U.S.S.R. and India. The Afghan ambassador to Cairo, Salaheddin Salgooky, declared that his country would seek Soviet or Czechoslovak arms if the west failed to supply them.

Education.—Schools (1951): primary 334, pupils 100,250 (including about 500 girls); secondary, lower 25, higher 7; vocational 2. Teacher training colleges 2. University of Kabul, with six faculties.

Finance.—Monetary unit: afghani, with an exchange rate of 16.80 afghanis to the U.S. dollar. Budget (1953 est.): total revenue 345,000,000 afghanis (consisting largely of payments in kind). Note circulation (1953): 1,278,000,000 afghanis.

Foreign Trade.—(1954) Exports to the U.K. £826,000; imports £303,000. Principal imports: cigarettes (5,000,000 in 1952), sugar, cloth, cement, building materials and motorcars. Principal exports: karakul skins (Persian lamb) (5,600,000 in 1952), carpets (150,000 m. in 1952), raisins, wool, fresh fruit, tobacco, spices, hides and skins.

Transport and Communications.—Roads (1949): 3,624 km. Motor vehicles in use (1952): cars 840, commercial 2,500. Telephones (Jan. 1954): 5,822. Radio receiving sets (1950): 8,000.

Agriculture.—Main crops (metric tons, 1953; 1954 in parentheses): cottonseed 26,000 (22,000); cotton, lint 13,000 (11,000); beet sugar, raw 6,000 (6,000); cotton, ginned 13,000; wheat (1948) 1,700,000; rice (1948) 333,000; barley, millet and maize. Livestock (1948): horses 500,000; asses 1,000,000; mules 200,000; cattle 2,500,000; sheep 14,000,000; goats 6,000,000; camels 350,000; chickens 40,000,000. Wool production (clean basis, 1954): 3,000 metric tons. Fuel and power (1951): electricity 17,000,000 kw.hr.

A. F. of L.: see LABOUR UNIONS.

Africa: see BRITISH EAST AFRICA; BRITISH SOUTH AFRICAN TERRITORIES; BRITISH WEST AFRICA; FRENCH UNION; LIBYA; PORTUGUESE OVERSEAS TERRITORIES; SOMALIA; SOMALILAND, FRENCH; SOUTH AFRICA, THE UNION OF; SPANISH COLONIAL EMPIRE; TRUST TERRITORIES; etc.

Agricultural Research Service. This agency conducts all of the U.S. department of agriculture's production and utilization research (except forestry research) and crops and livestock regulatory programs. Much of the work is co-operative with other federal, state or private agencies.

Antibiotics, already widely useful in combating animal diseases, hold promise of controlling some fungous as well as many bacterial diseases of plants. In the course of research which was continuing in 1955, they proved effective experimentally in varying degrees, against such bacterial diseases as leaf spot of sesame, angular leaf spot of cucumber, bacterial spot of pepper, wetwood of trees and rot of giant cactus. Antibiotics also proved effective against certain fungous diseases, such as bean rust and downy mildew of lima beans.

A discovery that fungi, which contain no chlorophyll, respond to light may mean that they can serve even better than green plants as tools for studying plant reactions to light.

Growth-regulating chemicals, which in lethal dosages clear lands of weeds and unwanted brush, continued to show amazing diversity in constructive use on crop plants. Low dosage application of 2,4,5-T produced lima bean plants $2\frac{1}{2}$ times the size of unsprayed ones, and increased yields of fresh beans 200 to 300 lb. per acre. Sprays of this chemical increased size, advanced maturity and prevented fruit drop of apricots. A chemical spray caused foul-smelling fruit of the ornamental ginkgo tree to fall off. A new sprout inhibitor proved highly effective for storing Irish potato tubers.

Improved crop varieties recently developed included a long grain rice variety; oat varieties resistant to all known races of oat stem rust; a superior winter barley; a superior dryland stripper cotton; a blight-resistant cotton; a hybrid disease-resistant spinach; four new durum wheat varieties resistant to 15B as well as other common races of wheat stem rust; a hard resistant orchard grass; two nonshattering sesame varieties; an early-maturing, shatter-resistant castor bean; an early, resistant onion; a superior Zoysia hybrid lawn grass; a disease-resistant sugar beet; and a wildfire-resistant burley tobacco. In the spring of 1956, hybrid grain sorghum seed would, for the first time, be available to growers. Its potential yields were 20% to 40% more than currently used varieties. Sorghum and Johnson grass were being crossed to develop a new perennial forage crop for the south.

Screwworms, costly livestock pests, were eradicated from the Caribbean island of Curaçao by a completely new method of biological control. Male flies, made sterile by radioactive rays, were released over the island to mate with wild female flies. It was hoped that this experiment might provide a method for eventually eradicating this livestock pest from Florida.

Free-choice phenothiazine, properly employed, appeared to present an entirely new approach to cattle-grub control; it might also be the most powerful weapon available for combating losses from parasitism in cattle.

A mite so small it cannot be seen without a microscope was identified as the carrier of peach mosaic, destructive virus disease of stone fruits.

A federal quarantine against the European chafer, a serious agricultural pest first recognized in the United States in 1919, went into effect to guard against spread of the insect from infested areas of Connecticut, New York and West Virginia.

A co-operative federal-state program to control the burrowing nematode that causes spreading decline of citrus began in Florida.

Probably the largest building-fumigation job in history is under way in California, Arizona and New Mexico against the grain-infesting khapra beetle, first found in the U.S. in 19

Grain storage buildings were wrapped in gastight covers and fumigated with methyl bromide gas to destroy the hard-to-kill insect.

About 18,500 destructive plant pests—11,500 insects and 7,000 plant diseases—from throughout the world were intercepted by plant quarantine inspectors during fiscal year 1955. They were found with agricultural products in cargo, in stores, baggage and mail, and as stowaways aboard vessels, planes, railway cars and vehicles.

More efficient mechanical means of producing and processing crops are constantly being developed, adapted or improved. Recent developments included an improved, inexpensive hose pump for metering liquid fertilizer; a mechanical silage feeder that reduced hand labour and cut by two-thirds time spent in feeding animals; two devices for tipping beehives that considerably reduced hand labour required for handling hives; a method of mechanical harvesting and curing of Virginia-type peanuts that saved labour and materials; fertilizer placement machines; a mechanical tung nut harvester; a sugar beet thinner using counter-rotating heads; and equipment for cutting leaves of and transplanting sansevieria, a long-fibre crop.

A combined opener and cleaner for cotton was developed, which could replace the four or five machines now needed. A new cotton-planting attachment for use with lister planters in the southwest was expected ultimately to save \$6,000,000 to \$10,000,000 annually in cost of replantings.

Use of radioactive chemicals as research tools continued to aid in solving problems of soil and plant relationships. Soil scientists had learned to measure available phosphate in any soil so accurately that it could be expressed in terms of pounds of superphosphate-equivalent per acre. By using a radioactive isotope of sulphur as a tracer, they found that cotton plants absorb part of their sulphur requirements from the atmosphere as sulphur dioxide. Adding iron chelates to the soil makes iron available for use of some western iron-hungry plants.

The total value of farm assets—farms, livestock, machinery, crop inventories, household goods, bank deposits and other financial assets owned by farmers in the United States—was about \$163,000,000,000 at the beginning of 1955, 1% above a year earlier but about 4% below the peak of 1952. Total farm debts rose nearly \$1,000,000,000 in 1954, from \$17,100,000,000 to \$18,000,000,000. Total farm-mortgage debt increased in 1954 for the ninth consecutive year and at the start of 1955 totalled \$8,200,000,000, 72% above the postwar low in 1946. It continued to rise in 1955. Farm real-estate values rose slightly during the year ended in March 1955; farm sales volume was 5% above the previous year's volume. Taxes on farm real estate increased in 1954 for the 12th consecutive year, pushing the average tax per acre to an all-time high.

Fatty acids usually produced in the rumina of cattle and sheep by other bacteria and used by important fibre-digesting bacteria were recently identified as essential for the latter's growth. It might be possible to add such factors to certain ruminant rations to increase digestion of the animals' feed and thus speed up growth.

One noteworthy gain on the livestock disease front would permit tissue-culture production of foot-and-mouth disease virus for research purposes in the U.S. Other work promised to result in more positive early diagnosis and improved control of vesicular stomatitis and, for the first time, an extensive U.S. survey of anaplasmosis. Ways were found to differentiate vibrios—bacteria—that cause vibriosis in cows from those that do not, and to cut the number of brucellosis-vaccinated animals classified as suspect and increase numbers classified as negative.

Recent swine disease research made practical the diagnosis of atrophic rhinitis, prevention of "yellow fat" disease, check of

spread of vesicular exanthema, and possibly the eradication of hog cholera.

Scientists discovered that resistance to the cancerous poultry disease, visceral lymphomatosis, may be passed to chicks through eggs from vaccinated hens inoculated with massive doses.

Mexico was declared free of foot-and-mouth disease on Dec. 31, 1954, and the border was reopened on Jan. 1, 1955.

Co-operative research and regulatory action was being taken against several apparently new diseases of cattle recently reported from scattered locations throughout the country under such names as viral diarrhoea, mucosal disease and rhinotracheitis. (See also VETERINARY MEDICINE.)

A reference diet for human nutrition studies was developed as a research tool for determining individual needs for practically any important nutrient, except amino acids, and measuring their use by the body.

New food composition tables were issued in which calories for hundreds of individual foods had been calculated from specific factors, replacing general factors developed about 50 years ago. They were especially useful in calculating calories for individual foods, special diets and international food supplies.

Two complex chemicals, discovered in the tubers of a rare Mexican yam, showed promise as superior raw materials for synthesis of the drug cortisone.

Transforming perishable foods into more storable form continued to help adjust marketing to demand. Newly developed were a lemonade powder rich in natural flavour, and tasty new French-fried vegetable snacks—chips from sliced carrots, beets and parsnips, and "nuggets" from whole peas and lima beans.

Dehydrofreezing, a combination food-processing technique which was coming into commercial use, might soon help to place on the market apples, apricots, green peas and pimientos that would combine space and weight economies of dehydration with convenience and freshness-retention of freezing. (See also CHEMISTRY.) (B. T. S.)

Agriculture. U.S. agriculture in 1955 became the widely recognized problem sector of the national economy. In the midst of an over-all boom, the farming sector drifted lower—a long continued slide that by late summer became a major worry to political and administrative officials as well as personally painful to a considerable percentage of farmers and some businessmen. Yet U.S. farms continued highly productive—so productive that abundance mounted to a problem surplus. Thus most U.S. families continued to "eat high on the hog" without, however, much, if any, decline in the dollar cost of their food budget. The farmers' share of the consumers' dollar for farm food products declined to 40% in July as compared with 43% a year earlier. Middlemen and retailers prospered—the widening spread between prices to farmers and to the consumer of this \$64,000,000,000 industry being partly explained by additional services. Changes in consumption patterns involved not only growth in use of frozen foods but eating outside the home—estimated as a \$16,000,000,000 industry.

Agricultural production continued very strong in spite of considerable drought and flood disaster. Farmers voted affirmatively on all marketing quotas and, with the exception of corn, generally abided by acreage allotments. Yet, over-all acreage planted did not decrease significantly. Whereas it had been assumed by most economists and technicians that the rapid domestic population increase would soon wipe out the agricultural surplus, the year brought larger stockpiles and higher costs of carrying the reserves in spite of major export efforts.

In spite of official acreage controls on a few crops, plantings were about as large in 1955 as in 1954. However, early bumper prospects were somewhat blasted in August; drought in the

western corn belt reduced corn prospects as much as 10% during that month and the record crops of soybeans and grain sorghums also suffered serious reduction. Drought in the middle Atlantic area, hurricane and related flood damage in parts of the east and extreme temperatures in California were part of the 1955 pattern.

After earlier indications which suggested to some a period of general stability, prices received by farmers declined 4% between mid-June and mid-August to a level about 6% below a year earlier, then declined further in the autumn. For the first eight months of 1955, as compared with the same period of 1954, prices received were about 5% lower, volume of marketings 1% larger, and cash received \$16,700,000,000, about 4% less. Farm debts increased. Meanwhile, the farmers' costs of production were comparatively stable near their all-time peak.

Though world food production expanded little in 1955, the one-fourth expansion in the past decade provided an eased situation in many areas, burdensome surplus in a few. Famine from drought, flood or economic dislocation was rarely noted. Trade in agricultural products declined somewhat as more areas attained, or tried for, self-sufficiency.

Crop Production.—U.S. crop production in 1955 was indicated at 106% of the 1947-49 base, equal to the 1948 record. On a yield per acre basis, the preliminary index was 117, well above the 1948 record of 108. Overwinter crops and early spring plantings were bedeviled by a dry, cool spring plus a severe late March freeze which extended deep into the early vegetable producing areas of the south. Not until late May did general rains drench the emerging dust bowl of the southern plains,

Table I.—U.S. Production and Yield Per Acre

Field Crops	1955*		1954	
	Yield	Production in thousands	Yield	Production in thousands
Corn, bu.	38.6	3,117,739	37.1	2,964,600
Wheat, bu.	19.3	915,528	18.1	969,700
Oats, bu.	38.9	1,636,030	35.6	1,499,500
Barley, bu.	27.4	386,551	28.5	370,100
Rye, bu.	13.7	28,448	13.8	23,600
Flaxseed, bu.	8.5	42,985	7.3	41,500
Rice, bags (yield in lb.)	2,768	50,233	2,447	58,800
Hay, all, tons	1.47	109,908	1.43	104,300
Beans, bags (yield in lb.)	1,178	18,954	1,199	18,800
Soybeans, bu.	20.4	374,816	20.1	342,700
Peanuts, lb.	1,057	1,749,825	737	1,023,000
Potatoes, bu.	268.3	387,334	252.8	356,000
Sweet potatoes, bu.	105.1	35,593	86.5	29,400
Tobacco, lb.	1,518	2,308,028	1,342	2,236,400
Sugar beets, short tons	16.4	12,176	16.1	14,000
Cotton, bales (yield in lb.)	405	14,843	341	13,600
Fruit Crops				
Apples, bu. . . . .	...	107,323	...	109,500
Peaches, bu. . . . .	...	50,539	...	61,300
Pears, bu. . . . .	...	30,363	...	30,400
Grapes, tons . . . . .	...	3,134	...	2,500
Oranges, boxes . . . . .	...	137,585	...	130,300
Grapefruit, boxes . . . . .	...	43,500	...	42,100

*Indicated figures.

just in time to rescue partially millions of acres of winter wheat from the edge of disaster and to encourage the planting of feed crops, especially grain sorghums, on acreage which had been sown to wheat but already abandoned for harvest.

The heavy plantings of spring crops intended by farmers in March materialized. Farmers generally abided by the acreage allocations officially set for several major crops, excepting corn on which there was no marketing quota. Nevertheless, for the major crops covered in the March report, intended plantings were 285,500,000 ac., or about 3,200,000 ac. more than in 1954. About 353,000,000 ac. were planted to 59 principal crops for harvest in 1955, only about 1,000,000 ac. less than in 1954.

Food grain crops totalling only about four-fifths as much as the postwar "normal" were harvested from 11% fewer acres than in 1954, partly a result of compliance with acreage allotments, but also involving abandonment of 10,000,000 ac. because of drought and wind damage to winter wheat in the southern plains. The spring wheat crops, including 14,379,000 bu. of durum, were sharply higher than in 1954. Included were 915,528,000 bu. of wheat, 28,448,000 bu. of rye, 5,023,300,000 lb. of rice, and a small buckwheat crop.

Feed grains, in total one-eighth above average and 6% more than in 1954, included a record crop of oats (1,636,030,000 bu.), near record crops of barley and grain sorghums, plus the fifth largest corn crop which was about 150,000,000 bu. larger than the 1954 crop. All told, though the indicated feed grain tonnage declined 8% in August, the new production of 130,000,000 tons (second only to 1948) plus a record carry-over of about 40,000,000 tons (three-fourths of which was controlled by the Commodity Credit Corporation) appeared likely to result in increased carry-over at the end of the 1955-56 crop year, most of it under loan or owned by the CCC. The hay crop was a record one, about 5% larger than that of 1954.

Soybeans on a record planted acreage gave an indicated new record crop of 374,816,000 bu., in spite of a sharp decline in prospect from August drought. The peanut crop was two-thirds larger than in 1954. White potatoes, though slightly below average, were nevertheless 9% in excess of 1954 and so abundant as to call for a large diversion program. The tree nut crop was small. Deciduous fruits, more abundant than in 1954, were nevertheless average—the early peach crop a near-failure, but grapes about one-fifth more abundant than the previous year. Citrus fruits were abundant.

In spite of an official reduction of 14% in cotton acreage, new record high yields provided an abundant crop larger than in 1954 or average. Vegetable crops generally were about average. The tobacco crop was indicated as slightly larger than



TOWNSPEOPLE OF KRASNODAR, U.S.S.R., welcoming the U.S. farm delegation in Aug. 1955

in 1954 and substantially above average, hence likely to raise problems of further acreage reduction. Sugar crops in total were less abundant than in 1954.

Livestock Production.—The weighted index of total numbers of livestock and poultry on U.S. farms at the beginning of 1955 was 112 as compared with 109 in Jan. 1954 and 100 as an average for 1947-49. Thus an upward trend in evidence since 1949 and only briefly interrupted in 1953 was resumed. Meat animals were 114% of the 1947-49 average, up 2% in the year. Milk cattle and poultry approximated the 1947-49 average. Cattle and calves, numbering 95,433,000 head, were a new record high, the sixth successive year of increase and 646,000 more than a year earlier. The size of the cattle breeding herd was practically stabilized, an increase in beef cows compensating for a slight decline in milk cows.

All sheep and lambs on farms declined to 30,931,000 from 31,218,000 a year earlier. Ewes in flocks and lambs on feed declined, but ewe lambs increased by 9%, suggesting probable moderate growth in flocks in near years, activated perhaps by a new rather favourable government support program for wool.

Hog numbers on Jan. 1, 1955—55,002,000 as compared with 48,560,000 head a year earlier—were substantially increased by a large spring pig crop of 60,503,000 saved, 9% more than in 1954, and by expanded breeding of sows to farrow in the autumn of 1955. This provided over-all for a pork supply about 10% larger than in the previous year. Still further expansion was indicated for the spring of 1956, the large supply and lower price of corn more or less compensating for lower hog prices.

The corn-hog price ratio, standing at 12.7 in October, or the same as in October 1954, was not so favourable as in recent years but sufficiently favourable to encourage expansion.

The 447,310,000 chickens on farms at the beginning of the year, as compared with 442,813,000 a year earlier, included 397,000,000 layers. By preliminary estimate, only 524,400,000 chickens were raised on farms in 1955 as compared with 620,300,000 in 1954. This 15% total reduction resulted in 7% reduction as compared with 1954 in pullets not yet laying on Sept. 1, a fact likely to reduce number of layers and, perhaps, egg production in 1956. Broiler placements, of record high levels in June and July, continued later in the year at a level about 10% above 1954. From 2,851,000 breeder turkeys on farms Jan. 1, there were 63,100,000 turkeys raised as compared with 65,900,000 in 1954. Heavy breeds totalled about 47,000,000 in both years, the decline occurring in the light breeds.

Production of all meat in 1955 was about 26,875,000,000 lb., 6% more than the 1954 record. Though pork accounted for much of the increase, fed cattle increased by at least 10% in the beef component, providing an abundance of high quality beef. Consumption of red meats per person was about 160 lb., exceeded only by the 163 lb. of 1908. Beef consumption of 81 lb.

Table II.—Index Numbers of U.S. Farm Output, Gross Production of Livestock and Crops, by Major Groups (1947-49=100)

Item	Indicated 1955	1954	Average 1952-54
Farm Output	111	108	108
All livestock and products	120	119	115
Meat animals	122	119	116
Dairy products	108	108	105
Poultry and eggs	132	134	128
All Crops	106	100	102
Feed grains	112	104	102
Hay and forage	113	108	107
Food grains	78	83	95
Vegetables	105	97	98
Fruit and nuts	110	106	104
Sugar crops	106	116	106
Cotton	100	95	105
Tobacco	112	109	108
Oil crops	136	118	108

Source: Agricultural Research Service and Agricultural Marketing Service, U.S. Department of Agriculture.



SOVIET FARMER Aleksandr Ezhaviski sampling U.S. watermelon at Iowa Falls, Ia., in Aug. 1955

exceeded the 1954 record high of 79 lb. per person. Shorn wool production was estimated at 228,000,000 lb., grease basis, 2% less than in 1954.

Though milk cows were reduced and milk production in the early part of the year was slightly below the early part of 1954, production for the year somewhat exceeded the 123,500,000,000 lb. of 1954. The rate of egg lay per hen was much increased in 1955 over 1954, reaching a new record level.

Agricultural Stocks and Foreign Trade.—In spite of a major and rather successful effort to export agricultural products in 1955, the build-up of some types of surpluses, or reserves, continued. Carry-over wheat stocks of 1,020,000,000 bu. on July 1 were 13% larger than the previous record in 1954. The corn carry-over on Oct. 1 was a record 1,050,000,000 bu., as compared with 920,000,000 bu. a year earlier. The cotton carry-over on Aug. 1 was 11,100,000 bales, about 1,400,000 bales more than in 1954.

A considerable part of the large reserve was in government-held stocks. At the end of July, government holdings and commitments amounted to \$7,019,823,000, down for the fifth consecutive month from a peak of \$7,440,156,000 reached at the end of Feb. 1955, but far above the \$5,980,269,000 of July 1954. Of the total, \$4,925,484,000 was held outright and \$2,085,339,000 under loan. Major items in the government-held surplus were: wheat, \$2,600,000,000; corn, \$1,400,000,000; cotton, \$1,400,000,000; tobacco, \$400,000,000; and dairy products, \$350,000,000. It appeared that with the completion of major 1955 harvests, large amounts of several products would come under government price support, to increase the total of surplus stocks.

U.S. agricultural exports increased modestly in 1954-55, whereas total exports of the U.S. economy declined. For the 12 months ending June 30, 1955, agricultural exports were valued at \$3,142,842,000 as compared with \$2,935,905,000 for the preceding year. Grains and their products were as usual the leading

group, accounting for \$826,271,000 as compared with \$855,115,000 in 1953-54. Cotton, excluding linters, valued at \$684,288,000, showed a slight increase for the year. A large miscellaneous "other" increased to \$480,523,000 from \$363,115,000 in the previous year. Leaf tobacco increased slightly to \$305,139,000. Fats and oils, including oilseeds, increased sharply to \$457,841,000 from \$363,285,000 in the previous year. Wheat exports increased 60,000,000 bu. to 275,000,000 bu. for the year. About 30% of the total value of farm products exported was facilitated by some type of government financing, as compared with 24% in 1953-54 and 19% in 1952-53. Some products were sold at "competitive" world prices, as much as one-fourth lower than those prevailing in the U.S.

Agricultural imports for consumption declined in 1954-55 to \$3,786,542,000, as compared with \$4,175,891,000 in 1953-54. This was largely accounted for by the decline of one item, coffee, to \$1,268,514,000 from \$1,620,598,000 in the preceding year. Crude rubber (\$351,201,000) and bananas (\$231,780,000) both showed substantial increase in value. Among the supplementary products, which accounted for \$1,515,190,000 of the total imports as against \$1,693,759,000 in 1953-54, cane sugar was the leader at \$382,191,000, down from \$437,865,000 in 1953-54. Wool and meats, each at nearly \$150,000,000, were next in value, but below the previous year.

Farm Product Prices.—The feature of the year was not so much that prices declined but that they declined a further 6%, much of that rather precipitously in July and August, after having been regarded as fairly well stabilized. A modest upturn in September appeared not to change the trend. The index of prices received by farmers stood at 235 (1909-14=100) in September, down from 246 in Sept. 1954, and far below the all-time high of 313 in Feb. 1951.

Meanwhile, the farmers' share of the consumer's dollar for farm food products declined to 40 cents as compared with an average of 43 cents for all of 1954 and as much as 52 cents in 1946. However, the consumer price index was almost stable at about 115% (1947-49=100), with a slight decline in food costs to the lowest level since 1950, compensating for higher costs of some other cost-of-living items.

Farm Income.—During the first eight months of 1955 farmers marketed a total product volume about 1% larger than in the previous year. Prices, however, were about 5% lower and the \$16,700,000,000 received was 4% less than for the same months of 1954. Livestock and livestock products accounted for \$10,400,000,000, 6% less than in 1954; meat animals showed an 11% decline. Cash received for eggs and poultry was little changed, and receipts from dairy products were up about 1%. Cash received for crops marketed during the first two-thirds of the year totalled \$6,300,000,000, a 1% decline on a 2% reduction in volume as compared with the same period of 1954.

Prices paid by farmers for commodities, interest, taxes and wages involved in farm production (the Parity Index) stood at 280 (1910-14=100) in October, as compared with 279 in Oct. 1954 and a record high of 290 in May 1952. Only feedstuffs, a farm-produced item which enters into the index in an important way, showed a major decline.

The result was that the parity ratio (of prices received to costs sustained) declined as low as 82 in October, as compared with 87 one year earlier and a record high of 123 in Oct. 1946. With the lower price-high cost squeeze still operating on the farm economy, farmers' realized net income during the first half of 1955 was at an annual rate of approximately \$10,600,000,000, as compared with a revised total of \$11,800,000,000 for 1954 and a peak of \$16,774,000,000 in 1947.

Farm Values.—Assets of U.S. agriculture, especially farm real estate, again increased. The estimated total market value

of U.S. farm land and buildings in March was \$91,300,000,000, about \$2,200,000,000 greater than in March 1954 but \$2,400,000,000 short of the March 1952 peak. Largest gains, averaging about 6%, were centred in the corn belt. The strength in farm real estate values was rather surprising in the face of the steady decline in farm commodity prices and farmer incomes.

Liquid assets, larger than farmers' total debts, continued near the \$20,000,000,000 level as in other recent years.

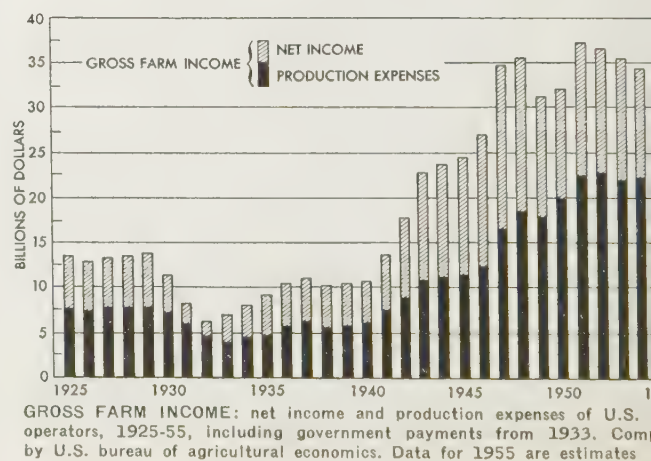
Farm debt increased appreciably: short-term and mortgage debt were both about 10% higher at the middle of 1955 than a year before. For short-term debt this represented a reversal of trend; mortgage debt increased at a more rapid rate than in the previous period.

Farm Labour and Low Income Farm Families.—The height of the 1955 summer harvest found about 9,225,000 persons employed on U.S. farms, almost as many as at the same time in 1954 but about 500,000 less than the 1950-54 average July employment. Of this total, 6,529,000 were family workers. Farm wage rates were generally higher than in 1954, but the composite rate per hour was only 67 cents. The rate per month with house was \$163 and per day with board and room \$5.90. The adjusted index for July 1 was 510 (1910-14=100) as compared with 505 a year earlier.

Low income farm families, which provide a considerable part of the farm labour force, both family and hired, received more attention than usual in 1955. They were defined as the approximately 1,500,000 farm families which had cash incomes under \$1,000 in 1950.

Machinery, Fertilizer and Taxes.—Machinery was used in ever increasing amounts on U.S. farms. Prices paid by farmers edged upward, the index in June standing at 315 (1910-14=100) as compared with 314 a year earlier. But several farm machinery companies raised prices something like 7% on some major types of machinery in the autumn. Breaking sharply from the upward trend of the last several years, sales of general agricultural machinery and tractors from the U.S. to Canada in 1954 fell \$62,500,000 from the 1953 level of \$188,000,000. On the other hand, 1954 export sales of these items to South America rose by \$33,000,000 over the preceding year, to a total of \$64,400,000, thereby offsetting somewhat the sharp Canadian sales slump.

Throughout the other areas of the world, moderate to slight declines were evident, with the exception of Asia where export sales of general agricultural machinery made a slight gain over 1954. In absolute terms, the total dollar volume of export sales of the tractors, parts and accessories group experienced a large decline—\$22,000,000 below the 1953 level of \$300,000,000. Percentage-wise, general agricultural machinery was the hardest hit, falling 9.2% from the \$188,000,000 sales volume of 1953.





NEBRASKA FARMER adjusting sprinkler head on irrigation system. The water became available in 1955 from the Bartley canal, part of the Missouri river basin project of the U.S. bureau of reclamation

Fertilizer use was reported as having been moderately reduced in some areas with the decline in farm income. with one overall estimate of 5% less than in 1954. Prices also were somewhat reduced to an index of 152 (1910-14=100) in September as compared with 155 a year earlier. Price softness for nitrogen fertilizers was indicated with sizable expansion in capacity and considerable shift to liquid types. The situation in potash fertilizers became more competitive, record deliveries having been reported in 1954-55. Some early season prices were moderately reduced to 36 cents per unit of K_2O .

Taxes as a cost of production moved up to 409 (1910-14=100) as compared with 391 a year earlier.

Commodity Credit Corporation.—Price supports extended on 1954 crops through June 30, 1955, totalled \$2,943,000,000, about one-third less than on the crops of the previous year, but approximately the same as was extended on 1952 crops. Of the total figure, loans made on 1954 crops amounted to \$2,372,597,069, purchase agreements entered into were \$273,080,000 and purchases of commodities not under agreement amounted to \$297,252,413. Cotton, corn and wheat loans, and purchases of dairy products were less than in the previous year but loans on tobacco, barley, grain sorghums, oats and rice increased.

The total invested in price support commodities as of June 30, 1955, was \$7,069,277,000 as compared with \$6,005,511,000 a year earlier; that in spite of the fact that much surplus had been sold, including, as of June 30, \$463,300,000 sold for foreign currency under public law 480.

The net realized program loss on price support operations for the fiscal year 1954-55 totalled \$799,061,464 as compared with \$416,477,074 for the previous year. Other program operations brought the realized loss to \$849,352,286. Valuation reserves were increased by \$1,384,588,782. As of the end of the fiscal year the Commodity Credit corporation had used \$8,594,634,000 of the \$10,000,000,000 borrowing authority authorized. This in August was increased to \$12,000,000,000, but in the early months of the 1955-56 fiscal year requests for new loans and purchase agreements lagged as compared with the previous year, suggesting that the maximum authorization might not be under serious strain during the current year. On the other hand, it appeared that loss on inventories would probably increase.

Legislation and Administration.—The first session of the 84th congress did not legislate a major new farm program but patched and improved existing measures. The house of representatives passed H.R. 12, which would have restored a fixed 90% of parity support prices on the six basic commodities, by a

close vote, but the senate delayed full consideration until early 1956, after extensive autumn hearings in the farm country.

New legislation included the following items, among others, as briefly noted: Direction to redetermine the national marketing quota for burley tobacco for the 1955-56 crop; one-half acre, rather than the previous seven-tenths acre, was established as a new minimum acreage allotment (public law 21). The excess marketing penalty was increased from 50% to 75% of the average market price in the preceding year. Durum wheat acreage allotments and marketing quotas for farms in the northern plains were increased for the 1955 crop (P.L. 8). The national rice acreage allotment for the 1956 crop may not be less than 85% of the final allotment for the preceding crop (P.L. 288). The requirement that producers comply with acreage allotments in order to be eligible to receive agricultural conservation payments was repealed (P.L. 42). The program for importing Mexican farm labour was extended until June 30, 1959 (P.L. 319). Onions were made subject to futures trading regulations under the Commodity Exchange act (P.L. 174). A bill, H.R. 5188, prohibiting the department of agriculture from forecasting apple prices, was passed by Congress but vetoed by the president. Innocent purchasers of converted fungible goods belonging to the Commodity Credit corporation were relieved from claims by the CCC (P.L. 43).

The Agricultural Trade Development and Assistance act of 1954 was amended to increase to \$1,500,000,000 the limitation on sales for foreign currencies (P.L. 387). The borrowing power of the Commodity Credit corporation was increased from \$10,000,000,000 to \$12,000,000,000 (P.L. 344). The Farm Credit act of 1955 (P.L. 347) authorized borrower co-operative associations to acquire full ownership of and to retire government capital in such banks. The interest rate on disaster and special emergency loans, which had been increased to 5%, was reduced to not to exceed 3% by P.L. 132. The authority of the secretary of agriculture to make emergency loans to farmers and stockmen in disaster areas was extended to June 30, 1957, with a \$15,000,000 limitation.

Administratively, 1955 was a trying year, in spite of progress made in increasing agricultural exports, reducing some government-held surplus stocks and general success in holding the line on flexible price supports. Not only were critics more active but some hundreds of farmers not in compliance with support programs appeared more resistant to paying penalties and less averse to challenging the department in the courts. The Blattner case, challenging the constitutionality of the federal farm crop acreage control laws, was appealed to the U.S. court of appeals but dismissed. Federal inspectors were indicted for



CORN-PRODUCING AREAS IN THE U.S.S.R. in relation to the latitude of Iowa, visited by Soviet agricultural economists in 1955. The original of this map appeared with an article discussing the problems of Soviet production in *Successful Farming* magazine

trespass in Maryland. Grain bins purchased by the government in part proved defective. A purchase-resale transaction, in which the department in shifting from a cheese support rate of 90% to 75% in April 1954, paid cheese distributors 37 cents a pound and then sold it back at 34½ cents per pound, was seriously questioned.

Congress, for the third consecutive year, appropriated more money for the department of agriculture than had been requested. The total of \$1,334,917,855 carried \$696,917,855 in direct appropriations for the fiscal year 1956, \$388,000,000 in lending authority and \$250,000,000 in advance authorization for conservation program subsidies.

Drought, Flood and Famine.—The U.S. was particularly hard hit in August in parts of the closely settled industrial northeast by torrential rains in the wake of Hurricane "Diane." The national government supported a flood relief program of grants totalling perhaps as much as \$100,000,000. All of New Jersey and Connecticut, plus parts of New York, Pennsylvania, Massachusetts and Maryland, were officially designated as areas in which farmers might obtain loans at 3% interest to repair damage and continue farming. Again in mid-October floods resulting from heavy rains struck further blows at many of the same northeastern areas. Parts of the southeastern and Gulf coast areas were also flooded during the year and parts of the great plains suffered flood damage as the drought broke in May, and again in September-October.

The Tampico area of Mexico was badly flooded. About 45,000,000 persons in India and Pakistan were reported as afflicted by terrible September floods on the Ganges, Brahmaputra and Indus rivers. The Punjab was reported as ravaged by the greatest flood of the century. The U.S. contributed 10,000 tons of wheat and an equal amount of rice to relief of the area. There were reports of floods from China, and typhoon-associated floods much reduced the Japanese rice crop.

Drought touched the U.S., not lightly, but without resulting in major disaster. Spring drought in the southern great plains, with accompanying wind and dust storms, made necessary anti-blowing tillage of millions of acres. The wheat acreage was reduced sharply, but remedial rainfall came in time to encourage replanting with feed crops, especially grain sorghums. Drought in northeastern U.S. and neighbouring provinces of Canada was relieved in August. Damage to livestock resulted in April when much snow paralyzed the northern mountain states.

Spring and early summer famine, reported as perhaps the worst in 90 years, afflicted wide areas of Red China and perhaps

180,000,000 persons. U.S. planes parachuted 1,000 tons of rice to villages in northern Laos hit by drought.

Other Countries.—Not only did the food situation ease further in 1955 in many countries outside the U.S.S.R. and its satellites, but surpluses of some commodities were a mounting problem. Stocks of five major grains in the four principal exporting countries reached a new record high estimated at 116,000,000 short tons, about 2% more than the previous record high of 1954.

The FAO (Food and Agriculture Organization) announced that world food production, excluding the Communist bloc, increased 25% in the decade since World War II, had recently increased faster than population, but that people in some areas were hungry whereas burdensome surpluses accumulated in others. This dislocation between supplies and consumers was partly charged to rigidities in the production pattern, sometimes intensified by price supports of individual commodities. Some other weaknesses noted in the world agricultural situation were the failure of consumption to increase with production, decline in world trade of agricultural products to 15% of output compared with 20% before World War II (partly because of emphasis on self-sufficiency and tendency to expend limited funds for imports of capital goods), and finally, the low level of farm incomes in relation to those of other occupations.

World livestock numbers increased to new record levels, cattle and sheep for the eighth consecutive year, cattle to a level 18% above prewar, sheep 14% above, and hogs 9% above prewar. Meat production in principal countries, exclusive of the far east, was a new record high, more than one-fifth above the prewar level.

Canada.—As usual, the prosperity of Canada depended first of all on wheat. Canadians wrestled with what was probably the worst wheat jam in their history. A bumper 1955 crop of high quality wheat was estimated at 500,587,000 bu., 67% more than the very poor crop of 1954 and above average, but far short of the record 687,922,000 bu. of 1952. The 435,800,000 bu. of 1955 crop, 42% more than in 1954, resulted from expanded acreage (11,178,000 ac.) and a high per acre yield of 39 bu. The barley crop of 268,798,000 bu. was the second largest on record, 53% above 1954 and 46% more than the ten-year average.

Abundant reserves from previous harvests, much of which had not yet been moved from the farms, included 481,363,000 bu. of wheat, 81,127,000 bu. of oats, 87,238,000 bu. of barley and 17,872,000 bu. of rye. In total tonnage these stocks were 22% less than a year earlier but approximately double the average for the previous decade.

Livestock numbers increased, excepting horses. The 10,239,000 head of cattle and calves on farms as of June 1, 1955, represented the third largest inventory on record. The spring pig crop of 4,827,000 pigs saved was up 14% as compared with 1954 and a 13% increase was indicated for the fall crop, bringing the year's production to the highest level since World War II and the fourth largest on record. Sheep showed a fractional increase to 1,723,000 head.

The large grain reserve plus the large new crop, without major expansion in livestock feeding and with an actual decline in export, added up to a grain glut: a difficult on-the-farm storage problem, widespread elevator congestion, some unemployment and tied-up shipping, as well as lower incomes for farmers. Farmers received \$1,030,800,000 in the first half of 1955 compared with \$1,060,800,000 and \$1,186,000,000 during the same periods of 1954 and 1953, respectively. Lower participation payments on wheat from the Canadian wheat board and decreased revenue from sales of hogs and oats were the major causes of the decline.

Latin America and Southern Hemisphere.—This diver-

area presented a mixed situation. Food shortages developed in some Central American countries which had a surplus of cash export crops such as coffee and cotton. Deflation of the coffee market presented some serious problems in Brazil. After cotton and coffee prices had been driven so high that they would not move freely in the competitive world market the export cruzeiro was revalued. Argentina expanded agricultural production but had not yet regained earlier levels, though exports of livestock and meat products increased. Carry-over stocks of wheat and barley increased moderately, whereas those of corn, oats and rye declined. Sugar growers in Peru requested an increase in the amount which might be shipped to the United States.

South Africa experienced a serious surplus corn storage and transport problem, the result of a record crop in 1953-54 followed by one nearly as large (138,000,000 bu.) in 1954-55. Planting of citrus and subtropical fruits was much increased.

Both Australia and New Zealand increased meat production and exports. Total exports of frozen and chilled meat from Australia in 1954-55 were 38% higher than in the previous year. New Zealand made sizable shipments of ewe mutton and beef to the U.S.S.R.

Sheep numbers increased, weather was favorable, and wool production of Australia, New Zealand and South Africa showed marked increases in output. Auction prices for Australian wool, which had declined about 15% in 1954, declined something like 10% more in 1955, giving rise to balance of payment problems which led to restriction of imports. The dairy industry of New Zealand found itself in increasing difficulties with the end of bulk purchasing by the U.K. Dairy product prices were lower and competition with meat and wool production became more severe.

Western Europe.—Western and southern Europe experienced further modest recovery in agricultural production as regards both crops and livestock as the over-all economies boomed. Output per unit of land was high but mechanization and increase in output per farmer made slow progress. Surplus of some agricultural products appeared and restrictions on some imports were continued and tightened, though takings of fats and oils and cotton remained high. The wheat crop, though not much larger than in 1954, was of better quality and approached record size in Italy, the German Federal Republic and France, the latter country having an indicated unusual export availability of about 100,000,000 bu. The U.K. imported 1,258,000 boxes of apples from North America, the first since 1951-52.

Food exports to countries east of the "iron curtain" were increased.

A beef surplus appeared in Norway. Irish fat and feeder cattle and sheep exports, mostly to the U.K., were up more than one-fourth in the first half of 1955 as compared with a corresponding period in 1954.

Imports of butter declined by one-fifth, though western Germany took increased amounts of butter and cheese. Ireland banned cheese imports, whereas the U.K. liberalized quotas on cheese imports from North America. Italian farmers protested increased cheese imports.

The large subsidy factor in British farm income came under increased discussion and criticism. But the statutory minimum wage for male farm workers in the U.K. having been increased from £6 to £7 per week (\$16.68 to \$19.46), the guaranteed prices for 1955 domestic grain were increased to the following prices (in U.S. equivalent) per bushel: wheat, \$2.23; rye, \$1.62; barley, \$1.47; oats, \$0.92; and mixed grain, \$2.88 per 100 lb.; all, nevertheless, moderately below the support levels on 1954 crops.

British grain farmers completed their first year of experience with the free market after 15 years of control. The average

price received for home-grown wheat in the market place proved to be about two-thirds as high as the standard prices prescribed by the Agricultural act of 1947. The deficiency payments scheme, in spite of some administrative problems, appeared to have worked rather better than had been anticipated. Livestock price guarantees were continued.

The Danes managed to obtain a higher price for bacon delivered to the British. Previously paid 237s. 6d. per hundredweight for a product which in turn was sold by the government for more nearly 328s., the new arrangement, effective for 12 months, beginning Oct. 1, called for a base price of 240s., with any excess obtained by the government above 270s. per hundredweight to be passed on to the producing country.

France struggled with a rising cost of living, which was in part blamed on expanded export of meat in spite of increased domestic demand. Efforts to solve the problem of excessive wine stocks were largely unrewarded, though more aggressive export and greater diversification of agriculture in producing areas was attempted. The grape harvest began exceptionally early under uncommonly favourable weather, promising, perhaps, an outstanding vintage.

The important Spanish food crop, wheat, was short because of drought in the centre and north, but export oranges were in over-supply. Spain made plans for supplying water to an additional 1,250,000 ac. over a ten-year period and proceeded with increased mechanization of farming.

Middle East.—Agricultural response was generally favourable in the middle east during 1955. Food grains and feed grains were relatively abundant. Turkey's wheat crop was significantly larger than in 1954 and above average, but Turkey's farm price support program, activated by purchasing grain at prices above the world market, appeared to be in serious difficulties. Egypt arranged to trade some of its surplus cotton to the Soviet bloc countries for needed fuel imports. Export taxes on most types of cotton were sharply reduced in September. Israel embarked on a modern poultry industry, based on broiler chickens and turkeys. Iraq, a major producer of dates, reported a crop 30% less than the record crop of 1954. Turkey by subsidy increased its efforts to export figs and raisins.

Eastern Europe and the U.S.S.R.—The outstanding agricultural event was the somewhat delayed but eventual exchange late in the summer of farmer delegations between the U.S.S.R. and North America, followed by exchange between the U.S.S.R. and the U.K. Initial indications were that the observations of the U.S.S.R. group to North America, led by Vladimir M. Matskevich, acting Soviet minister of agriculture, would probably result in attempts to make more efficient application of farm labour and in the mechanization of some of the nonfield work plus the purchase of about 60 head of hardy crossbred cattle of the Santa Gertrudis breed and, perhaps, as much as 300,000 bu. of hybrid seed corn after the later visit to the U.S.S.R., by invitation, of Roswell Garst, Iowa hybrid seed-corn grower and distributor.

The U.S. delegation, led by W. V. Lambert, dean and director of the University of Nebraska College of Agriculture (Lincoln), were impressed with the large amount of labour lavished on agricultural operations in the U.S.S.R., particularly on the lagging livestock husbandry. One farmhand in the U.S. was estimated to have an output at least five times that of equivalent labour time in the U.S.S.R. They found the growing of corn being attempted practically everywhere, in line with the program set by Moscow. Planting perhaps reached nearly 40,000,000 ac., four times as much as in 1954. However, much of the crop appeared to be a near failure as to grain production, as might have been reasonably anticipated from known climatological facts, although it was useful for silage. The Ukraine was

reported to have good crops, after much drought damage in 1954. This area, better adapted climatically to corn production than most in the U.S.S.R., was reported to have 15,000,000 ac. devoted to corn, ten times as many as in 1950, and with a goal of 20,000,000 ac. by 1960.

The subhumid or semiarid virgin grasslands in Kazakstan and other parts of the east of perhaps as much as 50,000,000-ac. extent, newly broken under the plan for major expansion of small grains, were reported to have suffered severely from drought during the year. Nevertheless, the delegation reported that the U.S.S.R. was not facing a major agricultural crisis. Farmers appeared to be fully as well if not better fed than the urban population. Bread was everywhere available at low cost, though meat and milk were not.

In eastern Europe several countries, including Czechoslovakia and Bulgaria, took steps to meet the recent food deficit by holding more able-bodied workers on the farms. Czechoslovakia also announced an increase of up to 10% in prices paid to farmers for their products. In Hungary, after the fall of Premier Imre Nagy in April, Matyas Rakosi stressed the necessity of proceeding with the expansion of the socialistic sector of agriculture which then included one-third of the arable land, to cover more than half of the total by 1960. Emphasis was to be on the most advanced type of collective farm. There must be more food; there was to be no open compulsion; but collective farmers were no longer to be permitted to leave if they wished, as was formerly the case.

Yugoslavia, more firmly associated with the west, also made a firm effort to increase agricultural production by price incentives and "other measures," apparently by greater investment in the agricultural sector.

Albania promptly rejected, as "foreign interference," the offer by U.S. Pres. Dwight D. Eisenhower to make surplus foodstuffs available through the League of Red Cross societies.

Far East.—Though this wide area as a whole made less progress in expanding its agricultural supplies in keeping with its population uptrend than other parts of the world, rice became surplus in 1955. China sold some rice in spite of spring famine in some provinces. The government was reported as decreeing a reduction of as much as one-third in state sales of rationed food to rural consumers. Many were reported to have been sent back to their native villages to increase food production and to reduce the urban feeding problem. The cotton crop of China was reported to be a large one.

Progress was reported in the Colombo Plan area, with famine overcome. A typhoon in late September reduced what promised to be the record large rice crop of Japan to a much smaller one. Substantial amounts of U.S. surplus agricultural products were exchanged for Japanese yen. Formosa pushed food production with considerable success. Recovery in Indonesia progressed slowly. Revision of the 1946 trade agreement between the United States and the Philippine republic, effective Jan. 1, 1956, included new duty provisions with respect to several agricultural products. Philippine sugar would remain under a fixed annual import quota of 952,000 short tons.

The famine area of north Vietnam, usually deficit to the extent of about 100,000 tons of rice, was aided by 150,000 tons of Burmese rice purchased by the U.S.S.R. for delivery to Haiphong.

International Agricultural Organizations.—The Food and Agriculture Organization of the United Nations noted the first decade of agricultural rehabilitation and expansion after World War II, as well as its own tenth anniversary, by a substantial report, "The State of Food and Agriculture, 1955—Review of a Decade and Outlook" (Rome, Italy, Sept. 1955, 236 pages).

Belgium, Luxembourg and the Netherlands asked the govern-

ing body of G.A.T.T. (General Agreement on Tariffs and Trade) for a waiver of the rules which prohibit discriminatory application of import controls on agricultural products.

The International Cotton Advisory committee, which met in Paris in June, interested itself largely in government policies affecting cotton. The eighth general meeting of the International Federation of Agricultural producers in Rome in September was attended by 200 delegates from 27 nations.

The International Wheat conference, held in Geneva, Switzerland in October, was attended by the 48 signatory countries of the second, 1953-56, agreement and by many of the additional 32 countries invited. Specific consideration was given to the question of whether and on what terms the agreement should be renewed.

(See also AGRICULTURAL RESEARCH SERVICE; BUDGET, NATIONAL; CENSUS DATA, U.S.; FRUIT; HORTICULTURE; IRRIGATION; LIVESTOCK; METEOROLOGY; PRICES; SOIL CONSERVATION; VEGETABLES; etc.; and also under principal crops.) (J. K. R.)

Agriculture, U.S. Department of: see GOVERNMENT DEPARTMENTS AND BUREAUS, U.S.

Aircraft Manufacture. Production of military aircraft continued during 1955 to make up the major portion of the work of the United States aircraft industry. The military services passed the peak of their buildup programs during the year and production dropped below the 1954 rate, but maintained a rate which the aircraft industry felt was healthy as regards their ability to expand rapidly in the event of another emergency.

From a rate of about 1,000 planes a month in early 1955, production fell off to about 700 planes a month by the end of 1955, more than 75% of which were jet-propelled types. A combat aircraft in production for the U.S. air force were jet and even in the noncombat categories, such as tanker and transport aircraft, jet and turbine-propeller engines (turboprops) were gradually replacing the old piston engines. The end was also in sight for production of navy piston engine combat aircraft.

The Aircraft Industries Association of America estimated that military production for 1955 would amount to about 8,500 aeroplanes. In addition, the industry turned out approximately 4,000 utility aircraft and about 200 airline-type transports, for a total production of 12,700 aeroplanes. This compares with an over-all production of 14,100 planes in 1954 and more than 16,000 in 1953.

Despite the decline in numbers of aeroplanes produced, very little change was reflected in the industry's sales position. The continuing military demand for more and more performance in its aircraft was an important factor in sales volume. The new very high speed aircraft demand heavily stressed airframes to withstand pressures at operational speeds. Also, the introduction of new complex electronic equipment added to both the weight and the cost per unit. Industry wages climbed again, and did material costs. The combined result of all these factors coupled with added emphasis on guided missile production brought about a gross sales volume only slightly below that of the preceding year.

Sales of the 12 leading airframe companies (an industry yardstick) were estimated at \$4,850,000,000, compared with \$4,920,000,000 in 1954. Total industry sales in 1955 were estimated at about \$8,000,000,000, compared with \$8,200,000,000 in 1954. It was also estimated that the industry profit in 1955 would be 3.7% of sales, approximately the same as in the preceding year, but a large gain over 1953 and 1952, when profits had averaged only 2.2%. This figure, however, was still low in comparison



MCDONNELL XV-1 CONVERTIPLANE, first aircraft to successfully combine both the vertical flight of a helicopter and the speed and range of conventional planes, shown in its first flight at Smartt field, Mo., in 1955

with the average profit for all U.S. manufacturing industries, particularly when it is considered that the aircraft industry is forced to divert a large portion of its profits to purchase of new tools and equipment each year as new military developments dictate changes in manufacturing procedures.

The guided missile field showed promise of balancing the drop in aeroplane production. A survey showed about 25 different types of missiles under development, at least 8 of which had reached production status. Four missiles were far enough advanced to be assigned to operational units. These included the Glenn L. Martin company's Matador and Chance Vought's Regulus, both surface-to-surface "pilotless bomber" types; Hughes Aircraft's Falcon, an air-to-air missile; and the Western Electric Nike, an army anti-aircraft missile.

In 1955, the U.S. aircraft industry averaged about 735,000 persons directly employed by airframe, engine, propeller and parts companies, a drop from 800,000 at the end of 1954. Employment was expected to decline to about 700,000 in the early months of 1956 and to remain stable for a time at that point.

Production was accelerated of a number of new, very high performance military aircraft, notably the McDonnell F-101, Convair F-102 and Lockheed F-104, supersonic air force fighters, and the Grumman F9F-9, a supersonic navy fighter. All of these types were approaching operational status at the year's end. Douglas Aircraft Co. and North American Aviation, Inc., continued to turn out navy F4D's and air force F-100's, first supersonic fighters to reach operational status. (The F-100 set a world speed record of 822.135 m.p.h. during the year.) Boeing Airplane Co. produced enough B-47 jet bombers to equip all U.S.A.F. medium bomber units, and stepped up production of its eight-jet B-52, first units of which were delivered to service units. For increased production, Boeing's Wichita, Kan., plant was assigned as a B-52 second source.

In the production of commercial aircraft, Douglas announced its intention to build an all-jet DC-8 airline transport and started initial work. Boeing continued development of its Model 707 Commercial jet airliner. Lockheed Aircraft Corp. announced sales of its new turboprop Electra airline transport and other manufacturers were preparing to enter the turboprop field.

The Aircraft Industries Association of America estimated that the total airframe weight, of military and civil aircraft, to

be produced in 1956 would be very close to the 137,500,000 lb. produced in 1955 and that the sales volume would fall only slightly below \$8,000,000,000, with the profits to sales ratio remaining between 3.5% and 4%. (See AVIATION, CIVIL; AVIATION, MILITARY; JET PROPULSION; MUNITIONS.) (J. J. Hy.)

Air Crashes: see DISASTERS.

Air Force, U.S. Department of: see GOVERNMENT DEPARTMENTS AND BUREAUS, U.S.

Air Forces of the World: see AVIATION, MILITARY.

Air Mail: see POST OFFICE.

Airports and Flying Fields: see CIVIL AERONAUTICS ADMINISTRATION.

Air Races and Records. Col. Carlos M. Talbott of Charleston, Ill., won the Bendix trophy at the 1955 National Aircraft show at Philadelphia, Pa. He raced his Super Sabrejet 2,325 mi. across the country from George air force base, Victorville, Calif., in 3 hr. 48 min. 4 sec., for an average speed of 610.726 m.p.h. The big United States air show, held Sept. 3, 4 and 5, attracted nearly 300,000 spectators and military observers from many nations, including the Soviet Union and Hungary.

Prior to the finish of the Bendix race, three B-47 medium bombers roared in from March air force base at Riverside, Calif., in a race for the General Electric trophy. Maj. Leonard J. Stevens of Chicago, Ill., piloted the winning craft and covered the 2,337-mi. route in 3 hr. 57 min. 59.2 sec. for an average speed of 589.294 m.p.h. Comprising Maj. Stevens' crew were Maj. F. J. Weedman, Bristow, Okla., Capt. G. F. Fornes, Buffalo, N.Y., and Staff Sgt. J. P. Flohe, Suttons Bay, Mich.

The Allison trophy, awarded for dexterity and speed in changing engines, was taken by a crew from the Webb air force base at Big Spring, Tex. It marked the first time such an event had been held at the national show and six teams made up of five workers and one inspector each matched skills at changing hot J-33 Allison engines on Lockheed T-33 jet training planes. The winning time was 11 min. 32.2 sec.

The third day of the exhibition was marked by an official announcement that an air force test pilot had set a world jet speed record of 822.135 m.p.h. in straight and level flight. Piloting a North American F-100C Super Sabre, Col. Horace A. Hanes established the new standard at a height of 40,000 ft. over the Muroc desert of California on Aug. 20. Col. Hanes flew level and straight downwind and upwind runs at 870.627 and 773.644 m.p.h. For his achievement of flying 1.23 times the speed of sound, Col. Hanes was awarded the Thompson trophy for 1955.

On March 9, 1955, three U.S. army jets all broke the coast-to-coast speed record. Lieut. Col. Robert R. Scott of Des Moines, Ia., was the first to finish the run from Los Angeles, Calif., to New York, his time being announced as 3 hr. 46 min. 33 sec. A recheck of the course of 2,464 mi. gave him a time of 3 hr. 44 min. 53 sec. and an estimated average of 652 m.p.h., which were accepted as new standards by the National Aeronautic association. Eight Republic F-84F's started the cross-country flight, but only three finished, the other successful pilots being Maj. R. C. Ruby of Des Moines and Capt. C. T. Hudson of Gulfport, Miss.

A national guard flier fulfilled a dream of breakfasting in Los Angeles, lunching in New York and dining in Los Angeles in the same day when he flew the round trip in less than 11½ hr. on May 21. Lieut. John M. Conroy, flying alone in an F-86 Sabrejet, made the record trip of 5,085 mi. at an average speed of about 445 m.p.h. in 11 hr. 26 min. 33 sec. He had six short refuelling stops. On the return flight from New York, Lieut.



JACQUELINE AURIOL seated in the cockpit of the turbojet fighter Mystère IV in which she set a new women's air speed record of 715.35 m.p.h. July 1, 1955

Conroy broke the east-to-west standard of 7 hr. 4 sec. set in 1947 by Paul Mantz.

Two British pilots set a record for a dual crossing of the Atlantic on Aug. 23. Capt. John Hackett, pilot, and Peter Money Penny, navigator, flying a Canberra twin-jet bomber, made the trip of 6,920 mi. from London to New York and return in 14 hr. 21 min. 45.4 sec.

Ten F-84F fighters established two world standards, one for time, one for nonstop mass flight distance, on Aug. 17 when they streaked from Sturgate in England to Austin, Tex., in 10 hr. 48 min., averaging about 480 m.p.h. for the 5,118 mi. The Thunderstreaks were from Austin's 27th strategic fighter wing.

On Oct. 16, 1955, the Boeing 707 jet-powered transport, experimental craft not yet in commercial service, streaked across the country from Seattle, Wash., to Washington, D.C., and back in a total time of 8 hr. 6 min., setting new unofficial transport speed records for both directions and the round trip.

Harmon trophies for 1955 were awarded to J. F. Coleman, test pilot for General Dynamics' Convair division at San Diego, Calif., and Capt. Marion H. Eppes, U.S. navy. Flying the XFY-1 Pogo turboprop V.T.O. fighter, Coleman made more than 60 free vertical take-offs and was the first person in history to make a transitional flight from vertical take-off to level flight and return to a vertical tail-sitting landing. Capt. Eppes was recognized for extraordinary achievement as commander of the Goodyear navy airship ZPG-2 in a simulated antisubmarine patrol, when he remained aloft for more than eight days and cruised more than 3,000 mi. In so doing, he broke all world marks for self-sustained nonrefuelling flight for any aircraft.

Wing Comdr. Walter Gibb, test pilot for the Bristol Aircraft company, flew a Canberra jet bomber to a new unofficial altitude record of 65,876 ft. over England on Aug. 29, 1955.

Jacqueline Auriol of France officially became the world's fastest aviatrix when she flew a French-built Mystère IV turbojet at 715.35 m.p.h. to surpass Jacqueline Cochran's standard of 675.468 m.p.h. The ninth annual transcontinental race from Long Beach, Calif., to Springfield, Mass., in July featured the year for women fliers in the United States. Mrs. Frances S. Bera, Los Angeles, and her sister, Mrs. Edna Bower, Long Beach, Calif., flying a Cessna 180, won first prize on corrected time.

Mrs. Alice Roberts, Phoenix, Ariz., and Mrs. Iris Critchell Palos Verdes Estates, Calif., were second. Forty-two of the 4 starters finished the handicap test, which is sponsored by Ninety Nines, Inc. Another handicap event for women was held in June, the race being from Washington, D.C., to Havana, Cuba. First prize was annexed by Bernice Trimble, Flint, Mich., and her co-pilot Joan Rhubec, Cleveland, O. (See also AVIATION MILITARY.) (T. V. H.)

Air Travel: see AVIATION, CIVIL.

A.L.A.: see AMERICAN LIBRARY ASSOCIATION.

Alabama. Alabama, the "heart of Dixie," was a part of the Mississippi territory when it was admitted to the union on Dec. 14, 1819, as the 22nd state. Located in the southeastern part of the United States, it is bounded by Tennessee on the north, Georgia on the east, Florida and the Gulf of Mexico on the south and Mississippi on the west. Known as the "Cotton state" or "Yellowhammer state" (from the state bird, the yellowhammer or flicker), Alabama's area includes 51,071 sq.mi. of land and 531 sq.mi. of water. The 1950 census population of Alabama was 3,061,743, of which 1,340,937 was urban and 1,720,806 rural; 2,032,714 white and 982,152 nonwhite. The estimated population July 1, 1955, was 3,006,000. Montgomery, the state capital, had a population of 106,525 in 1950. Other major Alabama cities and their population (1950 census): Birmingham 326,037, Mobile 129,009, Gadsden 55,725, Tuscaloosa 46,396, Bessemer 28,445, Anniston 31,066, Dothan 21,582, Decatur 19,974, Huntsville 16,437, Phenix City 23,305, Selma 22,840, Florence 23,879.

History.—Gov. James E. Folsom asked again and again for the end of racial bigotry during the legislative session of 1955. He vetoed two bills aimed at preserving racial segregation, and refused to sign a School Placement bill on the same grounds. At his inauguration on Jan. 17, he said, "Hate can destroy any man or any society, but by working together we can accomplish any desired goal." With this the governor set the stage for his administration.

Court action opened the door of the University of Alabama to Negroes for the first time. Registration was to begin in 1956. Cases were under consideration in many of Alabama's counties which would further reflect the supreme court's ruling regarding school segregation.

The legislature approved an educational appropriation of \$116,000,000, an increase of \$26,000,000 over 1954-55. A school bond issue of \$110,000,000 faced a referendum in Dec. 1955, with every chance of approval. This \$110,000,000 was programmed entirely for capital outlay for new school buildings.

The legislature changed the name of the old State Department of Public Welfare to the Department of Pensions and Security, and repealed the Relative Responsibility act. Every person over 65 years of age was made eligible for a pension, if need could be proved.

Mental hospitals received \$3,000,000 for new buildings during the year. More than \$250,000,000 was expected to be spent on new roads in Alabama during the current four-year administration of Governor Folsom. An additional \$225,000,000 was programmed for toll-road construction which would extend north and south across the state from the Gulf of Mexico to Tennessee, linking up with the Chicago-to-Miami superhighway.

New industry poured into the state at the rate of \$30,000,000 per month for the first 10 months of 1955, with a total of \$302,000,000 through September. This did not include expansions of existing facilities, such as \$30,000,000 for the Alabama Power company and \$20,000,000 for Southern Bell Telephone and Telegraph. New plant facilities and improvements planned and

being contracted would total nearly \$500,000.000 for 1955-56.

On the governmental side, there was still some unfinished business. Having called three special sessions of the legislature and one regular session in order to get his program through, Governor Folsom announced plans for another special session in Jan. 1956 to deal with reapportionment of the state legislature. The constitution adopted in 1901 states that the legislature will reapportion itself according to county population every ten years. Because of its black-belt (so-called because of geographical location of black soil where most of Alabama's cotton is produced) control the legislature had never in its 54 years reapportioned itself, under the present constitution.

Principal state officials during the period Jan. 1955 to Jan. 1959 were: governor, James E. Folsom; lieutenant governor, W. Guy Hardwick; attorney general, John Patterson; state auditor, Mrs. Agnes Baggett; commissioner of agriculture and industries, A. W. Todd; secretary of state, Miss Mary Texas Hurt; state treasurer, John Brandon; state education superintendent, Austin R. Meadows.

Education.—During the school year ended June 30, 1954, Alabama had 2,855 schools in the public school system (elementary and high schools). There were 448,970 pupils enrolled in the elementary schools, which had 13,351 teachers; there were 254,679 pupils in the high schools and 9,444 teachers. State expenditures for education (secondary system, colleges, trade schools, etc.) in the fiscal year ended Sept. 30, 1955, amounted to \$90,685,715.

Social Insurance, Public Welfare and Related Programs.—During the fiscal year ending Sept. 30, 1954, annual expenditures for Alabama's public welfare department totalled \$36,784,468.63. Expenditures for public assistance, with the average number of persons receiving assistance in parentheses, were as follows: old-age assistance \$21,479,853.48 (64,257); aid to the blind \$466,578.17 (1,501); aid to the permanently and totally disabled \$2,600,968.65 (8,722); aid to dependent children \$8,091,166.66 (16,491); aid to children in foster care \$274,330.50 (754); and temporary aid \$37,315.80 (119).

Alabama in 1954 operated four prisons and 31 prison road camps. The total number of prisoners on Sept. 30, 1955, was 5,031. Total expenditures for the prison system during the fiscal year ended Sept. 30 totalled \$4,500,000, including \$2,500,000 worth of farm products, clothing and other items made or produced by the inmates. There were three reformatories with a total population of approximately 550 and state appropriations for the 1954-55 fiscal year amounted to \$381,200. The approved budget for 1955-56 was \$1,600,000.

For the fiscal year ending Sept. 30, 1954, public health expenditures totalled \$6,759,893.24. This figure included \$1,896,806.08 in state funds, \$2,965,915.63 federal funds and \$1,897,171.53 local moneys.

Maternal and child health services included 3,191 maternity clinics in 50 counties, with 54,238 patients admitted; 619 well-baby clinics in 21 counties, with 11,198 patients admitted, and 419 dental clinics in 30 counties with 11,888 patients admitted.

Communications.—All highways and roads in the state (federal, state and local combined) totalled 62,241 mi. as of Dec. 31, 1954, of which 16,534 mi. were paved and 29,392 mi. were either soil surfaced or graveled.

State and federal funds disbursed for highways and roads totalled \$89,200,000 in the 1954-55 fiscal year. New road and highway construction completed in the 1954-55 fiscal year aggregated 1,200 mi. (estimated). Alabama's railroad mileage during the year was approximately 5,054. There were 518,128 telephones in the state. Alabama had 105 airports including 66 public, commercial and private fields which were licensed and 39 personal unlicensed airfields, two government fields (Tennessee Valley authority) and 15 that belonged to the air force and navy. There is heavy barge traffic on the Tennessee river in north Alabama.

Banking and Finance.—As of Dec. 31, 1954, Alabama had 160 state banks and one branch with total deposits of \$380,067,000. Total resources were \$414,721,000. There were 71 national banks with 28 branches which had total deposits of \$1,111,240,000 and total resources of \$1,202,753,000. As of Dec. 31, 1954, there were seven state chartered savings and loan associations with total resources of \$19,133,000; 23 federal chartered savings and loan associations with total resources of \$108,239,000; 83 state chartered credit unions with total resources of \$15,827,000 and 49 federal chartered credit unions with total resources of \$4,591,000. Total state (government) receipts in the fiscal year ended Sept. 30, 1953, were \$320,214,010.14. Total state expenditures for that period were \$324,783,982.68. The state's gross debt was \$61,287,000 and the net debt was \$47,433,000.

Agriculture.—Alabama's total agricultural production in 1954 was valued at \$506,572,000, a decrease of 7% from 1953. The cotton crop (lint and seed) grossed \$142,796,000 compared with \$180,523,000 in 1953. Peanuts grossed \$11,750,000 in 1954 compared with \$19,995,000 in 1953. Cash receipts from marketings to Alabama farmers from crops in 1954 was \$209,166,000 and from livestock and livestock products \$187,114,000.

Manufacturing.—Alabama in 1954 had an estimated 5,300 manufacturing establishments employing approximately 225,000 persons who were paid \$718,600,000. The value of the manufactured products was \$3,000,000,000. Primary metals had an average monthly employment of 42,287; total wages paid, \$184,600,000. Textiles had an average monthly employment of 47,300; total pay \$115,400,000. Lumber had an average monthly

Table I.—Production of Leading Crops in Alabama

Crop	Indicated 1955	1954	Average, 1944-53
Cotton, bales	975,000	728,000	908,000
Corn, bu.	61,432,000	28,808,000	44,921,000
Peanuts, lb.	236,500,000	110,550,000	280,931,000
Hay, tons	671,000	497,000	666,000
Potatoes, Sweet, bu.	1,425,000	935,000	3,338,000
Potatoes, Irish, bu.	1,426,000	3,925,000	4,056,000
Oats, bu.	8,100,000	6,960,000	4,296,000
Soybeans, bu.	2,438,000	1,196,000	1,079,000
Sorghum grain, bu.	855,000	232,000	418,000
Peaches, bu.		1,130,000	786,000
Pecans, lb.	2,500,000	8,000,000	15,726,000

Source: U.S. Department of Agriculture.

Table II.—Principal Industries of Alabama

	All employees 1953	Salaries and wages 1953 (in 000s)	Value added by manufacture 1953 (in 000s)	Value added by manufacture 1952 (in 000s)
Food and kindred products	13,035	\$ 35,274	\$ 75,982	\$ 54,527
Textile mill products	50,090	128,636	205,134	212,357
Apparel and related products	17,205	33,526	49,552	41,099
Lumber and products (except furniture)	34,612	58,507	101,424	88,092
Paper and allied products	8,297	32,752	69,279	70,961
Petroleum and coal products	3,185	12,640	75,308	64,365
Stone, clay and glass products	7,011	23,885	52,724	52,247
Primary metal industries	41,506	169,287	319,857	270,077
Fabricated metal products	9,487	35,598	60,102	55,783
Machinery (except electrical)	5,733	22,247	39,187	40,598
Transportation equipment	(*)	(*)	(*)	39,036
Administrative and auxiliary	5,040	22,600	...	...

*Withheld because the estimate did not meet publication standards, either on the basis of the associated standard error of estimate or on the basis of a consistency review.
Source: U.S. Department of Commerce, Annual Survey of Manufactures, 1953.

Table III.—Mineral Production of Alabama

Mineral	(in short tons, except as noted)			
	Quantity	Value	Quantity	Value
Cement (bbl.)	10,427,000	\$ 25,701,000	10,642,000	\$ 25,084,000
Clays	1,198,000	1,816,000	1,264,000	1,904,000
Coal	12,532,000	79,370,000	11,383,000	70,760,000
Coke*	6,278,000	72,502,000	5,712,000	66,888,000
Ferroalloys*	124,000	20,433,000	129,000	19,217,000
Iron ore	...	55,640,000	8,112,000	37,940,000
Iron, pig*	4,669,000	217,757,000	4,109,000	185,301,000
Lime	471,000	5,018,000	424,000	4,459,000
Petroleum (bbl.)	1,694,000	3,290,000	1,279,000	†
Sand and gravel	3,711,000	3,003,000	3,723,000	2,956,000
Stone	4,112,000	8,954,000	3,052,000	7,948,000
Other minerals	...	5,108,000	...	7,331,000
Total	...	\$187,900,000	...	\$158,382,000

*Values for processed materials are not included in the totals.

†Value included with other minerals.

employment of 32,400; total pay \$60,100,000. Food products had an average monthly employment of 15,000; total pay \$42,900,000. Output value: primary metals \$887,000,000; textiles \$509,000,000; lumber \$198,000,000; food products, \$302,000,000. (R.H. H.)

Mineral Production.—Table III shows the preliminary data on Alabama minerals for 1953, the latest available, compared with 1952. The statistics cover all minerals valued at \$100,000 or more. In 1953 Alabama was third among the states in output of crude iron and ranked 18th in value of its mineral production, with 1.31% of the U.S. total.

ALAND ISLANDS: see FINLAND.

Alaska. Alaska, the northernmost territory of the United States, is separated from Siberian U.S.S.R. by the Bering strait. The boundary line follows the international date line between Big Diomed Island, which is soviet soil and in the eastern hemisphere, and Little Diomed Island, which is on the U.S. side in the western hemisphere. These islands are about three miles apart. Alaska has an area of 586,400 sq.mi. Its population in 1950 was 128,643 and the 1955 estimated population was 172,000, excluding military personnel. The principal cities and their 1955 estimated populations are Anchorage, 40,000; Fairbanks, 12,000; Juneau, 6,000; Ketchikan, 6,000; Seward, 2,500; Sitka, 2,200; Kodiak, 2,100; Petersburg, 1,800; Wrangell, 1,500. The Aleutian Islands, a chain of small islands extending about 1,200 mi. westward from the extremity of the Alaska peninsula, are part of the territory of Alaska.

History.—Development of Alaska's timber resources continued during 1955. A sawmill at Wrangell began exporting lumber to Japan, and high grade pulp from a new \$52,000,000 plant

at Ketchikan was shipped to both foreign and domestic markets. Two additional pulp plants, one at Juneau and one at Sitka, were in the active planning stage. Both would utilize timber from Tongass National forest in southeastern Alaska.

A pipeline to carry military oil supplies was completed from Haines, near the northern end of the 1,000-mi. inland passage, to Fairbanks. Construction was started on the wide-flung Defense Early Warning line of radar stations along the Arctic coast.

Exploratory oil wells were being drilled in several areas during the year and interest in Alaska's oil potential continued high, with 2,487,337 ac. of oil leases to petroleum companies and individuals in effect on July 1, 1955.

The Eklutna hydroelectric power plant near Anchorage, built by the U.S. bureau of reclamation, was placed in service during the year. Investigation of other power sites continued but no new construction was initiated.

Tourist travel declined somewhat in 1955 as a result of the withdrawal of four American flag passenger ships from the Alaska route, but it was greater than anticipated, with a considerable increase in air travel.

None of the Alaska-Hawaii statehood bills introduced in the first session of the 84th U.S. congress was enacted. In March the Alaska legislature enacted a bill providing for a convention to draft a constitution for the proposed state. Alaska voters selected 55 delegates to the constitutional convention at a special election on Sept. 13 and the convention was convened at the University of Alaska at College, near Fairbanks, on Nov. 8.

Alaska officials in 1955, appointed by the president, included Governor of Alaska B. Frank Heintzleman and Secretary of Alaska Waino E. Hendrickson. Elected territorial officials were: J. Gerald Williams, attorney general; Henry A. Benson, labour commissioner; Hugh J. Wade, treasurer; and Irving Reed, highway engineer.

Education.—During the 1954-55 school year a total of 31,437 students were enrolled in elementary and secondary schools operated under the direction of the Alaska department of education. Another 5,000 were enrolled in grades 1 through 12 in 84 day schools and two boarding schools operated by the Alaska native service, a division of the U.S. bureau of Indian affairs.

Communications.—During 1955 the Alaska railroad, owned by the federal government, had 470 mi. of main track extending from Seward to Fairbanks, plus 65 mi. of branch lines. The White Pass & Yukon railroad, operating between Skagway, Alsk., and Whitehorse, Yukon Territory, had 20 mi. of track in Alaska.

The territory had approximately 1,000 mi. of through roads, 650 mi. of which were paved; 1,200 mi. of feeder roads, and 1,500 mi. of local roads.

Nine certificated mail carriers, two certificated nonmail carriers, 10 exempted carriers and 115 pilot-owners were engaged in air transportation within Alaska during the year.

Radio and telegraphic communication within Alaska and between Alaska and other places is handled by the Alaska Communication system, operated by the signal corps, U.S. army. There were 12 radio broadcast stations and four television stations in operation in Alaska in 1955, with another television station scheduled for opening near the end of the year. Seven daily and 12 weekly or semiweekly newspapers and several periodicals were published during the year.

Banking and Finance.—In the fiscal year ended June 30, 1955, territorial tax collections amounted to \$14,945,331, a slight decrease from the previous year. At the end of the fiscal year the territory's cash balance was \$9,271,961, with a surplus of approximately \$6,000,000 in the general fund. The territory had no bonded indebtedness. On June 30, 1955, six national and 12 territorial banks in Alaska had a combined capital of \$2,699,800, surplus of \$3,020,000, deposits of \$147,402,340 and undivided profits of \$2,015,305.

Agriculture.—The territory produced \$2,877,952 worth of agricultural products in 1954, with dairy products accounting for nearly half of the total. Cropland in the territory totalled 13,215 ac.

Timber.—A total of 182,000,000 bd.ft. of timber, valued at \$466,000, was cut from Alaska's two national forests during the fiscal year ended

June 30, 1955. This was more than double the yield of the previous year.

Fisheries.—Products of the Alaska fishing industry in 1954 amounted to 222,377,520 lb., with a wholesale value of \$77,879,446. In 1955 the Alaska salmon fisheries produced only approximately 2,300,000 cases of canned salmon, the smallest yield from this fishery in half a century.

(B. F. HN.)

Mineral Production.—The accompanying table shows the tonnage and value of those mineral commodities produced in Alaska in 1952 and 1953 (preliminary) whose value exceeded \$100,000.

Albania. A people's republic in the western part of the Balkan peninsula, Albania is bounded north and east by Yugoslavia, south by Greece and west by the Adriatic sea. Area: 11,100 sq.mi. Pop.: (1945 census) 1,122,000; (1954 est.) 1,260,000. Language: literary Albanian and two spoken dialects, the Gheg north of the Shkumbi river and the Tosk in the south. Religion: Moslem 65%, Orthodox 23%, Roman Catholic 11%. Chief towns (1949 est.): Tirana (cap.) 80,000; Scutari 60,000; Shkoder 30,000; Kortcha or Koritsa 28,000. First secretary of the Albanian Workers' (Communist) party in 1955 was Enver Hoxha; chairman of the presidium of the people's assembly Haxhi Leshi; chairman of the council of ministers, Mehmet Shehu.

History.—Events in Albania in 1955 followed in the main the pattern of previous years. The Communist government remained in uneasy control of the country, but failed to progress toward making its regime acceptable to the people. In agriculture, the government was compelled to abandon a significant part of its political theory. On Aug. 11 it issued a decree by which it abandoned the centralized planning of all agricultural produce except rice and some industrial crops. The decree admitted the failure of centralized planning by stating that under the new arrangements farmers would be encouraged to produce more by exercising their own initiative.

The lack of ideological education of party members came for much criticism in the party press. Shortcomings of this nature, according to the critics, led to apathy and indiscipline and was largely responsible for the number of thefts of state property which was causing concern to the authorities.

Albania followed the example of the Soviet Union and on Sept. 3 announced a reduction in the strength of the armed forces. By the end of the year 9,000 men out of about 45,000 were to be released.

In foreign affairs there was one important change in Albania's situation. On May 14 Albania was admitted to the Warsaw treaty of mutual defense by which an integrated command of the Soviet and satellite armies was established. The importance of this step lay in the fact that it was the first time the Soviet Union had formally committed itself to Albania's defense. Special efforts were made by the government to improve relations with Yugoslavia, and these resulted in frontier agreements and the exchange of official visits on a small scale. Albania made further approaches to Greece, but no progress was registered. Likewise there were no developments during the year to bring Albania into better relations with the western countries. (See also EASTERN EUROPEAN ECONOMIC PLANNING.) (M. MACK.)

Education.—Schools (1954): primary 2,140, pupils 136,800; high primary 315, pupils 39,700; secondary 28, pupils 8,600; teachers' training college and five institutions of higher education, students 1,200.

Agriculture.—No reliable data published since 1948. Main crops (metric tons, 1934-38; 1947 est. in parentheses): maize 134,000 (140,000); wheat 40,000 (54,000); oats 9,000; barley 5,000; rye 3,000; rice, par 1,000; potatoes 2,000 (4,000); olives 17,000; tobacco 1,600. Livestock (1938; 1946 est. in parentheses): sheep 1,573,900 (1,548,000); goats 932,000 (854,000); cattle 391,200 (345,000); pigs 15,300 (35,000); horses 54,400 (50,000); asses 44,600 (40,000); mules 10,000; buffaloes 22,000.

Industry.—Crude oil output (metric tons, 1954; 1955 plan in parentheses): 230,000 (263,000). Production (1950; 1955 plan in parentheses): electricity 21,000,000 kw.hr. (121,000,000 kw.hr.); cement (metric tons) 15,000 (58,000); sugar (tons) 610,000 (11,000,000); textiles, cotton woollen 1,100,000 m. (21,000,000 m.); footwear (pairs) 272,000 (5,000); soap (tons) 950 (3,700).

Finance.—Budget (1952 est.; 1953 est. in parentheses): revenue 9,400,000 leks (11,350,000,000 leks); expenditure 9,834,000,000 leks (

Mineral Production of Alaska

(In short tons, except as noted)

Mineral	1953		1952	
	Quantity	Value	Quantity	Value
Coal	861,000	\$ 8,452,000	686,000	\$ 5,779,000
Gold (oz.)	254,000	8,882,000	241,000	8,419,000
Sand and gravel	7,689,000	5,080,000	10,782,000	8,651,000
Tin concentrate	?	106,000	?	221,000
Other minerals . . . . .	...	1,732,000	...	3,232,000
Total		\$24,252,000		\$26,302,000

250,000,000 leks), including 3,802,000,000 leks (5,437,000,000 leks) invested in the national economy. Monetary unit: *lek* with official exchange rate, high and fictitious, of 50 leks to the U.S. dollar.

Foreign Trade.—Estimated imports in 1952: 908,700,000 leks. Main sources of imports: U.S.S.R., Czechoslovakia, Rumania, Poland. Main imports (1952): machinery, textiles, petroleum products, wheat (30,000 tons), maize (20,000 tons), cement (18,000 tons), paper (13,000 tons), window glass (60,000 sq.meters). Main exports: crude oil, pig copper, chrome ore.

Transport and Communications.—Roads (1949): 1,766 mi. Licensed motor vehicles (Dec. 1950): cars 500, commercial 1,240. Railways (1951): 81 mi. linking Duresi (Durazzo) with Tirana and Elbassan via Kavaja-Peqini. Telephones (1954 est.): 1,700. Radio receiving sets (1950): 40,025.

Alberta. Most westerly of Canada's prairie provinces, Alberta, formerly a part of the Northwest Territories, was created a province by parliament in 1905. Area: 255,285 sq.mi., of which 6,485 sq.mi. are water. Pop.: June 1, 1955 (official figures), 1,066,000. Largest city: provincial capital, Edmonton, pop. (1955 official figures) 209,353, metropolitan area 229,000. Second largest city: Calgary, pop. (1955 official figures) 168,840, metropolitan area 180,000.

History.—Following a bitterly contested election in June 1955, the Social Credit government was again returned to power with a loss of 15 seats, the majority to the Liberals; the new executive was comprised of Ernest Manning, premier, minister of mines and attorney general; W. W. Cross, minister of health; A. J. Hooke, municipal affairs and provincial secretary; G. E. Taylor, railways, telephones and highways; A. O. Aalborg, education; L. C. Halmrast, agriculture; N. A. Willmore, lands and forests; R. D. Jorgenson, welfare; E. W. Hinman, provincial treasurer; J. Hartley, public works; F. C. Colborne, minister without portfolio; R. Patrick, economic affairs; R. Reiersen, industries and labour.

During the pre-election campaign, government supporters reiterated the statement that Alberta was the first Canadian province in a position to pay off all debts if it desired and that revenues from oil fields approximating \$100,000,000 annually might eventually be adequate to eliminate municipal and school taxes. The continued improvement in the over-all economic position of the province was due primarily to oil which was not only supporting the provincial treasury but was providing employment for more than a quarter of the provincial population and promoting the erection of numerous office buildings. A special Gas Resources Preservation Act Amendment act was enacted at the first sessions of the thirteenth legislature which prevents the board from granting a permit for removal of gas unless the gas "in the opinion of the Board is surplus to the present and future needs of the Province."

Education.—Latest available revised statistics for provincially controlled elementary and secondary schools were: school enrollment, June 30, 1954, 201,420. Estimated enrollment June 30, 1955, 214,000; estimated teachers, June 30, 1955, 8,191. Estimated school grants (for operation) for 1955-56 fiscal year, \$25,760,000. Estimated grants for new school buildings, \$4,500,000.

Public Health and Welfare.—There was no recurrence of the polio epidemic which took such a severe toll in 1954. Latest available statistics for hospitals were (1954): hospitalization expenditures \$15,335,816; medical service and hospital construction grants \$1,677,354; (1955) hospitalization estimate \$19,100,000; medical service and construction grant estimate \$2,000,000. In 1954 public welfare expenditure amounted to \$8,632,815 to 11,900 recipients.

Transportation and Communication.—During 1954 1,880 mi. of roads were surfaced and 3,325 mi. gravelled. Cost of main and secondary provincial highways was \$27,500,000; Trans-Canada highway \$3,500,000; cost of 1955 program, \$6,000,000. Number of airports, 34. There were in 1954 approximately 175,000 radios. Latest telephone statistics (1951) listed approximately 165,000 instruments. On Sept. 30, 1955, there were 115,344 trucks and 222,778 cars in operation.

Banking and Finance.—Bank clearings, 1954, were \$4,584,000,000. The provincial budget for 1954-55 was \$157,315,000; estimated expenditure \$156,950,000, and estimated surplus \$365,000. Cumulative revenues from oil royalties, lease and development at March 31, 1955, were \$364,000,000. The provincial funded debt, March 31, 1955, was \$91,781,000.

Agriculture.—The estimated farm value of total 1954 agricultural production was \$556,946,000. The 1954 crop (est.) was: wheat \$131,100,000, oats \$48,100,000 and barley \$67,900,000. Livestock value: cattle \$86,868,000, sheep \$1,986,000, hogs \$87,823,000. Dairy products amounted to \$36,629,000.

Fisheries, Fur and Forestry.—The 1954 fisheries production (value as marketed) was \$1,149,502. During 1954-55 trappers disposed of furs valued at \$2,078,381, while fur farms produced pelts worth \$2,504,556. The entire fur trade continued to languish. The increasing scarcity of wild fur bearers together with the depressed prices had a serious effect on both white and Indian trappers. Total value of lumber, cordwood and other products for 1954 amounted to \$17,761,000.

Manufacture and Industry.—Ninety manufacturing firms which began operations in 1954, or which were under construction to begin operations in 1955, represented approximately \$94,000,000 and provided work for 2,300 people. In 1954 the estimated gross manufacturing value was \$567,360,000, while the estimated retail trade was \$970,000,000. Approximately 31,000 employees were employed by 2,209 manufacturing plants in 1954.

Minerals and Mining.—Coal production declined from \$32,100,000 in 1953 to \$26,600,000 in 1954. Crude oil production rose from \$200,500,000 to \$238,600,000 in the same period. In 1954 crude oil production comprised 87,713,855 bbl. and natural gas production was 135,545,000 cu.ft. Total value of 1954 mineral production was \$284,461,638. (P. H. GL.)

Alcoholic Intoxication: see INTOXICATION, ALCOHOLIC.

Alcoholic Liquor: see BREWING AND BEER; LIQUORS, ALCOHOLIC; WINES.

Alcoholics Anonymous: see SOCIETIES AND ASSOCIATIONS, U.S.

Aleutian Islands: see ALASKA.

Alfalfa: see HAY AND PASTURES.

Algeria. A French territory of North Africa, Algeria is situated between Morocco (west) and Tunisia (east), with the status of government-general of the French Union. Total area: 846,124 sq.mi., administered in two parts: northern Algeria (80,919 sq.mi.), comprising the overseas *départements* of Algiers, Oran, Constantine and Bône, and the four territories of southern Algeria (765,205 sq.mi.). Pop.: (1948 census) 8,681,785 including 816,993 (9.4%) in the southern territories; (1954 est.) 9,531,000. Arabs and Berbers, who are Moslem, constitute 86.7% of the population; Europeans, predominantly Roman Catholic, 11.5%; Jews 1.8%. Administration: Algerian assembly, 120 members elected by two colleges (first college, all citizens of French status and Moslems distinguished by military, university, administrative or judicial qualifications; second college, all other Moslem citizens). The assembly manages Algerian affairs in agreement with the governor general, who has wide powers. Chief towns (1948 census): Algiers (cap.) 266,165; Oran 244,594; Constantine 80,233; Bône 77,675; Sidi-bel-Abbès 52,881; Mostaganem 50,403; Tlemcen 50,272. Governor general in 1955, Jacques Soustelle.

History.—Terrorism came to an end in Tunisia (*q.v.*) with the conclusion of the Franco-Tunisian agreements, but spread over Algeria, particularly over the eastern region (the *département* of Constantine), where attacks on isolated farms and assassinations of Frenchmen and of certain Moslems became almost daily occurrences.

On Jan. 26, 1955 the former minister Jacques Soustelle, a Gaullist deputy, was appointed governor general of Algeria. On Feb. 4 the national assembly decided that a state of emergency existed in certain zones and that travel and the right of assembly should be restricted. In April and in May terrorism spread throughout the zone between Constantine and Philippeville, farms were burned, vines cut down, telegraph wires severed, settlers massacred. In the south, near Tebessa and near Biskra, administrative outposts were attacked and an administrator was murdered. The government ordered the dispatch to Algeria of ten battalions of infantry and eight squadrons of *gendarmes*. On June 18 there was a wave of attacks in Philippeville. French and Moslem civilians were murdered by the rebel bands, whose usual weapons seemed to be bombs and razors.

In July it was decided that the administration had to be reorganized. A fourth Algerian *département* was created, consisting of the eastern part of the former *département* of Constantine, with Bône as its capital and Souk-Ahras, Guelma and Tebessa as subprefectures. Specially qualified officers of the

Moslem administration had already been sent to pacify the Aurès mountains, where insurrection had first broken out.

Later eleven new subprefects for Algeria were appointed, including five Moslems.

On Aug. 20 there was a new outbreak of violence in the Constantine and Philippeville region. In September there were about 120,000 men under arms in the French forces in Algeria, and order was being restored. The official casualty list for the period from Nov. 1, 1954, to Sept. 30, 1955, numbered 106 European and 347 Moslem civilians killed by the rebels, 317 officers and other ranks killed by them and 2,176 rebels killed.

These disturbances were reflected on the political plane. On Sept. 26 the majority of the deputies in the second (*i.e.*, Moslem) electoral college, which had hitherto supported the policy of assimilation to France, declared itself in favour of "the idea of Algerian nationality." The Algerian assembly was adjourned. On Sept. 30 the assembly of the United Nations put the Algerian question on its agenda. On Oct. 18 the French government secured a majority in the national assembly in Paris with an undertaking to implement in full the statute of 1947, to raise the standard of living and to hold free elections. (*See* also FRENCH UNION.) (Hu. DE.)

Education.—Schools (1953-54): primary (French and Moslem) 2,369, pupils 410,627; secondary (French only) 44, pupils 31,196 (pupils at higher Moslem schools 631); teachers' training schools 6, students 1,039; vocational (1952) 130, pupils 17,074. Institutions of higher education 4, including 1 university with 5,149 students in 1953-54.

Finance.—Budget (1954 actual): balanced at 150,000,000,000 fr. including an allocation of 40,000,000,000 fr. from metropolitan France. Algerian franc=metropolitan franc. U.S.\$1=350 fr.

Foreign Trade.—(1954) Imports 217,738,000,000 fr. of which 172,000,000,000 fr. from metropolitan France; exports 140,355,000,000 fr., of which 102,000,000,000 fr. to metropolitan France. Production (metric tons, 1954): wheat 1,300,000; oranges, etc. 318,000; dates 105,000; figs (1953) 102,000; iron ore 2,928,000; wine 19,300,000 hectolitres.

Aliens: *see* IMMIGRATION, EMIGRATION AND NATURALIZATION.
Alimentary System, Disorders of: *see* STOMACH AND INTESTINES, DISEASES OF THE.

Allergy. Much work was done during 1955 to broaden the scope of allergy. On the experimental side, additional light was thrown on the basic immunologic principles involved in antigen-antibody reaction. Allergic manifestations are based on an antigen-antibody reaction. Research work was done on a method of production of antibodies, on the life duration of antibody and on the nature of antigen. Attempts were made to separate the antigenic fractions of many proteins. There was

more and more evidence that antigen-antibody union leads to liberation of a histamine-like substance which is responsible for symptoms in many forms of allergy. Other substances, particularly acetylcholine, are also involved. Clinical investigations on collagen disease of which periarteritis nodosa is an example were also carried out, indicating the possible allergic nature in, at least, some instances. There was also an attempt to reveal the immunologic nature of blood vessel lesions as a result of experimental sensitization.

The role of ACTH and cortisone in clinical allergy was clarified. Additional work was done on the use of hydrocortisone in the treatment of allergic diseases. These hormones were found to be helpful in the treatment of acute allergic emergencies, such as severe intractable asthma, nasal allergy, severe

cases of angioedema and urticaria. The administration of these preparations helps to encourage the patient and helps him over the period during the course of which a complete allergic survey may be done. The administration of these drugs is not without danger. Patients should be studied carefully before these drugs are given and watched continuously during the period of drug administration. Many reports were available of patients who had received these drugs over a long period of time without any serious effects. However, hormone therapy of this type is not considered a substitute for the proper and adequate study and management of the allergic patient.

Several new products were developed, particularly prednisolone and prednisolone. These synthetic products compare respectively to cortisone and hydrocortisone. They have the advantage over cortisone and hydrocortisone as well as ACTH in that they do not lead to salt retention and therefore to accumulation of water. Their administration does not necessitate a salt-free diet and the concomitant administration of potassium chloride. Roughly, about 10% of the patients receiving these products developed side reactions. A great deal of work was also done in developing functional tests for pulmonary function. These were used in conjunction with determining the effectiveness of various drugs in relieving asthma.

Thrombocytopenic purpura and certain forms of anaemia were shown to be caused by a new mechanism as a result of allergy to certain drugs. Whenever a patient develops unusual manifestations during the course of treatment for any condition, drug administered to the patient for the relief of his symptoms may be responsible for the symptoms.

Many additional antihistaminic agents were produced during the year; because the average allergic person appears to develop a tolerance to an antihistaminic drug, it is frequently necessary to change from one drug to another. Some of these drugs were found to produce a sedative type of action, and for that reason were used especially at night. They were particularly helpful in the symptomatic treatment of urticaria and nasal allergy, but were of little help in the symptomatic treatment of asthma. (L. H. C.)

Alloys: *see* METALLURGY.

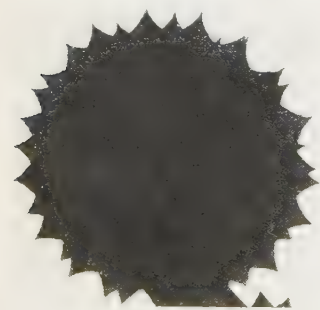
Almonds: *see* NUTS.

Altrusa International, Incorporated: *see* SOCIETIES AND ASSOCIATIONS, U.S.

Aluminum. World production of aluminum in 1954 was about 13% greater than in 1953. All major producing countries except Switzerland showed increases. As in 1953, the U.S., Canada and the U.S.S.R. supplied 78% of the total. Most of the increase was in the United States, with Germany, Norway, Japan and Canada showing smaller increases.

United States.—Data on the domestic industry, reported by the U.S. bureau of mines, are summarized in Table II.

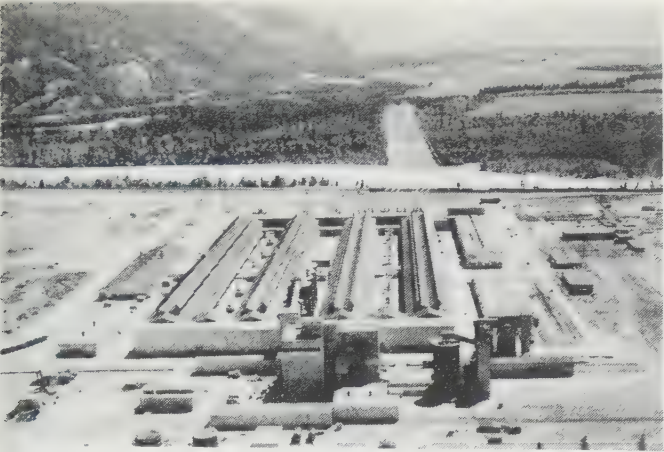
Output of primary aluminum in the first nine months of 1955 totalled 1,156.693 short tons, an increase of more than 6% over production in the first nine months of 1954. The new reduction plant of the Anaconda Aluminum company at Columbus Falls



GRAIN OF RAGWEED POLLEN, photographed through an electron microscope in 1955. In actual size the pollen is about one-fifth the diameter of a human hair

Table I.—World Production of Aluminum
(in 000 short tons)

	1954	1953	1952	1951	1950	1949	1948
Austria . . .	52.9	47.9	40.5	29.1	19.8	16.3	14.1
Canada . . .	560.9	545.8	499.8	447.1	396.9	369.5	367.7
France . . .	132.3	124.6	117.0	99.6	66.8	59.5	70.1
Germany . . .	142.4	117.9	110.8	81.7	30.7	31.8	8.8
Great Britain . . .	35.4	34.6	31.4	31.1	33.0	34.0	33.3
Italy . . .	63.5	61.1	58.2	54.8	40.8	28.5	36.7
Japan . . .	58.5	50.1	47.0	40.7	27.3	23.4	7.7
Norway . . .	71.6	59.0	56.3	55.4	51.9	39.3	34.1
Switzerland . . .	29.8	30.9	32.5	29.8	21.2	23.8	21.1
U.S.S.R. . .	375.7	325.7	275.7	225.7	200.7	182.7	154.7
United States . . .	1,460.6	1,252.0	937.3	836.9	718.6	603.5	623.3
Others . . .	77.1	61.1	54.2	48.8	33.0	32.4	23.3
Total . . .	3,060	2,710	2,260	1,980	1,640	1,444	1,393



ALUMINUM PLANTSITE at Columbia Falls, Mont., opened Aug. 15, 1955, by the Anaconda Aluminum company, the first to enter the field of primary aluminum production in the U.S. since 1946. A capacity of 120,000,000 lb. annually was expected from the new plant

Mont., with a rated capacity of 60,000 tons annually, began producing in August. This made a total of four producers of primary aluminum in the United States. (F. E. H.; B. B. M.)

Table II.—Data of Aluminum Industry in U.S.

	(in 000 short tons)				
	1954	1953	1952	1951	1950
Production, primary . . .	1,460.6	1,252.0	937.3	836.9	718.6
Imports, primary . . .	228.9	359.5	150.7	161.8	255.7
Exports, primary . . .	10.8	15.4	10.6	14.8	23.2
Producers' stocks . . .	+21.1	+39.3	—0.9	—8.5	—12.5
Available new supply . . .	1,657.6	1,556.8	1,073.5	992.4	963.6
Secondary recovery . . .	292.0	368.7	304.5	292.6	243.7
From old scrap . . .	60.0	78.9	71.5	76.6	76.4
Secondary imports* . . .	14.8	19.8	5.4	16.7	68.4
Total supply . . .	1,963.4	1,945.2	1,386.4	1,284.7	1,242.7
Consumption, primary . . .	1,657.6	1,556.8	1,072.3	973.9	896.4

*Ingot equivalent of net imports (wt. x 0.9). Imports are largely scrap pig. Some duplication of secondary aluminum occurs because of small quantity of loose scrap imported, which is included as secondary recovery from old scrap.

Ambassadors and Envoys.

The following is a list of ambassadors and envoys to and from the United States, as of Oct. 1, 1955:

To the United States	Country	From the United States
*Ludin, Mohammad Kabir	Afghanistan	*Ward, Angus
*Paz, Hipólito J.	Argentina	*Nufer, Albert F.
*Spender, Sir Percy	Australia	*Peaslee, Amos J.
*Gruber, Karl	Austria	*Thompson, Llewellyn E., Jr.
*Silvercruys, Baron	Belgium	*Alger, Frederick M., Jr.
*Andrade, Don Victor	Bolivia	*Drew, Gerald A.
*Muniz, João Carlos	Brazil	*Dunn, James C.
*Barrington, James	Bulgaria†	*Satterthwaite, Joseph C.
*Kimny, Nong	Burma	*McClintock, Robert
*Heenev, A. D. P.	Cambodia	*Stuart, R. Douglas
*Gunewardene, R. S. S.	Canada	*Crowe, Philip K.
*Jara, Anibal	Ceylon	*Beaulac, Willard L.
*Koo, V. K. Wellington	China	*Rankin, Karl L.‡
*Zuleta-Angel, Don Eduardo	Colombia	*Bonsal, Philip W.
*Fournier, Don Fernando	Costa Rica	*Woodward, Robert F.
*Campa, Miguel A.	Cuba	*Gardner, Arthur
*Petrželka, Karel	Czechoslovakia	*Johnson, U. Alexis
*Kauffman, Henrik de	Denmark	*Coe, Robert D.
*Salazar, Joaquín E.	Dominican Rep.	*Pheiffer, William T.
*Kiriboga V., José R.	Ecuador	*Mills, Sheldon T.
*Hussein, Ahmed	Egypt	*Byroade, Henry A.
*Castro, Don Héctor David	El Salvador	*Hill, Robert C.
Kaiv, Johannes§	Estonia	(Legation at Tallinn closed)
*Deressa, Yilma	Ethiopia	*Simonson, Joseph
*Nyköpp, Johan A.	Finland	*McFall, Jack K.
*Couve de Murville, Maurice	France	*Dillon, C. Douglas
*Krekeler, Heinz L.	Germany	*Conant, James B.
*Makins, Sir Roger	Great Britain	*Aldrich, Winthrop W.
*Melas, George V.	Greece	*Cannon, Cavendish W.
*Cruz-Salazar, José Luis, Lieut. Col.	Guatemala	*Sparks, Edward J.
*Léger, Jacques	Haiti	*Davis, Roy Tasco
*Izaguirre, Carlos, Gen.	Honduras	*Willauer, Whiting
Szarka, Károly	Hungary	Ravndal, Christian M.
Thors, Thor	Iceland	Muccio, John J.
*Mehta, Gaganvihari Lalubhai	India	*Cooper, John S.
*Notowidigdo, Moekarto	Indonesia	*Cunning, Hugh S., Jr.
*Entezam, Nasrollah	Iran	*Chapin, Selden
*Al-Shabandar, Moussa	Iraq	*Gallman, Waldemar J.
*Hearne, John Joseph	Ireland	*Taft, William Howard, III
*Eban, Abba	Israel	*Lawson, Edward B.

To the United States	Country	From the United States
*Brosio, Manlio	Italy	*Luce, Clare Boothe
*Iguchi, Sadao	Japan	*Allison, John M.
*Rifa'i, Abdul Monem	Jordan	*Mallory, Lester D.
*You Chan Yang	Korea	*Lacy, William S. B.
Souvannavong, Ourat R.	Laos	*Yost, Charles W.
Spekke, Arnolds|| . . . . .	Latvia	(Legation at Riga closed)
*Khouri, Victor, Appointed	Lebanon	*Heath, Donald R.
*Simpson, Clarence L.	Liberia	*Jones, Richard L.
*Muntasser, Saddigh	Libya	*Tappin, John L.
Žadeikis, Povilas	Lithuania	(Legation at Kaunas closed)
Le Gallais, Hugues	Luxembourg	*Buchanan, Wiley T., Jr.
*Tello, Don Manuel	Mexico	*White, Francis
	Morocco	Holmes, Julius C.¶
*Shanker Shamsher Jang Bahadur Rana, Gen.¶	Nepal	*Cooper, John S.δ
*Roijen, J. H. van	Netherlands	*Matthews, H. Freeman
*Munro, Leslie K.	New Zealand	*Hendrickson, Robert C.
*Sevilla-Sacasa, Don Guillermo	Nicaragua	*Whelan, Thomas E.
*Munthe de Morgenstjerne, Wilhelm	Norway	*Strong, L. Corrin
*Ali, Syed Amjad	Pakistan	*Hildreth, Horace A.
*Vallarino, Don Joaquín José	Panamá	*Harrington, Julian F.
*Enciso-Velloso, Don Guillermo	Paraguay	*Ageton, Arthur A.
*Berkemeyer, Don Fernando	Peru	*Briggs, Ellis O.
Leuterio, Raul T.□	Philippines	*Ferguson, Homer
*Spasowski, Romuald	Poland	*Jacobs, Joseph E.
*Fernandes, Luis Esteves	Portugal	*Bonbright, James C. H.
Moisescu, Anton	Rumania	Thayer, Robert H.
*Al-Khazayal, Sheikh Abdullah	Saudi Arabia	*Wadsworth, George
*Holloway, J. E.	South Africa:	
	Union of	*Wailles, Edward T.
*Areilza, Don José M. de	Spain	*Lodge, John
*Boheman, Erik	Sweden	*Cabot, John M.
Torrenté, Henry de	Switzerland	*Willis, Frances E.
*Zeineddine, Farid	Syria	*Moose, James S., Jr.
*Sarasim, Pote	Thailand	(Vacancy)
*Görk, Haydar	Turkey	*Warren, Avra M.
*Zaroubin, Georgi N.	U.S.S.R.	*Bohlen, Charles E.
*Mora, José A.	Uruguay	*McIntosh, Dempster
*González, César	Venezuela	*Warren, Fletcher
*Tran Van Chuong	Vietnam	*Reinhardt, G. Frederick
Abu-Taleb, Sayed Abdurrahman ibn Abdussamed°	Yemen	Wadsworth, George^
*Mates, Leo	Yugoslavia	*Riddleberger, James W.

*Ambassador. Unstarred—Minister.
†Diplomatic relations severed Feb. 24, 1950.
‡Resident at Taipei, Formosa; embassy at Nanking closed March 5, 1950.
§Acting consul general.
|| Minister plenipotentiary, chargé d'affaires (May 24, 1954).
¶Diplomatic agent with rank of minister; consul general.
§Resident in London.
δResident in New Delhi, India.
□Minister plenipotentiary, chargé d'affaires ad interim (June 24, 1954).
°Chargé d'affaires.
^Resident in Jidda, Saudi Arabia.

- American Academy of Arts and Letters: see SOCIETIES AND ASSOCIATIONS, U.S.
- American Academy of General Practice: see SOCIETIES AND ASSOCIATIONS, U.S.
- American Academy of Political and Social Science: see SOCIETIES AND ASSOCIATIONS, U.S.
- American Association for the Advancement of Science: see SOCIETIES AND ASSOCIATIONS, U.S.
- American Association of University Professors: see SOCIETIES AND ASSOCIATIONS, U.S.
- American Association of University Women: see SOCIETIES AND ASSOCIATIONS, U.S.
- American Bankers Association: see SOCIETIES AND ASSOCIATIONS, U.S.
- American Bar Association: see SOCIETIES AND ASSOCIATIONS, U.S.
- American Bible Society: see SOCIETIES AND ASSOCIATIONS, U.S.
- American Cancer Society: see SOCIETIES AND ASSOCIATIONS, U.S.
- American Chemical Society: see SOCIETIES AND ASSOCIATIONS, U.S.

American Citizens Abroad. United States consular representatives estimated that there were 516,903 American citizens residing in various foreign countries as of Jan. 1, 1955, which reflected a decrease of 41,382 as compared with the previous year. The largest decrease in the American population abroad occurred in Europe and

Estimate of U.S. Citizens Residing Abroad

	Jan. 1, 1954	Jan. 1, 1955	Change
South America	40,210	41,301	+ 1,091
Mexico and Central America	57,769	53,317	- 4,452
Europe	168,732	139,657	-29,075
Asia	65,316	51,398	-13,918
Africa	15,926	14,844	- 1,082
Australia and New Zealand	5,432	5,998	+ 566
West Indies and Bermuda	17,897	24,639	+ 6,742
Canada, Newfoundland and Iceland	155,948	157,367	+ 1,419
Philippines	31,055	28,382	- 2,673
Totals	558,285	516,903	-41,382

Asia, in which areas 42,993 fewer Americans resided at the beginning of the year. As shown by the table, however, a gain of 6,742 was reported for the West Indies and Bermuda.

Many of the American citizens who were residing abroad had received passport facilities for their foreign travel during the tenure of Mrs. Ruth B. Shipley as director of the passport office. Mrs. Shipley retired on April 30, 1955, after having directed the country's passport activities for 27 years. She was succeeded by Miss Frances G. Knight, a career federal employee who was formerly assistant deputy administrator of the bureau of security and consular affairs in which capacity she was closely associated with the work of the passport office.

(See also TOURIST TRAVEL.) (F. G. Kt.)

American College of Dentists: see SOCIETIES AND ASSOCIATIONS, U.S.

American College of Hospital Administrators: see SOCIETIES AND ASSOCIATIONS, U.S.

American College of Life Underwriters: see SOCIETIES AND ASSOCIATIONS, U.S.

American College of Physicians: see SOCIETIES AND ASSOCIATIONS, U.S.

American College of Surgeons: see SOCIETIES AND ASSOCIATIONS, U.S.

American Correctional Association: see SOCIETIES AND ASSOCIATIONS, U.S.

American Dental Association: see SOCIETIES AND ASSOCIATIONS, U.S.

American Dialect Society: see SOCIETIES AND ASSOCIATIONS, U.S.

American Economic Association: see SOCIETIES AND ASSOCIATIONS, U.S.

American Federation of Labor: see LABOUR UNIONS.

American Geographical Society: see SOCIETIES AND ASSOCIATIONS, U.S.

American Historical Association: see SOCIETIES AND ASSOCIATIONS, U.S.

American Hotel Association: see HOTELS, U.S.

American Indians: see INDIANS, AMERICAN.

American Institute for Property and Liability Underwriters: see SOCIETIES AND ASSOCIATIONS, U.S.

American Institute of Accountants: see SOCIETIES AND ASSOCIATIONS, U.S.

American Institute of Architects: see SOCIETIES AND ASSOCIATIONS, U.S.

American Institute of Chemical Engineers: see SOCIETIES AND ASSOCIATIONS, U.S.

American Institute of Electrical Engineers: see SOCIETIES AND ASSOCIATIONS, U.S.

American Institute of Mining and Metallurgical Engineers: see SOCIETIES AND ASSOCIATIONS, U.S.

American Iron and Steel Institute: see SOCIETIES AND ASSOCIATIONS, U.S.

American Law Institute: see SOCIETIES AND ASSOCIATIONS, U.S.

American Legion: see VETERANS' ORGANIZATIONS, U.S.

American Library Association. The American Library association (A.L.A.) the official organization for librarians in the United States and Canada, had a membership in 1955 of approximately 20,000 from the U.S. and possessions, Canada and more than 50 other countries. In 1955, the association had an endowment capital of approximately \$2,460,000 and a total income of about \$1,170,600.

Headquarters are located at 50 East Huron street, Chicago 11, Ill., with David H. Clift as executive secretary. The work of the association is carried on by a staff of 95, assisted by more than 700 members of voluntary boards and committees. The annual midwinter meeting of the association was held in Chicago, Feb. 1-5, 1955. There were 4,500 registered at the 74th annual conference in Philadelphia, Pa., July 3-9. Future conference plans called for a midwinter meeting in Chicago, Jan. 31-Feb. 4, 1956, and annual conferences in Miami Beach, Fla., June 17-23, 1956, and in Kansas City, Mo., June 23-29, 1957.

Officers, elected by ballot, who assumed their duties at the 1955 annual conference were: president, John S. Richards, Seattle (Wash.) Public library; first vice-president and president elect, Ralph R. Shaw, graduate school of library service, Rutgers university, New Brunswick, N.J.; and second vice-president, Mrs. Frances L. Spain, New York Public library. The treasurer was Raymond C. Lindquist, Cleveland (O.) Public library.

The annual A.L.A. citations for distinguished service as library trustees were awarded to Mrs. George R. Wallace, Fitchburg, Mass., and Ralph D. Remley, Rockville, Md. The 34th Newbery medal was given to Meindert DeJong for *The Wheel on the School*, judged to be the most distinguished children's book of 1954. Marcia Brown received the Caldecott medal for *Cinderella*, chosen as the best illustrated children's volume of the year. Emerson Greenaway, director, Free Library of Philadelphia, received the Joseph W. Lippincott award (\$500) for distinguished service in the profession of librarianship. The Margaret Mann citation was given to Seymour Lubetzky, consultant on bibliographic and cataloguing policy, Library of Congress, for his contribution in the field of cataloguing and classification. Maurice F. Tauber, Melvil Dewey professor of library service, Columbia university, received the Melvil Dewey medal for creative professional achievement both as a librarian and as a teacher. The E. P. Dutton-John Macrae award (\$1,000) for advanced study in the field of library work with children and young people went to Mrs. Barbara Davis Widem, assistant librarian, Center for Children's Books of The University of Chicago.

The Grolier Society award (\$500) was presented to Mrs. Charlemae Rollins, children's librarian, Chicago Public library, for her outstanding contribution to the reading of young people. Helen M. Harris, librarian, Lawson McGhee library, Knoxville, Tenn., received the *Letter* librarian award (\$100) for her exemplification of the best traditions of library service. The Kentucky Library Extension division was given the *Letter* librarian award (\$100) for its contribution in extending "the number and degree of an informed citizenry in the State of Kentucky through placing nearly 100 bookmobiles in service. Arthur and Elizabeth Rose of Pennsylvania State college were awarded the Oberly Memorial award, presented every other year for the best bibliography in the field of agriculture and related sciences for their scholarly and valuable work, *Distillation Literature Index and Abstracts 1946-52*.

Thirteen libraries were winners of the 1955 John Cotton Dana Publicity awards, sponsored by the *Wilson Library Bulletin* and the A.L.A. Public Relations committee for effective public relations programs.

The year 1955 saw many A.L.A. projects completed and t

authorization for the beginning of new ones. Notable among the latter was a management survey of the association, conducted by the firm of Cresap, McCormick and Paget, which was accepted by the A.L.A. council. A grant of \$30,000 was given to the Association of College and Reference Libraries, a division of A.L.A., for the support of liberal arts college libraries throughout the country.

Grants from the Fund for Adult Education enabled the association to continue the American Heritage project, whose staff during its four years of operation trained a total of 1,153 discussion leaders with 16,753 people participating in 1,063 groups all over the country. The experience gained resulted in the establishment in the fall of 1955 of the Library-Community project, also financed by the fund. This new project was to be concerned with the establishment of a program of adult education in four pilot libraries in Kansas, Maryland, Michigan and Tennessee.

Hearings were held before the committee on education and labour of the U.S. house of representatives in connection with the A.L.A.-sponsored Library Services bill, which was reported favourably out of the house committee in July and was to be presented to congress when it convened in Jan. 1956. The A.L.A. endorsed the School Library Bill of Rights, which was adopted by the American Association of School Librarians, and accepted the *Library's Pay Plan: A Statement of Principles*, which was prepared by the A.L.A. Board on Personnel administration. The association also was concerned with revising the standards for public and school libraries, recruiting and training able men and women for the profession, and developing worthwhile reading habits for children and adults. (See also LIBRARIES.)

(D. H. C.)

American Literature. The year 1955 brought little to startle and less to gladden the discriminating American reader. He was, as in past years, bombarded by facts and opinions of varying degrees of reliability and, to judge by the popularity of Rudolf Flesch's *Why Johnny Can't Read* and F. L. Ilg and L. B. Ames's *Child Behavior*, had decided that his best hope was to solve his children's problems and to let them settle the world's. The material presented to him by writers on foreign and domestic matters was perhaps more varied and more freely expressed than in the last few years, and less charged with nostalgia for the past and hysteria about the present.

The fiction of the year was undistinguished. Although there were some competent and interesting novels, the most obvious trend was toward a used-up naturalism which had neither individuality of style nor inherent value of content. In the unfortunately sparse output of short stories the reader could find some good writing and sharp perceptions of the surrounding world. If he wanted poetry, there was much from poets both new and established.

The Foreign Scene.—Of books about the world outside the United States, John Gunther's *Inside Africa* was one of the most popular. Narrower in scope and more intense was *Black Power*, Richard Wright's report on the Gold Coast. Harrison E. Salisbury concentrated on the daily life of the Russian people in *American in Russia*. Marston Bates, in his lively book *The Prevalence of People*, discussed the general problem of world population versus resources. And Carleton Coon, as anthropologist, archaeologist and ethnologist, attempted to trace man's growth from prehistoric times in *The Story of Man*.

Several books studied the facts and implications of the foreign policy of the United States. Frank Tannenbaum, in *The American Tradition in Foreign Policy*, suggested that it was in the American tradition to support international ideals at any cost. Louis Joseph Halle, in *Civilization and Foreign Policy*, supported the idea that to survive, nations must get along.

Edwin O. Reischauer's *Wanted: An Asian Policy* recommended ideological rather than military strategy.

The American Scene.—Two provocative studies of American culture were Erich Fromm's *The Sane Society* and Lewis Mumford's *In the Name of Sanity*. Fromm, using a broad psychiatric approach, found the whole contemporary standard of mental health false and proposed sweeping economic, social and moral changes; and Mumford, making a somewhat similar analysis, plead for unconditional world co-operation. Samuel A. Stouffer's *Communism, Conformity and Civil Liberties* concluded on the basis of statistical samplings that hysteria was becoming less acute. *Government by Investigation*, by Alan Barth, and *Grand Inquest*, by Telford Taylor, both defended the principle of government investigation but recommended protective reforms. Gordon Harrison, in *Road to the Right*, reported on conservatism from feudalism to Eisenhower. William O. Douglas' *An Almanac of Liberty* was a group of thoughtful essays and historical notes on civil rights. Richard L. Neuberger's *Adventure in Politics* was a lively discussion of states' rights and other political matters.

A basic source book for future economic studies was *America's Needs and Resources, a New Survey*, by J. Frederic Dewhurst and associates, an estimate of future production, labour force and consumer habits. In a more specific study Benjamin Fine's *1,000,000 Delinquents* collected case studies as well as suggestions on diagnosis, prevention and treatment. A forceful book was Charles Abrams' *Forbidden Neighbors*, which reported on race prejudice in housing, both public and private. C. Vann Woodward, in *The Strange Career of Jim Crow*, followed the story of segregation from pre-Civil War times to the present.

Books about less controversial aspects of American life included *American Skyline, the Growth and Form of Our Cities and Towns*, by Christopher Tunnard and Henry Hope Reed. Eric Russell Bentley's *The Dramatic Event* traced the Broadway theatre from 1952 to 1954. Wyman Richardson's quiet and scientific essays on nature as observed on Cape Ann, Mass., appeared in *The House on Nauset Marsh*. Gilbert Chase, in *America's Music, from the Pilgrims to the Present*, made a scholarly survey of all musical forms. *Charles Ives and His Music*, by Henry and Sidney Cowell, showed the influence of transcendentalism and New England village life on the composer. Van Wyck Brooks's *John Sloan: A Painter's Life* was less a critique than an affectionate reminiscence. Rockwell Kent's discursive *It's Me, O Lord* was a lengthy autobiography of a man whose activities touched on much of America's cultural life for many years. Benjamin Albert Botkin collected city folklore in *Sidewalks of America*. A striking book, edited by Nat Shapiro and Nat Hentoff, *Hear Me Talkin' to Ya*, told the story of jazz in the recorded conversations of more than a hundred of the men who made it. Roland Gelatt presented his enormous research into social history in an entertaining style in *The Fabulous Phonograph; From Tin Foil to High Fidelity*.

Historical Works.—The year was marked by the appearance of the last volumes of two major biographies whose authors died before the work could be completed. *Patriot and President*, a study of the years 1783-1793, was volume vi of Douglas Southall Freeman's *George Washington: A Biography*. This monumental work, if completed, would have included one more volume. J. G. Randall's *Lincoln the President: Last Full Measure*, appeared as the final volume of the work, finished by Randall's close associate, Richard Nelson Current.

A number of interesting works focused on the early days of the country. Wallace Notestein's *The English People on the Eve of Colonization* surveyed the customs and institutions of the people from whom the American colonists came. In *The Coming of the Revolution, 1763-1775*, Lawrence Henry Gipson studied

the trend toward revolution in the colonies. *From Lexington to Liberty*, by Bruce Lancaster, told the story of the American Revolution in homely detail. *Rebels and Democrats*, by Elisha P. Douglass, gave a picture of the struggle for equal political rights and majority rule during the Revolution. *The Washington Papers*, selected from his public and private writings by Saul K. Padover, showed the first president as a democratic human being. Volume x, June 22 to Dec. 31, 1786, of *The Papers of Thomas Jefferson* was issued, under the editorship of Julian P. Boyd, assisted by Mina R. Bryan and Frederick Aandahl. Two popular accounts of lesser known episodes in history were given in Marion Lena Starkey's *A Little Rebellion*, the story of Shays' rebellion, and Glenn Tucker's *Poltroons and Patriots*, a two-volume study of the War of 1812.

Richard Nelson Current's *Daniel Webster and the Rise of National Conservatism* analyzed the Whig statesman's economic thought in relation to his age. In *Andrew Jackson: Symbol for an Age* John William Ward concentrated more on the beliefs of the age than on the actual biography. *The Jacksonians*, by Leonard Dupee White, was the third and final volume in an administrative history of the United States from 1789 to 1861.

Hudson Strode, drawing upon private letters from the Davis family, wrote an excellent biography, *Jefferson Davis: American Patriot 1808-1861*. Other books on the Civil War era included Earl Schenck Miers' *The Web of Victory; Grant at Vicksburg* and James Alonzo Bishop's *The Day Lincoln Was Shot*, a sometimes more dramatic than accurate account of the single day's events.

Harry Barnard, in *Rutherford B. Hayes, and His America*, wrote a carefully documented psychological and political study of the Hayes administration. Two volumes of memoirs supplied interesting source material on the present century. *The Lowering Clouds 1939-1941* was volume iii of *The Secret Diary of Harold L. Ickes*, and *Year of Decisions*, volume i of the memoirs of Harry S. Truman, covered the former president's first year in the White House.

Fiction.—The middle-aged masters dominated fiction in the year 1955, both old and young masters being almost mute. The general monotony of the year's fiction was seldom relieved by the sure voice of the experienced artist or the uncertain experiments of the novice. Although there were novels, some of them competent, on a great variety of themes, the two characters most favoured for dissection were American businessmen or young ladies uncertain of their identity.

Robert Penn Warren's *Band of Angels*, while it discussed problems of freedom and history through the adventures of a white girl who discovers she is a slave, in many ways resembled a standard historical romance of the old south. Herman Wouk's *Marjorie Morningstar* went through much duller adventures and arrived at even more conservative conclusions. Harvey Swados combined both of the year's two favorite type-characters in *Out Went the Candle*, dealing more perceptively and ironically with the businessman father than with the confused and searching daughter. Both Swados and Wouk used a Jewish background for their stories. James Yaffe, in *What's the Big Hurry?*, also concerned with the life of a Jewish businessman, managed better to convey some of the richness and contradictions of this setting. John P. Marquand presented the genteel history of a businessman's hypocrisy and success in *Sincerely, Willis Wayde*. Sloan Wilson's *The Man in the Gray Flannel Suit* anatomized the businessman in suburbia. In contrast to the sometimes pedestrian and sometimes reverent approach of many of the foregoing books was Ring Lardner Jr.'s *The Ecstasy of Owen Muir*, a sharp and often successfully funny satire of a man who adopts a succession of philosophical positions and reduces each to absurdity.

A good, quiet novel was Gerald Warner Brace's *Bell's Landing*, which described the effect of an old Cape Ann house on brothers. A New Yorker returns to his home town and analyzes the Shinto tradition of the south in Hamilton Basso's *The View from Pompey's Head*. Violence characterized a group of books. Robert C. Ruark's *Something of Value*, about the Mau Mau rising in Kenya, had little more than its violence to distinguish it. Budd Schulberg's *Waterfront* was an indictment of waterfront racketeering. *The Goodly Seed*, by John Wyllie, was an exciting story of the clash of personalities, both Japanese and American, in a Japanese prison camp. Mario Puzo, in *The Death Arena*, told of cruelty, weakness and violence against the background of U.S.-occupied Germany. Evan Hunter found his material in New York vocational schools for the sensational *Blackboard Jungle*. And MacKinlay Kantor used the horrors of a Confederate prison for *Andersonville*.

George R. Stewart, with his customary quiet skill, wrote *Years of the City*, not exactly a novel, but the story of the cycle of an imaginary Greek city. William Gaddis' *The Recognition* made a lengthy study of falseness. Merle Miller's excellent story *Reunion* described the tensions and reactions of wartime comrades meeting again years later. Jo Sinclair's *Two Changelings* chronicled a crisis in a neighbourhood becoming interracial. In William Krasner's *North of Welfare*, set in East Harlem, the pictures and character studies were more important than the plot. William Gardner Smith's *South Street* was a fine portrait of a Negro community. Martha Dodd, in *The Search for Light*, observed the effects of a loyalty investigation on a college campus. Calder Willingham's *To Eat a Peach* demonstrated a surer than average sense of style in a story about a southern summer camp. Milton Lott's *The Last Hunt* vividly portrayed the slaughter of the American buffalo.

The sense of style and the richness of content so often missing in the novels of the year appeared more frequently in the short-story collections, many of them written by lady southerners. Of these Eudora Welty's *The Bride of the Innisfallen* was especially good. Shirley Ann Grau, though limited in range, demonstrated her competence in *The Black Prince*. Flannery O'Connor's *A Good Man Is Hard to Find* showed perception of both evil and humour. Frances Gray Patton's *Good Morning, Mr. Dove* was a group of excellent stories. Jessamyn West, a lady not a southerner, in *Love, Death and the Ladies' Drill Team* presented portraits rich in humour and understanding of characters in a southern California setting. Elizabeth Enright's *The Moment before the Rain* was a group of stories about troubled children and adolescents. In *The Worcester Account*, Sam Nathaniel Behrman collected reminiscences about childhood of a minority group. Samuel Hopkins Adams' charming *Grandfather Stories* pictured early days in upstate New York.

Scholarship.—The year saw major publications about America's two great poets, Emily Dickinson and Walt Whitman. The celebration of the hundredth anniversary of *Leaves of Grass* resulted in a number of books about Whitman and editions of his work. The most outstanding was Gay Wilson Allen's *The Solitary Singer*; solid and unromantic in its approach, it for the first time brought together the incredibly scattered and difficult record of the poet's life and work in a scholarly and critically definitive biography. In *Walt Whitman Reconsidered* Richard Volney Chase gave a detailed analysis of the major works and a study of the poet's alienation from his culture. *Leaves of Grass One Hundred Years After*, edited by Milton Hindus, included new essays by William Carlos Williams and others.

The other major event was *The Poems of Emily Dickinson*, edited by Thomas Herbert Johnson, in the first three volumes of what was to be the definitive edition of her complete writings. A monumental work, it includes all variant readings and thorough

a meticulous study of the manuscripts establishes for the first time a canon and chronology of the poems. Johnson focused the vast amount of biographical material he examined in the course of editing the poems into *Emily Dickinson: An Interpretive Biography*, a critical study of her poetry as well as a study of her relationships with her family and, through Colonel Higginson, the Reverend Charles Wadsworth and Helen Hunt Jackson, the outside world. Two books by Millicent Todd Bingham were *Emily Dickinson's Home*, the letters of Edward Dickinson and his family with documentation and comment, and *Emily Dickinson, a Revelation*, Mrs. Bingham's account of her investigation of the poet's love for Judge Otis Phillips Lord of Salem.

Edward Hoffman Rosenberry in *Melville and the Comic Spirit* persuasively argues that Melville's genius was initially and essentially comic rather than tragic. Hyatt H. Waggoner's *Hawthorne, a Critical Study* offered a detailed analysis of Hawthorne's allegory and images. Charles H. Foster's *The Rungless Ladder* studied Harriet Beecher Stowe's literary career and the genesis of *Uncle Tom's Cabin*. Eric Wollencott Barnes wrote *The Lady of Fashion; the Life and Theater of Anna Cora Mowatt*. In *Howells and the Age of Realism* Everett Carter traced the development of realism in American fiction.

Lionel Trilling in *The Opposing Self* collected a group of his studies of literature and of the relation of the self to society. Philip Wheelwright in *The Burning Fountain* made a philosophical analysis of the language of symbolism. Malcolm Cowley, speaking as a literary elder statesman, described the ideas, habits and working conditions of contemporary writers in *The Literary Situation*. Frederick John Hoffman's *The Twenties* was a serious attempt to survey and assess American writing in the postwar decade. *The Lion and the Honeycomb* was a collection of essays by the distinguished critic Richard P. Blackmur. Two poets published groups of essays: Marianne Moore's *Predilections* were prose writings about poetry; and William Carlos Williams' *Selected Essays* dealt with poetry and the related arts and with the development of a specifically American tradition. *The Chicago Renaissance in American Letters*, by Bernard I. Duffey, told the story of the period from the 1890s to the 1920s. Leon Edel's *The Psychological Novel, 1900-1950* traced the form back to Henry James. Finally, two autobiographies by literary figures were of special interest: *The Woman Within*, Ellen Glasgow's life, showed the growth of a writer in a conservative southern society. Pearl Buck's *My Several Worlds* was interesting both as the story of a writer and as a view of China in a turbulent period.

Poetry.—The voice of the poet was increasingly clear in the land; established poets continued to collect their life work and new poets continued to write in considerable volume. W. H. Auden's *The Shield of Achilles* was a group of new poems, pastoral and devotional, displaying perhaps less pessimism than previous poems. The title poem of Conrad Aiken's *A Letter from Li Po, and Other Poems* discussed the function of the poet and poetry in society. Archibald MacLeish's *Songs for Eve* contained some fine lyric poetry and some criticism of the age. Elizabeth Bishop's *Poems: North and South. A Cold Spring* demonstrated her exact observation of nature.

In *Poems: 1923-1954* E. E. Cummings presented his collected poems. There were volumes of selected poems from Randall Jarrell, Robert P. Tristram Coffin, Mark Van Doren and Kenneth Burke. Rolfe Humphries' *Poems: Collected and New* and John Ciardi's *As If: Poems New and Selected* contained new and collected works.

Poets of Today II continued the successful experiment of publishing the work of several poets in one volume, *The Hatch* by Norma Farber, *The Irony of Joy* by Robert Pack, and *Good News of Death and Other Poems* by Louis Simpson. Other



THE EISENHOWER BROTHERS, a photograph from *The Great American Heritage* by Bela Kornitzer, published in 1955. From left to right: (seated) Arthur, the President and Milton; (standing) Edgar, Earl

books of some distinction by poets new and old were: *The Symbols*, by John Holmes; *The Scarecrow Christ*, by Elder Olson; *Man Now*, by William Burford; *The Second Man and Other Poems*, by Louis O. Coxe; *The Salt Garden*, by Howard Nemerov; *Birthdays from the Ocean*, by Isabella Gardner; *Wilderness Stair*, by Ben Belitt; *Water Ouzel and Other Poems*, by William H. Matchett; and *The Middle Voice*, by Constance Carrier. (See also BOOK PUBLISHING AND BOOK SALES; CHILDREN'S BOOKS; ENGLISH LITERATURE; LITERARY PRIZES.)

(H. M. H.)

American Mathematical Society: see SOCIETIES AND ASSOCIATIONS, U.S.

American Medical Association: see SOCIETIES AND ASSOCIATIONS, U.S.

American Optometric Association: see SOCIETIES AND ASSOCIATIONS, U.S.

American Pharmaceutical Association: see SOCIETIES AND ASSOCIATIONS, U.S.

American Prison Association: see SOCIETIES AND ASSOCIATIONS, U.S.; *American Correctional Association*.

American Society of Agricultural Engineers: see SOCIETIES AND ASSOCIATIONS, U.S.

American Society of Civil Engineers: see SOCIETIES AND ASSOCIATIONS, U.S.

American Society of Composers, Authors and Publishers: see SOCIETIES AND ASSOCIATIONS, U.S.

American Society of Heating and Air-Conditioning Engineers: see SOCIETIES AND ASSOCIATIONS, U.S.

American Society of Mechanical Engineers: *see* SOCIETIES AND ASSOCIATIONS, U.S.

American Sunday-School Union: *see* SOCIETIES AND ASSOCIATIONS, U.S.

American Veterans' Committee: *see* VETERANS' ORGANIZATIONS, U.S.

American Veterans of World War II (Amvets): *see* VETERANS' ORGANIZATIONS, U.S.

Anaemia: *see* BLOOD, DISEASES OF THE.

Andorra. An autonomous principality between France and Spain, Andorra is bounded north by the *départements* of Ariège and Pyrénées-Orientales and south by the Spanish province of Lerida. Area: 191 sq.mi. Pop. (1953 est.): about 6,500, excluding about 1,200 foreigners, mainly Spaniards; (1954 census) 5,664. Language: Catalan. Religion: Roman Catholic. Capital: Andorra-la-Vieja, pop. (1952 est.) 600. Co-princes: the president of the French republic and the bishop of Urgel, Spain, respectively represented in 1955 by their *viguiers* (deputies), Jean Menant (France) and Jaime Sansa Nequi (Spain). An elected general council of 24 members appoints one of its members as the *syndic général des vallées* (from 1946, Francisco Cayrat).

History.—There was a substantial amount of new housing in 1955 and 15 small hotels were built at Las Escaldas, a tourist centre. But an important source of livelihood was still smuggling, which was the main cause of strained Franco-Andorran relations. Trouble also arose from the decision of the Sofirad (Société Financière de Radiodiffusion), a concern controlled by the French government, to build another transmitter in Andorra. The transmitter was completed, but remained silent, because the Spanish coprince failed to give consent to the venture. Locally-controlled Radio Andorra continued to broadcast.

Economy.—No budget or taxes. Telephone system built and maintained by Radio Andorra (1954, about 100 subscribers). Roads maintained by *Forces Hydro-électriques d'Andorre S.A.* (Fhasa). Cigarette factory with yearly turnover of about 50,000,000 pesetas. Duties collected on imported goods in 1952: about 2,250,000 pesetas. Monetary unit: French franc and Spanish peseta.

Angling. In the fiscal year July 1953 to July 1954, fishing-licence sales in the United States continued their upward trend. A total of 18,580,813 men and women paid a record-breaking \$38,927,735 for all categories of state licences, permits and stamps. Four states had more than 1,000,000 licence holders: California, Michigan, Minnesota and Wisconsin.

The 47th annual tournament of the National Association of Angling and Casting clubs was held at St. Louis, Mo., Aug. 17-21, 1955. The distance trout fly event was won by Jon Tarantino of San Francisco, Calif., with a long cast of 175 ft. and an average of 169 ft. The $\frac{3}{8}$ -oz. bait-casting event was taken by Dick Ward of Washington, D.C., with a long cast of 386 ft. and an average of 368 ft., which broke both records. The $\frac{5}{8}$ -oz. bait-casting event was won by William J. Lovely of St. Louis, Mo., with a long cast of 442 ft. and an average of 427 $\frac{3}{4}$ ft. The distance salmon fly event was won by Myron C. Gregory with a long cast of 212 ft. and an average of 200 $\frac{3}{4}$ ft., which also toppled both records. Ben Fontaine of New Orleans, La., again took the Skish distance fly event, this time with a long cast of 148 ft. and an average of 140 $\frac{3}{4}$ ft.

The 12th International Tuna Cup match was held at Wedgeport, N.S., Sept. 7-9; the Alton B. Sharp cup was awarded to the United States team.

The International Game Fish association announced six all-tackle records. A 21-lb. 6-oz. blackfish was taken on June 12, 1954, off Cape May, N.J., by R. N. Sheaffer. A 90-lb. black drum fell to J. W. Douglass on May 17, 1955, at Wildwood Highland,

N.J. A 2,536-lb. mako shark was caught on April 11, 1955, Denial Bay, Austr., by A. Dean, who broke his own record. A 136-lb. wahoo was taken on April 8, 1955, at East Boynton Inlet, Fla., by R. J. Geyer. A 105-lb. 12-oz. yellowtail was caught by M. A. Yant on April 30, 1955, at Bahia de Tonala, Mexico. *Field & Stream* magazine announced a new fresh-water record for longnose gar, a 50-lb. 5-oz. specimen taken by Townsend Miller on July 30, 1954, from Trinity River, Tex. (A. J. MEYER)

Anglo-Egyptian Sudan.

A country in northeast Africa, the Anglo-Egyptian Sudan was under British and Egyptian control until Feb. 12, 1954, under the joint sovereignty of Great Britain and Egypt; on that date it entered a transitional period of more than three years at the end of which complete independence was to be attained. Area: 967,500 sq.mi. Pop. (1955 census, no census ever taken): 8,764,000.

Language: English, Arabic, and various Nilotic and Nubian tribal dialects in the south.

Religion: in the six northern provinces the Sudanese, a Negroid Hamitic race, are almost entirely Sunni Moslem divided into a few sects; in the three southern provinces, containing one-quarter of the country's population, the Negroes are mainly pagan, but one-fifth is Christian.

Chief towns (pop., 1955 est.): Khartoum (cap.) 827,000; Khartoum North 34,000 and Omdurman 125,300—the three towns constituting in fact one agglomeration divided by the Nile; Niles' joining there; El-Obeid 70,100; Port Sudan 47,400; Wad Medani 57,300.

Governor general in 1955 (responsible to the co-dominion powers for matters of defense and external affairs), Sir Knox Helm; prime minister, Ismail el-Azhari.

History.—On Dec. 28, 1954, the Sudanese cabinet was reconstituted following the dismissal by the prime minister of the previous cabinet ministers. The dismissed ministers had fallen out with the government on the issue of what they felt was the too great domination of Sudanese affairs by Egypt. In accordance with the declared policy of the Sudanese government the prime minister resisted their complaints and continued to advocate close co-operation between Egypt and an independent Sudan. But the deterioration of Sudanese-Egyptian relations was the principal feature of 1955 and before it was over Ismail el-Azhari himself had far exceeded his former colleagues in the expression of resentment of Egyptian methods and his determination not to allow the Egyptian connection to qualify the reality of Sudanese independence.

On March 31 the government National Unionist party (N.U.P.) adopted a resolution in favour of complete independence and of a parliamentary republic. Relations with Egypt, the resolution stated, must not be prejudicial to Sudanese sovereignty. In foreign relations the Sudan must not be tied to one power but should be a member of the Arab league. The public declaration of policy marked an important change in the attitude of the party. It was attributed to resentment at the steady stream of propaganda which was directed from Cairo against the Sudanese people, to the dismissal of Gen. Mohammed Naguib (a Sudanese) and to the Egyptian attitude toward the control and distribution of the waters of the Nile. The extent of the disagreement between the two countries on this last issue became clear when a conference, which met in Cairo on April 6, broke down on the following day and the Sudanese minister of irrigation declared that his government had lost all confidence in Egyptian intentions.

During 1955 the Sudan began to take its place in the world field of international affairs. On April 4 British and Egyptian diplomats, acting as representatives of the two states still

sponsible for the foreign relations of the Sudan, signed an agreement in the United States which provided for extended technical assistance to the Sudan which was to take the form, among other things, of a campaign against malaria under the direction of the World Health organization, and of a program of "fundamental education" by the United Nations Educational, Scientific and Cultural organization.

The Sudan was represented at the Bandung Asian-African conference (*q.v.*) by the prime minister where he was reported as siding, unlike Egypt, with the prowestern group of Asian and African powers.

On June 18 two ministers were dismissed; both advocated union with Egypt and the autonomy of the southern Sudan. Cairo radio continually attacked the prime minister and on July 1 a Sudanese minister declared "A link with Egypt means domination by Egypt." El-Azhari and six members of his cabinet visited Cairo during July 23-28. Later the prime minister said "If we had represented a foreign power the treatment we received would have made us break off relations." On Aug. 16 the Sudanese parliament unanimously adopted a resolution to the effect that Sudanization had been completed and asking that arrangements for self-determination be put in motion forthwith. The prime minister stated that the Sudan desired complete independence but that if the question of a link with Egypt had to be considered he would prefer it should be by a plebiscite rather than by a constituent assembly as provided for in the Anglo-Egyptian agreement of 1953.

On Aug. 22 parliament decided to invite representatives of Czechoslovakia, India, Pakistan, Sweden, Switzerland, Norway and Yugoslavia to supervise the voting, of whichever kind, upon whose outcome the issue of the country's relations with Egypt would depend.

The latent antagonism of the northern and southern Sudan found expression on Aug. 19 when two companies of the Equatoria corps of the Sudan defense force mutinied at Torit, the capital of Equatoria province. At the request of the Sudanese government Sudanese troops were flown to the affected areas by royal air force transports.

The governor general of the Sudan returned from leave in Great Britain and appealed to the mutineers to lay down their arms. The U.K. government rejected a suggestion by the Egyptian government for joint military action by the two co-dominions and by the end of August it appeared that the situation was under government control. (*See also EGYPT.*) (H. S. D.)

Education.—Schools (1953-54): primary (including sub-grade and Koran) 1,636, pupils 168,329; intermediate and vocational 101, pupils 15,343; secondary 23, pupils 4,333; teachers' training colleges 19, students 1,645. University College of Khartoum (July 1954): students 616, teaching staff 94.

Finance and Banking.—Monetary unit: Egyptian pound, with an exchange rate of £E0.975 to the £1 sterling and £E0.348 to \$1 U.S. Budget: (1951-52 actual) revenue £E46,400,000, expenditure £E21,800,000; (1953-54 estimate) revenue £E28,500,000, expenditure £E26,800,000. Total external debt (June 1953): £E10,400,000, of which £E4,700,000 to Egypt for development. Bank deposits (Mar. 1954) £E13,900,000.

Foreign Trade.—(1953; 1954 in parentheses) Imports £E50,776,000 (£E48,492,000); exports £E44,419,000 (£E40,458,000). Main sources of imports (1953): U.K. 41.5%; Egypt 8.2%; India and Pakistan 7.8%; Italy 5.9%; Germany 5.3%; U.S. 2.6%. Main destinations of exports: U.K. 41.9%; India and Pakistan 13.2%; Germany 10.8%; France 6.9%; Italy 6.2%; Egypt 5.5%; U.S. 2.5%. Main exports (1953): cotton 62.2%; cottonseed 7.4%; gum arabic 6.9%.

Transport and Communications.—(1953-54) Railways 3,956 km. Waterways 3,744 km. Motor vehicles in use (1953): cars 6,200, commercial vehicles 7,200. Telephones (Jan. 1954) 11,648.

Agriculture.—Main crops (metric tons 1953; 1954 in parentheses): cotton, lint 87,000 (93,000); cottonseed 165,000 (167,000); broad beans 3,000; chick-peas 1,000; (1953-54) sesame 29,000; peanuts 24,000; dates (1952) 31,000. Livestock (1955 est.): sheep 6,000,000; cattle 5,500,000; goats 5,000,000; camels 2,000,000; horses (Sept. 1952) 20,000; asses (Sept. 1952) 500,000.

Angola: *see* PORTUGUESE OVERSEAS TERRITORIES.

Animal Fats: *see* VEGETABLE OILS AND ANIMAL FATS.

Animal Industry, Bureau of: *see* VETERINARY MEDICINE.
Anniversaries and Centennials: *see* CALENDAR, 1956, page xxii.

Antarctica. The fifth largest continent is separated from the rest of the world by the Antarctic ocean (South Atlantic, Pacific and Indian oceans), whose stormy, pack-ice-filled seas hampered man's effort to complete the coastal outline of Antarctica until 1947. The shores can be reached by ship only during the summer months as the low temperatures in winter cement coastal waters into a solid, impenetrable ice mass.

Less than one-third of the continent's 5,100,000 sq.mi. of land is explored, principally along the coast and a narrow track to the south pole. The known portion has an average elevation of about 5,000 ft. above sea level and is one-tenth snow-covered.

History.—The U.S. navy icebreaker "Atka" left Boston, Mass., in Dec. 1954 for the Ross sea sector of the Antarctic to make a survey of the Bay of Whales and to select sites for bases in connection with U.S. participation in the International Geophysical year 1957-58. Upon reaching the 100-ft.-high Ross Ice Shelf it was found that a huge segment of it had broken off and drifted out to sea, including what was formerly the Bay of Whales (the site of earlier Norwegian and United States expeditions). What remained of the once easy landing area now ended abruptly in a sheer wall of ice. Much equipment, such as five aeroplanes, buildings and food abandoned by the navy in 1947, had drifted out to sea and was lost. A helicopter from the "Atka" crashed while flying under "white-out" conditions and the pilot was killed. Possible sites for bases were later investigated at Okuma and Kainan bays, to the eastward in the Ross sea, where easy access to the interior appeared feasible. In the latter part of Jan. 1955 the "Atka" made attempts to reach the coast of the continent in the Pacific quadrant to obtain needed ground control points for previously recorded aerial photographs taken by the navy in 1947; but the vessel retreated northward because of ice. In Feb. 1955 the "Atka" rounded Cape Horn and entered the Weddell sea in an attempt to reach its head in 78° S. lat. Because of ice, a ship's broken propeller blade and the lateness in the season, further attempts were abandoned and the vessel returned to the United States in April 1955.

Two months earlier, the Argentine icebreaker "General San Martin" had secretly and successfully penetrated the Weddell sea pack ice to reach the Gould bay area where their fifth and southernmost station was established, less than 800 mi. from the south pole. Base General Belgrano was within the Argentine-claimed sector of the Palmer peninsula and was manned by 32 men.

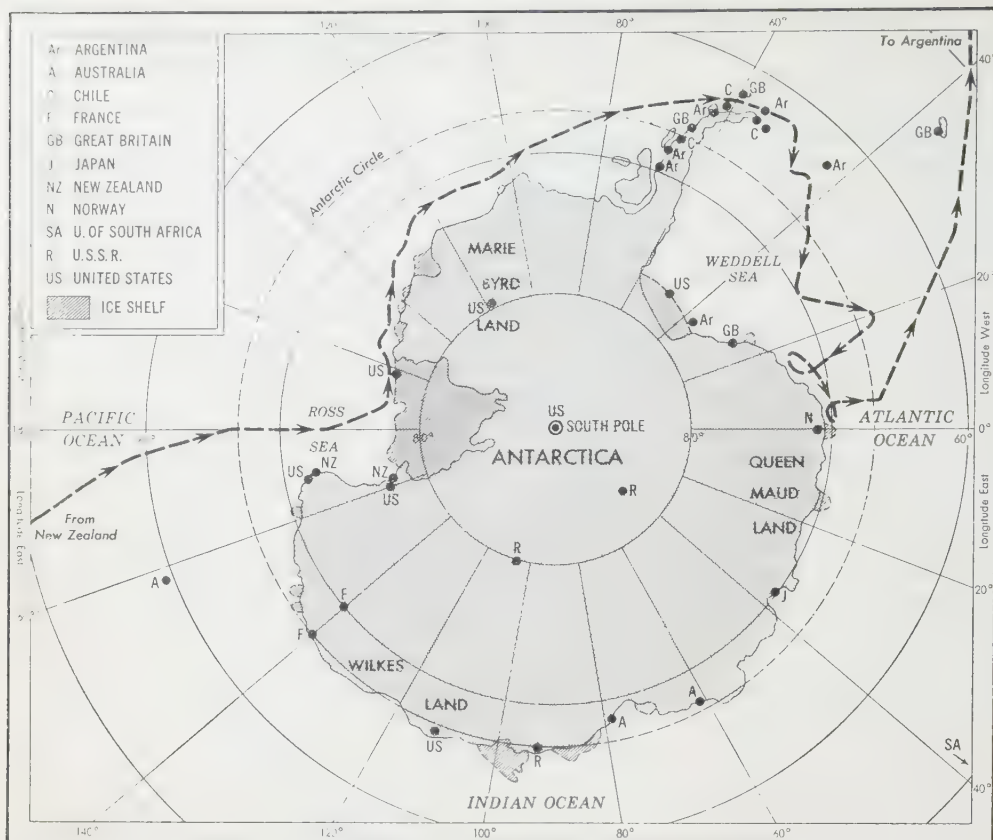
The Argentines announced plans for a transantarctic air-supported tractor journey, via the south pole, to McMurdo sound in the Ross sea in the 1955-56 season, putting themselves in competition with a similar British venture to be launched in Dec. 1956.

When Argentine naval transports were unable to penetrate the last 140 mi. of pack ice in Marguerite bay, helicopters flew a new group of men into the Argentine base and relieved the 19-man garrison which had been marooned for two years.

An additional Argentine base, Camp Esperanza, was set up on the extreme northern tip of Palmer peninsula close to the British Hope bay station.

During the year, the British set up two additional bases at Anvers and Horseshoe Islands in Marguerite bay. Four or five men occupied each base and were engaged in meteorological observations and local survey.

In the disputed Palmer peninsula sector, the British with



ROUTE OF THE U.S.S. "ATKA" during its 1954-55 voyage to Antarctica. Also shown are the bases proposed by the nations participating in the antarctic program of the International Geophysical year, 1957-58

eight, the Chileans with four and the Argentines with five bases maintained continuous occupation to strengthen their rights for sovereignty in an area where those three nations' claims overlapped.

The third International Geophysical year was to be held from June 1957 to the end of Dec. 1958 for the study of earth sciences. In 1882 the first one was held, and the second took place in 1932-33. Eleven nations planned to participate with stations in the antarctic and subantarctic islands to make identical geophysical recordings with those made elsewhere throughout the world. The National Science foundation and the National Research council were jointly sponsoring U.S. participation in the international program, with the navy providing logistic support. Five cargo ships and three icebreakers left for the Ross sea area in Nov. 1955 to set up the main station in the vicinity of the Bay of Whales in the Ross sea. A base for air operations was to be constructed in McMurdo sound at the western head of the Ross sea. From this base, planes would make air-drops to set up one of the field stations at the south pole in Nov. 1956. Tractor-trains would haul supplies to construct another field station in Ellsworth highland at 80° S. lat., 120° W. long. Two additional stations, as part of U.S. obligations in the scientific year, were to be established at the head of the Weddell sea and on Knox coast in the 1956-57 season. Navy Task Force 43 was set up for the purpose of providing logistic support for the program and was in command of Rear Adm. George Dufek, U.S.N. (retired).

At a meeting in Paris in July 1955 the location of the bases of the various nations was determined, with Great Britain, Norway, Chile, France, Belgium, Japan, Australia, New Zealand, Argentina and the Soviet Union participating. (See also EXPLORATION AND DISCOVERY; INTERNATIONAL GEOPHYSICAL YEAR, 1957-58.)

(F. RE.)

Anthropology. The year 1955 marked by the crystallization of two trends whose first indications appeared in earlier years. The first of these was a restatement of the basic unity of the discipline, an attempt to reintegrate the diverse pursuits of anthropologists which had led them into such disparate and apparently unrelated topics as the Ice Age and the prehistoric neme.

The re-evaluation took several forms, depending on the individual interests of the workers, and it is unnecessary to capitulate here all the aspects presented by the various works which displayed this trend. Significant works ranged from Ralph Linton, *The Tree of Culture*, through such diverse books as M. J. Herskovits, *Cultural Anthropology*, W. Barre, *The Human Animal*, W. W. Howells, *Back of Evolution*, and C. S. Coon, *The Story of Man*. The latter works showed

a modification of the basic trend: the interest of the worker in making anthropology both interesting and clear to the general reader, who has no training in the field. In fact, the principal trend of the year seems to have been to attract the interest of scholars working in various branches of the sciences to the central scientific core, so that the science as a whole would have more meaning, and at the same time their work would have more validity because of its broader outlook. Culminating this trend was the publication of the first volume of the *Yearbook of Anthropology—1955*, published by the Wenner Gren Foundation for Anthropological Research. This volume replaced the *Yearbook of Physical Anthropology* and other works published sporadically by the foundation to fill anthropological needs as they arose. The volume, edited by William Thomas, Jr., detailed in its preface the three kinds of readers which it intended to attract: other professional specialists in anthropology, the vast audience of the lay public and students and scholars in disciplines other than anthropology.

Publication, throughout the year 1955, reflected each of these kinds of readers. It also reflected the thinking of previous years; there were prophets who had demonstrated the present trend in years which had gone before, only to be overlooked. Herskovits' earlier *Man and His Works* was a substantial attempt to integrate most of the fields of anthropology, yet it fell short in its broad, general appeal. J. G. D. Clark's monumental *Prehistoric Europe: The Economic Basis* (1952) perhaps displayed the best features of this trend.

Anthropological publication continued to increase, both in variety and in importance. Apart from the inauguration of the *Yearbook*, the year also saw the inception of the regular publication of *Ethnohistory* as a quarterly, of *Western Anthropology* by the Western States branch of the American Anthropological association, *African Abstracts* and the *Davidson Journal of Anthropology*. During the year, the review editor of the American Anthropological association received 480 publications, and 211 books were reviewed in the *American Anthropologist*. T



SURVEY OF THE ANTARCTIC, a series of photographs by Walter Sullivan of the *New York Times*, who accompanied the U.S. navy expedition seeking a site for a base of operations during the Antarctic phase of the International Geophysical year, 1957-58

Top, left: Helicopter leaving the flight deck of the icebreaker "Atka" for an exploratory flight near Little America III, 1939 base of Adm. Richard E. Byrd

Top, right: The "Atka" moored to the ice in Admiral Byrd bay, one of two good sites found for docking the ship on the Atlantic side of the south polar region

Left: A seaman pursuing Adélie penguins across the ice. The expedition brought back several of the birds for the Washington (D.C.) zoo

Bottom, left: Technicians and observers aboard ship and helicopter co-ordinating navigation measurements. This point was determined to be 686 mi. from the pole, the farthest point to the south reached by the expedition

Bottom, right: A U.S. signal corps observer shown after dismantling a wind generator he had mounted during the Byrd expedition of 1934. The radio tower shown buried in the snow was 70 ft. high when erected



represented only a fraction of the books of anthropological interest which were published. It in no way reflected the constantly increasing pressure on publishers and editors by authors of manuscripts both great and small, which complicated the editorial problem. Anthropology as a field had acquired more interested participants, had begun to develop its own integrated core and had reached out to the general public for a measure of understanding.

The second major trend of the year was reflected both in publications and in meetings. Anthropology, no longer an isolated science, had joined other sciences in the attack on common problems, with the idea of solving, by a multidirectional approach, questions which had not been illuminated by previously used techniques. Although many meetings reflected this new trend, two in particular deliberately established the multidirectional approach. The first of these was the international symposium on "Man's Use of the Earth," held in Princeton, N.J., June 16-22, and sponsored by the Wenner-Gren foundation. Its theme—"What has been and is happening to the earth's surface as a result of man's having been on it for a long time, increasing in numbers and skills unevenly, at different places and times?"—was debated by more than 80 participants representing about 21 different disciplines. Representatives came from ten countries and represented universities, private institutions, industry and government. The second international symposium was held in Cambridge, Eng., July 25-30, on the subject of the current status of radiocarbon research. This technique, not originally developed by anthropologists but rapidly accepted by the discipline as one of prime importance, was also accepted by other scientific fields. The conference brought together 30 scientists, including 4 from the United States, to discuss several important aspects of the technique.

There was a subtle difference in the approach of these two congresses. The first attempted to illuminate problems; the second attempted to frame directions for future research.

The Cambridge radiocarbon conference concentrated on three general topics of fundamental importance to the future of radiocarbon research: counting techniques, the geochemistry of carbon 14 and the correlation of recent radiocarbon datings. The conclusion of the assembled scientists was that radiocarbon research was of the utmost importance for several sciences, not only as a technique for dating events but also as a sensitive and valuable tool for determining rates of important processes.

The cross-disciplinary pattern was reflected in several publications during the year. Among these, *For a Science of Social Man*, edited by John Gillin, *Education and Anthropology*, by G. D. Spindler, and *Aspects of Culture and Personality*, edited by F. L. K. Hsu, show the impact of anthropology and other sciences on problems which lie both inside and outside the more conventional anthropological field.

Two series of special conferences were held during the year. The first, sponsored by the Society for American Archaeology under a grant from the Carnegie corporation, consisted of four seminars held in four cities. Gordon R. Willey was chairman of the first of these, held in Cambridge, Mass., on the subject of "Prehistoric Culture Contacts." The second, under the chairmanship of Emil Hauray, concentrated on "Cultural Persistence and Change Through Time." In Santa Fe, N.M., under the co-chairmanship of Jesse D. Jennings and Erik Reed, the seminar considered "The Prehistoric Southwest: A Problem in Cultural Isolation." The final group, under the direction of Richard K. Beardsley, concentrated on "Changing Settlement Patterns in American Cultural Evolution." The results of these seminars were to be published as a memoir of the Society for American Archaeology.

Three conferences of special interest to physical anthropolo-

gists were held during the year: "Dynamic Anthropometry" in New York city in March; "Nutritional Anthropometry" in Cambridge, Mass., in June; and "The Role of Physical Anthropology in the Field of Human Identification" in Washington, D.C., in September. The National Science foundation increasingly supported projects in physical anthropology.

Apart from special conferences and meetings during the year, the period was marked by the continuance of the usual anthropological meetings. The most notable of these was the 11th Pan-African Congress on Prehistory, held in Livingstone, Northern Rhodesia, in July. The conference was preceded by the announcement by Raymond A. Dart of the medical school of the University of the Witwatersrand, Johannesburg, U. of S.A., of a new jaw fragment of *Australopithecus*, which had been found by E. L. Boné in the dump from Limekiln cave at Makapansgat, U. of S.A. This find had particular significance in view of the recent identification of pebble tools from the same site by C. Van Riet Lowe. This appeared to be the earliest association between tool-making and manlike animals. These finds were presented at the congress, where they formed an integral part of the discussion on the relationship of the australopithecine finds to man's ancestry. The general conclusion was that these finds were relatively late in date, and probably not ancestral to living human forms. A wide variety of papers was presented at the congress, of which three deserve special mention. R. S. Mason of the South African Archaeological survey advanced a new method of tool analysis based on statistical computation which would substantially reduce the subjective aspect of much archaeological reporting. C. K. Brain of the Transvaal museum presented a new method of computing the position in the pluvial cycle of any cave deposits, linking with it a magnificent analysis of the process of cave deposition. It was believed that his techniques might go far toward the final solution of the dating of the African material, which, up to now, had hung in chronological limbo. Another paper, by H. S. B. Cooke, presented a remarkably ingenious theory about the relationship of European glaciations and the African pluvials, which offered many ideas for future research. His theories accounted for many of the discrepancies between the two sequences, but failed to account for certain local irregularities.

The congress was preceded by a week's excursion to most of the important sites of Southern Rhodesia. Following the meeting in Livingstone, where the papers were presented, were two further excursions, which permitted the delegates to examine the most important sites of Northern Rhodesia and the Katanga area of the Belgian Congo. It was significant that this congress reflected the general trend of the integration of several sciences around a central theme: in this case, the geological correlation of Africa and Europe and the dating of the Australopithecine.

During the year, a two-year project, "The Southwest Project in Comparative Psycholinguistics," was initiated by the Social Science Research council, to study the relationship between language structure and patterns of thought. Under the direction of John B. Carroll, Harvard psychologist, the first phases of the investigation, involving the collaboration of psychologists, anthropologists and linguists, were planned during July and August. The project was supported by a grant from the Carnegie corporation. The Association of American Medical Colleges concentrated the third of its teaching institutes on anatomy and anthropology, pressing further the interdisciplinary trend.

The Wenner-Gren foundation entered its 15th year of continuing to serve the anthropological profession. The Viking fund medals and awards, presented by the Wenner-Gren foundation, went to Robert Redfield (The University of Chicago), general anthropology; W. Duncan Strong (Columbia university), archaeology; and W. W. Howells (Harvard university),

physical anthropology.

It must be noted that the trends which have been mentioned here were part of a continuum, extending back in time and projecting into the future. The 1955 meetings of the American Anthropological association emphasized this: for the first time, a special session of papers selected from all anthropological disciplines was projected, without competing sessions. In this way, all branches of the science could come together to draw from each other mutual support and inspiration. (See also ARCHAEOLOGY.) (W. S. Gy.)

Antibiotics: see AGRICULTURAL RESEARCH SERVICE; BACTERIOLOGY; CHEMISTRY; CHEMOTHERAPY; EAR, NOSE AND THROAT, DISEASES OF; STOMACH AND INTESTINES, DISEASES OF THE.

Antigua: see LEEWARD ISLANDS.

Antimony: see MINERAL AND METAL PRODUCTION AND PRICES.

Apples: see FRUIT.

Apricots: see FRUIT.

Arabia. A peninsula of southwestern Asia, Arabia is bounded north by Jordan and Iraq, southwest by the Red sea, southeast by the Gulf of Aden and the Indian ocean and northeast by the Persian gulf and the Gulf of Oman. Area, about 909,681 sq.mi., almost four-fifths occupied by the kingdom of Saudi Arabia (*q.v.*); in the northeast, southeast and part of the southwest coastal regions are the kingdom of Yemen (*q.v.*), the British colony and protectorate of Aden (*q.v.*) and the states listed below. Total pop. (1954 est.) 13,418,000, mostly Arabic-speaking Sunni Moslems.

Muscat and Oman.—This is a sultanate in close treaty relations with Great Britain, occupying regions extending northwest and southwest from the most easterly point of Arabia, together with an enclave in Trucial territory stretching southward for about 45 mi. from Cape Musandam. Area: about 82,000 sq.mi.; pop. (1954 est.) 550,000, including many Baluchis, western Indians and Negroes. The dependency of Gwadar, an enclave on the south coast of Makran (Pakistan) comprises a port (pop. about 5,000) and about 300 sq.mi. of adjoining country. Chief towns: Muscat (cap.), est. pop. 5,500; Matrah, 8,500. Sultan, Said bin Taimur.

Persian Gulf.—The following are British-protected Arab sheikhdoms in the Persian gulf. The headquarters of the British political resident, Persian gulf, is at Manama, Bahrain. Agent in 1955, B. A. B. Burrows.

Bahrain.—This archipelago lies 20 mi. off Al Hasa on the gulf coast of Saudi Arabia. Total area, 231 sq.mi.; pop. (1954 est.) 120,000 (about 50% Shia Moslems). Chief towns (1954 est.): Manama (cap.), pop. 50,000; Muharrek, about 30,000. Sheikh, Sulman bin Hamad al-Khalifah; British political agent in 1955, C. A. Gault.

Katar (Qatar).—Area about 8,500 sq.mi.; pop. (1953 est.) 30,000. Cap.: Doha (or Bida). Sheikh, Ali bin Abdullah al-Thani; British political agent in 1955, W. B. M. Johnston.

Kuwait.—Area, about 8,000 sq.mi.; pop. (1954 est.) 200,000. Cap.: Kuwait, pop. (1952 est.) about 25,000. Sheikh, Abdullah bin Salim as-Subah; British political agent in 1955, C. J. Pelly.

Trucial Sheikhdoms (or T. Oman, T. Coast).—Abu Dhabi, Ajman, Dubai, Fujairah, Ras al-Khaiman, Sharjah and Kalba, and Umm al-Kawain sheikhdoms. Total area, about 5,792 sq.mi.; total pop. (1954 est.) 80,000. Chief towns: Dubai (chief port and British political agent's headquarters); Sharjah; Abu Dhabi (port). British political agent in 1955, C. M. Pirie-Gordon.

History.—The three British-protected oil-bearing states in the Persian gulf (Kuwait, Bahrain and Katar) increased production during 1955 and there was also active exploration of

potential submarine deposits off the Kuwait coast.

In April the British foreign secretary (then Sir Anthony Eden) stated in the house of commons that the new Anglo-Iraqi agreement (see IRAQ) in no way affected the status of Kuwait.

Under the 1954 truce, oil prospecting by the Iraq Petroleum company in the Buraimi zone proceeded peacefully. But in August tension suddenly revived when the Saudi Arabian authorities blocked a British relief convoy for the victims of an extensive fire in the zone; and when in September the arbitration tribunal met, the president and the British delegate quickly resigned in protest against the partiality of their Saudi Arabian colleague. Saudi Arabian bribery in Abu Dhabi, aimed at bringing the sheikhdom into Saudi Arabia's orbit, was also alleged. The outcome was the reoccupation of Buraimi by Arab levies under British officers. Saudi Arabia (*q.v.*) protested strongly.

(O. M. T.)

Production.—Oil production in metric tons for recent years was as shown in the table.

	1951	1952	1953	1954
Bahrain	1,503,000	1,505,000	1,500,000	1,500,000
Katar	2,370,000	3,297,000	4,056,000	4,776,000
Kuwait*	28,226,000	37,637,000	43,284,000	48,575,000

*Including Kuwait Neutral Zone.

Finance and Trade.—*Muscat and Oman.*—Monetary units: Indian rupee (official) valued at 21 cents U.S.; Maria Theresa dollar (common medium of exchange) and (in Dhofur province) half dollar; in interior generally, copper *baiza* (200 *baizas*=1 Maria Theresa dollar=c. Rs. 2.5) with nickel coins for multiples. Foreign trade (1952-53): imports Rs. 24,363,300, exports Rs. 22,817,400; imports from U.K. (1954) £248,170, exports to U.K. (1954) £11,328. Chief imports: cereals, tea, sugar, tobacco, cotton goods. Chief exports: dates (£709,377 in 1952-53), limes, dried fish.

Kuwait.—Monetary unit: Indian rupee. Trade (1954): imports from U.K. £10,173,574, exports to U.K. £134,775,089. Chief exports: petroleum and pearls.

Bahrain and Katar.—Monetary unit: Indian rupee. Foreign trade (1954 including trucial Oman): imports from U.K. £10,732,087, exports to U.K. £16,344,150. Chief exports: rice, petroleum products, pearls. Chief imports (Bahrain): sugar, textiles, machinery, motor vehicles.

Trucial Sheikhdoms.—Monetary unit: Indian rupee. Chief imports: rice, sugar, textiles, machinery. Chief products and exports: pearls, dates (exports, 1952, Rs. 1,000,000), dried fish. Imports (1952) Rs. 35,987,454.

Arab League: see IRAQ; JORDAN; LEBANON; SAUDI ARABIA; SYRIA.

Arboretums: see BOTANY.

Archaeology. Eastern Hemisphere.—The archaeological year 1955 was an active one. For the most part, excavations and projects dealt with sites which already had been under excavation. There were few highly spectacular finds, in the journalistic sense, but much general advance in knowledge of the past.

Pleistocene Prehistory.—For the more remote ranges of prehistoric time, the important finds of the year were linked to discoveries of bones of fossil men and were mainly in Africa. At Ternefine near Mascara, Alg., C. Arambourg recovered two human jawbones in a context which suggested their association with bifacially worked flints of the Abbevillian type. Although coarse pebble tools do proceed them in further Africa, Abbevillian implements are the earliest of the standard Eurafrian series, dating back several hundred thousand years. Up to this time, no bones of fossil men had been found with them.

From Cyrenaica, Libya, west of Derna, C. B. M. McBurney reported the contents of a 25-ft. deep trench in a large cave, Haua Fteah. The sequence yielded recent, Roman, Neolithic, a burin and blade industry, and earliest, a rather late aspect of Levallois-Mousterian. A fossil human jaw fragment appeared in the earliest levels and was dated by radioactive carbon at about 34,000 years ago.

In London, the investigation of the Piltdown hoax was completed with the proof that the tools associated with "Eoanthropus dawsoni" had also been faked.

Referring to more recent prehistoric times, a new cave in northern Spain, at Puente Viesgo, yielded fine outline drawings and engravings of animals in the earlier Franco-Cantabrian style. Carleton Coon carried on test diggings in caves near Palmyra, Syria. Bruce Howe did an extended survey for cave sites in Iraqi Kurdistan for the American Schools of Oriental Research, testing six of the caves and completing his excavations at Palegawra.

Near East.—The Iraq-Jarmo project of the Oriental Institute of The University of Chicago continued its examination of the appearance of the village-farming community in Iraqi Kurdistan. After a survey of the basin of the greater Zab river, five village sites were tested; one of these, M'lefaat, appeared to be the oldest proper village site yet encountered anywhere. In the spring months work at the site of Jarmo was resumed. Extensive data were collected for a reconstruction of the environment in which agriculture, animal domestication and the village-farming community first appeared, and about 52 radioactive carbon samples were secured from the more important prehistoric village sites of western Asia.

Kathleen Kenyon also continued her work on the prehistoric levels of the town of Jericho in Jordan. The earlier of two stone wall foundations, which seem to have encircled the site in very early times, was encountered in several places. Maurice Dunand expanded his exposure of the important earliest level of the prehistoric occupation at Byblos in Lebanon.

In the historic range of time, there was work in Egypt by both the Oriental Institute of Chicago and the University Museum of Philadelphia at Luxor and Memphis. The excitement over the solar boat at the base of the Cheops pyramid tended to deflate to its proper proportions. After the removal of the capping blocks of limestone, one competent Egyptologist observed "so far as we could see there is no hull and scarcely one piece of wood joined to another." Later reports suggested that the thing became slightly more comprehensible after cleaning, but no objects other than those pertaining to a ship were reported.

Meanwhile, a considerably earlier and substantially intact funerary boat was found as part of a great tomb at north Sakara by W. B. Emery. The whole complex, measuring 65 by 27 m., contained many new architectural features, inscribed jar-sealings and pottery, but unfortunately had been severely plundered in antiquity. It was probably the tomb of Udimu, fifth king of the 1st dynasty, and should date to about 3000 B.C.

In Israel, Nelson Glueck carried on a surface survey in the arid Negev district, establishing that the flourishing period of this district, about 2,000 years ago, was the result of irrigation engineering and not climatic change. At Beth Shearim near Nazareth a tomb believed to be that of the noted rabbi, Judah the Prince, was cleared. Exploratory excavations were begun at a town site believed to be that of Netofa, and also at the fortress of Masada overlooking the Dead sea. S. Yeivin, the director of antiquities, reported on excavations in the great port of Caesarea Maritima, in which architectural details, mosaics and sculpture appeared.

Details of the important work in Syria, the continuation of French excavations at Mari on the Euphrates and at the two coastal sites of Amrit and Ras Shamra, were not available. In Iraq, in addition to the prehistoric activities of the Iraq-Jarmo project, the British and German schools and the Directorate of Antiquities were active. The directorate made important clearances in a late Assyrian palace at Nebi Yunis, a mound of the Nineveh complex hitherto untouched because of a mosque and cemetery on its surface. The bases of statues of the Egyptian king defeated by the Assyrians were found. The directorate also continued its work at Hatra, the Parthian fortress city in the

northern desert. A quantity of the exotic half-Greek, Oriental sculpture known as Parthian (first three centuries) was recovered. Max Mallowan extended his clearance of the public building area at Nimrud, one of the Assyrian capitals and had considerable success with heavy excavation machinery in moving fill away from the river wall of the town. Heinrich Lenzen concentrated on architectural exposure in the later levels of the site of Warka, south of Baghdad.

R. Ghirshman resumed the cleaning of the great brick ziggurat tower and temple of Untash-Haban on the Elamite site of Choga-Zambil in Iran. Two other French expeditions were at work in Afghanistan. That of J.-M. Casal at Mundigak in the Kandahar area encountered thirteen levels to virgin soil; the lowermost nine contained simple living debris, next appeared an elaborate monumental building and finally several superimposed levels of post-Harrapan date. The site was yielding important material for the synchronization of the Indus valley Harappan culture with more westerly cultural features. At Surkh Kot in Bactria, Daniel Schlumberger completed the excavation of the Greco-Iranian temples of monumental scale built by kings of the Kushan dynasty.

In Turkey the British school at Ankara under Seton Lloyd carried on significant work at Beycesultan in the Meander river valley. The mound yielded traces of Hittite occupation, an early installation identified with the kingdom of Arzawa which successfully held off the Hittites for some time, and a still earlier and preliterate assemblage with buildings of monumental scale which dated back to about 2700 B.C.

Classical Lands.—In Greece, an important prehistoric village site in Thessaly, Ottaki-Magula near Larisa, was being excavated by a German expedition under Vladimir Milojević. The site appeared to yield an earlier aspect of village materials than yet found in the country.

Alan Wace continued his clearances at Mycenae, concentrating on three houses outside the citadel. At Eleusis, George Mylonas encountered an excellent Protoattic vase (about 600 B.C.) painted with Homeric subjects. C. Blegen continued clearing the Mycenaean palace at Pylos. J. Caskey exposed the Helladic architecture at Lerna.

The American School of Classical Studies proposed to finish its work in the Athenian Agora during the year; a large deposit of pottery was found and the restoration of the Stoa of Attalos proceeded. Oscar Broneer completed clearance of the temple of Poseidon at Isthmia near Corinth. An outstanding find was announced by Emil Kunze of the German Archeological Institute digging at Olympia consisting of portions of the clay mold used by the sculptor Pheidias for casting the gigantic statue of Zeus, one of the Seven Wonders of the World. The French school was busy at Argos and also on the island of Thasos where the Agora was being excavated. The British school worked on southern Chios on its Acropolis.

In Italy, P. Sestieri continued his work at Paestum, opening an underground shrine to the goddess Hera which yielded excellent magnificent bronze vases and a fine black-figure amphora. Greek work of about 550 B.C. At Velia, south of Paestum, Sestieri resumed architectural clearance on a second important Greek colonial town in southern Italy. P. E. Arias reported the discovery of excellent Greco-Etruscan pottery and small objects from mud-filled tombs in land being reclaimed by a drainage project near the Po delta.

An excellent series of Roman sculpture was being recovered from Hadrian's villa near Tivoli. Some of the statues were fragmentary but reconstructible and others essentially whole; at least four caryatids, a Silenus pillar, Mercury, Mars, and Faunus. Tiber were represented. At Stabiae, near Naples, L. d'Orsi uncovered a villa buried since the Vesuvius eruption of 79

which also covered Pompeii. It contained some fine portrait wall paintings. At Pompeii itself the bodies of nine more victims were encountered, including that of a woman wearing jewellery. In 1954 the remains of a large Mithraic temple containing sculpture and small objects had been revealed under the foundations of a later church on the Aventine hill in Rome. An aerial photograph, taken by accident at a time when lighting was propitious, revealed a large and sumptuous Roman villa underlying the airfield at Centecelle, Rome.

There was considerable activity in the provinces of the classical lands. In Cyrenaica, Libya, the ritual baths of a nymphaeum were identified at Cyrene, and C. Kraeling of the Oriental Institute examined Ptolemais. In Tripolitania, the site of a desert outpost-farming community established by the Romans on the Saharan border was studied. In the upper Euphrates valley in Anatolia, a combined German-American staff investigated the Hellenistic shrine of Antiochus I at Nemrid-Dagh and the site of Arsameia, where a long Greek inscription was copied with a "squeeze" of latex. A fine series of late 4th-century B.C. Greek gold vessels was reported found in Bulgaria.

In 1954 when making foundations for a new building in a bombed-out portion of the "city" of London, just south of the Bank of England, the remains of a large Mithraeum (temple) appeared, also some fragmentary sculpture, including the head of the Persian god Mithras from the customary relief for the altar. In 1955 further fragments and the neck of the Mithras were found. The remains were to be reconstructed in the court of the finished office building.

Post-Classical Eurasia.—There continued to be a dearth of news from behind the "iron curtain." The *Illustrated London News* reported a remarkable find of fabrics, carpets and felt work from Pazyryk in Altaic Siberia. Because of their remarkable preservation in permafrost, the original colour, texture and great richness of subject matter had been well preserved. Two rich cemetery finds of Frankish jewellery and glass were made, one in the Netherlands and one in Kent, Eng. The fine late Byzantine mosaics of the Kahrie Djami and of the great palace, in Istanbul, Turkey, were being cleaned and restored.

Further Asia.—In a rock shelter in Kelantan, eastern Malaya, an important series of artifacts of the Hoabinhian "Mesolithic" and of the Malayan "Neolithic" categories were found. It was suggested that included cord-marked pottery was a descendant of pottery common in the Chou dynasty in China, and other dating evidence included fragments of 4th- to 2nd-century B.C. Greek trade wares.

An Englishman repatriated from China brought with him a number of photographs of inscribed and carved tombstones from T'ai-tu, the traditional capital of Kublai Khan. Many of the stones bore Christian symbols; one with a Latin inscription was probably the tombstone of Friar Andrew of Perugia, mentioned by Marco Polo.

(R. J. B.)

Western Hemisphere.—The Society for American Archaeology held its annual meeting of 1955 on May 5-7, at the Uni-



SOUTHWEST WING OF THE PROPYLAEA, the Acropolis, Athens, Gr., showing reconstruction which was completed in 1955

versity of Indiana, Bloomington. On May 4, a group of archaeologists attending the meeting conducted an informal discussion of the current concepts relating to the Archaic stage of culture in North America. An attempt was made to clarify the relationships of Archaic to earlier Paleo-Indian industries, as well as to post-Archaic pottery-bearing cultures.

William Duncan Strong of Columbia University was chosen by the society as the recipient of the 1954 Viking Fund Medal and Award in Archaeology.

Early Man.—By far the oldest radiocarbon dating of traces of early man in the new world was recently determined by W. F. Libby on charcoal samples from the intriguing Tule Springs site in southern Nevada. According to Libby, more than 23,800 years have elapsed since the ancient hunters cooked their game on a series of small camping spots, situated on low clay knolls along a stream. The entire area has been a barren desert in recent times.

Geological studies revealed that subsequent to the probably intermittent human occupations a large lake, or series of lakes, covered the region. It has been suggested that this change was induced by the long wet interval of the Great Pluvial period in the southwest, probably to be correlated with a major early stage of ice advance of the Wisconsin or latest glaciation elsewhere in the country. The lake waters deposited over the site about 14 ft. of silt, containing the shells of small mollusks. A long dry period following the Wisconsin glaciation may have resulted in the evaporation of the lake, after which portions of the silt cover were removed by erosion, exposing the ancient habitation level.

Discovery of this remarkable station came as a result of the paleontological survey of Vegas wash, in 1913, by Fenley Hunter, representing the American Museum of Natural History. Intermingled with ashes and charcoal he detected burned and broken bones of long-extinct Pleistocene mammals, the most abundant of which pertained to a large American camel (*Camelops*). Also represented were a long-horned bison, one species of deer, two species of the American horse, and the mammoth. Among these remains he recovered an obviously man-made obsidian flake,



PREHISTORIC PERUVIAN FIGURE c. 1100 A.D. installed in the Hall of Latin American Archaeology, Smithsonian institution, Washington, D.C., in 1955. The figure, dressed in the ancient garb of coastal Peru, was found in a grave

confirming his suspicion that the bones were split by man to obtain the succulent marrow, then discarded in and around the campfires.

The Southwest museum at Los Angeles was invited to examine the site and in 1933 its curator, M. R. Harrington located a series of additional camp spots about $\frac{1}{2}$ mi. distant, where from similar deposits he obtained crudely chipped, scraperlike and chopperlike stone implements. Preserved in the ashes were several awllike tools made from splinters of camel leg bones.

After receiving the astonishing radiocarbon dating report, Harrington, accompanied by Ruth D. Simpson, assistant curator of the museum, and several associates, revisited the almost inaccessible site in May, 1955. Additional ash beds were excavated, a fire pit where a camel had been cooked and eaten was found, and several additional stone artifacts were collected from among the bones. Some distance from the main site, Miss Simpson discovered much of the disarticulated skeleton of a mammoth, near whose skull lay a small accumulation of charcoal, suggesting human activities.

These finds at Tule Springs went far to advance the case for the long Pleistocene human occupation of the new world.

Remains of a second mammoth, apparently killed by Paleo-Indian hunters, came to light during ditching operations in the dry bed of Lake Texcoco, at Iztapan, near Mexico City. The deeply embedded, vertical orientation of the foreleg bone proved that the enormous elephant had been driven into the sticky mud of the shallow lake, where it was killed with the use of leaf-shaped projectile points found among the bones. These points bear a general similarity to the type known in the United States as Angostura points of the early man horizon of the Great Plains.

Pacific Coast.—A University of Oregon expedition under L. Cressman excavated in an unusually deep and instructive stratified site at Five Mile locks on the Columbia river, exposing four clearly defined geological strata within a continuous reworked deposit 23 ft. thick. Upper level material comprised a wide variety of well-made projectile points and other objects related to later Columbia river cultures. A single point type and a smaller artifact range characterized the next level, while the deepest cultural stratum, sealed beneath a hardpan layer, yielded leaf-shaped knives and projectile points with a shortened, restricted stem, and grooved bola stones, the latter suggesting a method of capture of the large birds whose bones were numerous in this level. This oldest assemblage and its geological setting may be of late Pleistocene age. The site was significant for the light it threw on the cultural succession and chronology of the Columbia river valley.

Plains.—Two large-scale research projects were carried out in 1954 under the Missouri river basin salvage program of the Smithsonian institution, national park service, and co-operating agencies in a valiant effort to save some of the most important archaeological sites to be inundated by extensive dam construction. In the Oahe reservoir, about 20 mi. S. of Mobridge, S. D., Wesley R. Hurt of the University of South Dakota excavated a portion of the rich earth-lodge village of Swan Creek. At Fort Randall reservoir, the Crow Creek site, located between Chamberlain and Fort Thompson, S.D., was partly explored by a crew from the Nebraska State Historical society, led by Marvin F. Kivett. One of the most heavily fortified prehistoric sites in the Missouri basin, this also was shown to have been twice occupied by different Indian villages, as revealed by superimposed house floors and refuse middens.

Eastern North America.—In Georgia, impressive finds were made at the famous site in Etowah Mounds state park, where parties from the Georgia Historical commission under L. Larmon and the University of Georgia, directed by A. R. Kelly. In the case of Mound C, more than 40 graves were uncovered while from a pit dug by the Indians through the mound edge there were recovered two sculptured and painted stone figures about 24 in. in height, representing a seated man and woman. These objects, together with the polished stone "sun disk," a monolithic ax, copper headdress, slate palettes, shell gorgets depicting "Eagle Warriors," and various other objects, pertain to a widely diffused, late prehistoric, religious cult in the southeast.

At Washingtonboro on the Susquehanna river in Pennsylvania, a collaborative research job of the Pennsylvania State museum and North museum of Franklin and Marshall college (Lancaster), supervised by John Witthoft, was clarifying the customs of the Susquehannock Indians, an Iroquoian tribe of some importance to history during the period of transition from native to white man's ways. Most of the new data had come from the graves, whose occupants had been richly provided both with native pottery, pipes and ornaments and with tools, weapons and personal decorations obtained from European traders.

Many archaeologists regard the Hopewellian culture, cent

in southern Ohio and the Illinois valley at about the time of Christ, as the most advanced Indian civilization north of Mexico. In Hardin county, Ill., a burial mound of this culture was explored in the summer of 1955 by a student party from the Illinois State museum, led by Melvin L. Fowler. Thirty burials were found, accompanied by impressive offerings, including copper ear spools, shell beads, effigy pipes, and a cache of cannon coal rings, probably used as ear ornaments.

Middle America.—In Romero cave, high in the Sierra Madre mountains of Tamaulipas, northeastern Mexico, a discovery of much significance to the understanding of agricultural beginnings in the new world was made in 1954 by Richard S. MacNeish and a crew of three student assistants. Twenty-six superimposed layers of cultural debris, recording the presence of seven separate cultural complexes, were cut through. As the cave contents were dry, an amazing richness of perishable materials rewarded the searchers. Especially notable were about 137,000 specimens of vegetable foods, including maize, beans and squash. There were also 500 rope or string fragments, 700 pieces of woven mats and, of more permanent nature, 1,500 tools and weapons, chiefly projectile points and scrapers for working wood and leather.

Only wild foodstuffs were present in the lowest and oldest part of the fill, associated with checker- and twill-work mats, and leaf- and diamond-shaped points and knives. Above this zone the deposit yielded atlatl or dart shafts (but no evidence of the bow and arrow), together with squash and beans, the latter perhaps of still wild varieties. Primitive forms of maize were present in the succeeding level, while in the fourth cultural stratum from the bottom occurred a few grains of teocinte, a wild grass formerly regarded as the ancestor of Indian corn. This same layer yielded four corn cobs showing hybridization with teocinte. This evidence was significant in supporting current botanical opinions which regard the earliest maize as a derivative from a primitive pod corn crossed with teocinte. Cotton cloth and pottery made their initial appearance in the same assemblage. In the fifth level, arrowshafts, tobacco and chili were discovered, while in the uppermost or seventh horizon all weapon shafts pertained to arrows, and the pottery forms bridged the gap into early historic times.

Working in Yucatán for the Carnegie institution of Washington, D.C., Edwin Shook and Robert Smith collected important evidence to prove the absence of a post-Toltec occupation at Chichén-Itzá. At the great Late Empire Maya city of Mayapán, Karl Ruppert and Ledyard Smith completed their immense task of mapping the nearly 4,000 house sites and associated structures.

The Carnegie institution's fifth and final season at this site emphasized the study of domestic rather than religious structures, the results indicating that the rulers of Mayapán had transferred their major interests from the construction of communal religious buildings to their own elaborate dwellings. This significant fact signalized, along with other data, the secular shift in the configuration of Maya culture during this period.

Philip Drucker of the Bureau of American Ethnology and Eduardo Contreras, representing the Instituto Nacional de Antropología e Historia, worked jointly at La Venta, a site of the Olmec culture in Veracruz. Their results included additional important stone sculptures, among them a large seated human figure, another colossal human head and effigies of monsters, jaguars and birds, all carved in the distinctive La Venta style.

Peabody museum of Harvard university completed its third field season in British Honduras, again under the direction of Gordon R. Willey. This long-term investigation into Classic Maya settlement patterns had, by 1955, included the mapping of the Barton Ramie site in the Belize valley which covered an area of about 700 ac. and comprised a ceremonial group surrounded

by nearly 300 house mounds. Thirty-nine of these structures had been studied in great detail in an effort to trace the relationship of the domestic to the ceremonial centres of Maya culture, and to determine the occupational spans of the dwelling units.

South America.—Early in Feb. 1954, the press announcement of the discovery by muleteers of the intact, frozen body of a boy in a stone cairn on the summit of the mountain El Plomo (elevation 5,400 m.), Chile, occasioned considerable curiosity and skepticism concerning its antiquity and cultural affiliations. Subsequently, the Museo Nacional de Historia Natural acquired the body and its funerary accompaniments. On April 3 of the same year, an expedition composed of mountain climbers of the Club Andino de Chile and the archaeologist, Richard P. Schaedel, together with several of his students from the University of Chile, Santiago, attempted an examination of the site. Because of the severity of the weather, this was only partially successful, yet it seemed well established by the evidence gathered that the burial had been interred in one of three cairns, constituting the burial component of a ceremonial complex, which also included a circular stone shrine at 5,200 m. In the frozen soil of a hearth near the latter structure, the expedition found about 100 potsherds representing Inca-type vessels, which, together with the grave furnishings, indicated the Incaic origin of the site, probably sometime within the protohistoric period. (See also ANTHROPOLOGY.) (W. A. RE.)

Archery. The 71st annual National Archery Association tournament was held at Miami university, Oxford, O., Aug. 8–12, 1955, with 245 archers participating. The championship scores of the winners in all divisions were as shown in the table.

Target Archery	
Men's championship	Joe Fries, Los Angeles, Calif.
Scores: Double York round	1,832
Double American round	1,420 3,252
Ladies' championship	Ann Clark, Cincinnati, O.
Scores: Double National round	1,038
Double Columbia round	1,204
Double American round	1,364 3,606
Men's American round division (free style)	J. Robert Kest, Santa Ana, Calif.
Scores: Sextuple American round	4,048
(Bare Bow)	Bertram R. Hatfield, Cincinnati, O.
Scores: Sextuple American round	3,974
Junior boys' championship	Richard Carlson, Sacramento, Calif.
Scores: Double Hereford round	2,042
Double American round	1,434 3,476
Junior girls' championship	Nancy Breneman, Columbus, O.
Scores: Double National round	1,071
Double Columbia round	1,144
Double American round	1,196 3,411
Intermediate boys' championship	Gerald Kapela, Toledo, O.
Scores: Quadruple Jr. American round	2,792
Intermediate girls' championship	Kay Volkman, Dayton, O.
Scores: Double Jr. Columbia round	966
Double Jr. American round	1,326 2,292
Beginner boys' championship	Peter William Wagner, Cincinnati, O.
Scores: Quadruple Jr. Columbia round	1,599
Beginner girls' championship	Jackie Couse, St. Louis, Mo.
Scores: Quadruple Jr. Columbia round	2,175
Crossbow	
Men's championship	Paul Eytel, Pluckemin, N.J.
Scores: Quadruple American round	2,854
Ladies' championship	Lillian Eytel, Pluckemin, N.J.
Scores: Quadruple American round	2,302
Flight Shoot	
Men	50-lb. class: 531 yd. 1 ft.
	65-lb. class: 556 yd. 0 ft. 6 in.
	80-lb. class: 585 yd. 0 ft. 6 in.
	Unlimited class: 614 yd. 1 ft.
	Free style (footbow): 774 yd.
Women	35-lb. class: 393 yd. 0 ft. 3 in.
	50-lb. class: 392 yd. 2 ft.
	Unlimited class: 381 yd. 0 ft. 6 in.
Junior boys	35-lb. class: 473 yd. 0 ft. 6 in.
	50-lb. class: 553 yd.
	Unlimited class: 504 yd.
Junior girls	35-lb. class: 383 yd. 1 ft.
	50-lb. class: 356 yd.
	Unlimited class: 348 yd.
Intermediate boys	35-lb. class: 339 yd. 1 ft.
	50-lb. class: 339 yd. 0 ft. 6 in.
	Unlimited class: 357 yd. 2 ft.
Intermediate girls	35-lb. class: 267 yd.
	Cecil Modlin, Evansville, Ind.
	Irving Baker, Westfield, N.J.
	Irving Baker, Westfield, N.J.
	Cecil Modlin, Evansville, Ind.
	Charles Pierson, Cincinnati, O.
	Virginia Hersh, Dayton, O.
	Eu nice Modlin, Evansville, Ind.
	Dorothy Humbert, Springboro, O.
	Larry Modlin, Evansville, Ind.
	Larry Modlin, Evansville, Ind.
	Larry Modlin, Evansville, Ind.
	Nancy Breneman, Columbus, O.
	Nancy Breneman, Columbus, O.
	Nancy Breneman, Columbus, O.
	Jim Dillon, Parma, O.
	Jim Dillon, Parma, O.
	Jim Dillon, Parma, O.
	Bertha Modlin, Evansville, Ind.

Flight Shoot—Continued

Beginner boys	35-lb. class: 224 yd. 2 ft.	Lonnie Modlin, Evansville, Ind.
Beginner girls	35-lb. class: 160 yd. 1 ft.	Mimi Whitmore, Portland, Ore.
Crossbow, men	50-lb. class: 440 yd. 1 ft.	Col. Francis E. Pierce, Coronado Beach, Calif.
	65-lb. class: 471 yd.	Col. Francis E. Pierce, Coronado Beach, Calif.
	80-lb. class: 566 yd.	Col. Francis E. Pierce, Coronado Beach, Calif.
	Unlimited class: 554 yd.	Col. Francis E. Pierce, Coronado Beach, Calif.

Clout Shoot

Men	(36 arrows at 180 yd.)	Dimitri Erdely, Erie, Pa.	36-268
Ladies	(36 arrows at 140 yd.)	Virginia Hersh, Dayton, O.	36-284
	(36 arrows at 120 yd.)	Alice S. Hilton, Dunkirk, N.Y.	36-258
Junior boys	(36 arrows at 120 yd.)	Jerry Gooley, Shelton, Conn.	36-278
Junior girls	(36 arrows at 120 yd.)	Dorothy Breneman, Columbus, O.	36-236
Intermediate boys		Gerald Kapela, Toledo, O.	36-256
Beginner boys		Peter William Wagner, Cincinnati, O.	24-92
Beginner girls		Jackie Couse, St. Louis, Mo.	29-137
Senior men—crossbow		Fred Isles, Cranford, N.J.	34-230
Senior women—crossbow		Lillian Eytel, Pluckemin, N.J.	14-40

The Cleveland Archery club of Cleveland, O., with a team of four men, won the men's team round (96 arrows at 60 yd.) with a total score of 2,767. The women's team round (96 arrows at 50 yd.) was also won by the Cleveland Archery club, with a team of four women.

Jean Richards of Laguna Beach, Calif., former holder of the world's women's championship title 1953-55, placed fifth at the 1955 national U.S. tournament at Oxford, O., with a score of 3,461. Bob Rhode of Minneapolis, Minn., 1954 national U.S. champion, placed second at the 1955 international tourney, Helsinki, Finland, while finishing fifth at the national U.S. tournament with a score of 3,134.

(J. R. K.)

Architecture. Architecturally the year 1955 opened upon an optimistic note in the United States, the 12 regional directors of the American Institute of Architects reporting activity surpassing previous high levels in nearly every section of the nation. Since projects currently upon architects' boards serve as an index to future building, the reports were taken to mean that construction would continue its record-breaking pace. The greatest increase was in the Pacific northwest where gains indicated 30% to 50% more work than a year before. Texas showed a 20% gain, New England and the Gulf states about 18%; and other sections 10% to 15% ahead of 1954. Whereas, for the past several years, school construction had surpassed all other nonresidential classes, during 1955 the volume of commercial jobs equalled that of school work in many areas, the only exception being in the north central states where schools, hospitals and churches ranked in that order. There was a considerable volume in churches, especially in the south Atlantic, central, and Great Lakes areas. The F. W. Dodge corporation reported that church construction was running at the highest rate in history, contract awards in 37 eastern states during the first three months of 1955 totalling \$128,000,000. That was an increase of 61% above the first quarter of 1954.

At the same time, residential construction continued at a good rate, private housing starts rising to 132,000 in May from 127,000 in April, but declining to 129,000 in June and 115,000 in July. This was taken to mean that home construction would level off. However, home-building contracts were still ahead of those of a year before. Builders seemed confident and the housing market was firm with few signs of overbuilding. But on July 30 the Federal Housing administration stiffened the rules on home loans, requiring a higher down payment and shortening the maximum amortization period from 30 years to 25 years. Builders held the opinion that the revised rules would adversely affect the building and sale of houses but not until late in the year. In mid-August, total new housing starts for 1955 were still

estimated at 1,300,000 as compared with 1,200,000 in 1954. Also in August, the government agreed to the construction of 45,000 public housing units.

The 87th annual convention of the American Institute of Architects met in Minneapolis, Minn., June 20-24. The following were elected officers for 1955-56; president, George Cummings, Binghamton, N.Y.; first vice-president, E. A. Heitschmidt, Los Angeles, Calif.; second vice-president, John Richards, Toledo, O.; secretary, Edward L. Wilson, Ft. Worth, Tex.; treasurer, Leon Chatelain, Jr., Washington, D.C. Two members of the institute were advanced to the rank of fellow. Willem Marinus Dudok, architect and city planner of Amsterdam, the Netherlands, was awarded the institute's gold medal for the outstanding honour bestowed by the A.I.A., and nine teachers of architecture from various colleges and universities were cited for distinguished performance in the classroom.

New Materials.—The invasion of aluminum and plastics into the construction field continued at an increased tempo. Various types of aluminum curtain-wall construction were promoted not only as money savers on first cost and maintenance, but also for lightness, economy of space and speed in erection. Under construction at Charlotte, N.C., was an aluminum-domed house for sports events 332 ft. in diameter. Applications of glass to building were multiplied and specific uses of plastics were given increased attention following the publication of the results of a research conference on the subject held in Washington, D.C., late in 1954. Acrylic domes, skylights, floor coverings, translucent roofing and curtain walls, and glazing and lighting fixtures showed signs of becoming common in dwellings, educational and commercial structures. At the University of Illinois, Urbana, architectural investigators experimented with a new material called pneumatic bricks. Each brick, triangular in shape, was made of thin, tough plastic and inflated with air under low pressure. The investigators envisioned the use of this material in building domical structures large enough to cover school grounds, drive-in theatres, ball parks and stadiums, and weather-conditioned to suit the climate. The Small House council of the university reported that there is little practical difference between flooring materials in the amount of resilient underfoot so far as human fatigue is concerned, thus upholding the common opinion on the subject.

Design.—The following five buildings were selected for honour awards in the American Institute of Architects' seventh annual competition for outstanding American architecture: American embassy, Stockholm, Swed., Ralph Rapson, Minneapolis, and John van der Meulen, Chicago, architects; the central restaurant, General Motors Technical centre, Warren, Mich., and the women's dormitories and dining hall, Drake university, Des Moines, Ia., Eero Saarinen and Associates, Bloomfield Hills, Mich., architects; the North Hillsborough (Calif.) elementary school, Ernest J. Kump, Palo Alto, Calif., architect; the general Telephone Company of the Southwest, San Angelo, Tex., Pace Associates, Chicago, Charles B. Genthner, architect in charge.

The Chicago chapter of the institute honoured 64 architects, craftsmen, owners and artists for "outstanding architectural contributions to the growth and improvement of Chicago during the last five years." Honour awards went to the Sawyer Building, company's plant, Skidmore, Owings and Merrill, architects; Village market, La Grange, Ill., Mittelbusher and Tourtellot, architects; Saint Patrick's high school, Chicago, Belli and Associates, architects; Lake Meadows apartments, Chicago, Skidmore, Owings and Merrill, architects; American Bar centre, Chicago, Holabird and Root and Burgee, architects. The Architectural league of New York awarded its 1955 gold medal to Skidmore, Owings and Merrill for the design of the Manufacturers



NOTRE-DAME-DU-HAUT, church designed by Le Corbusier (C. E. Jeanneret) and completed in 1955 on the summit of Haut Lieu, in the Vosges mountains, France. The almost complete absence of straight and parallel lines gave the church its unique appearance

company building on Fifth avenue.

Churches attracting attention for nontraditional treatment were the chapel of the Colorado Agricultural and Mechanical college at Fort Collins; the Children's chapel at the Neighborhood church in Pasadena, Calif.; the Church of Saint Albert the Great at Compton, Calif., which was the award winner in the 1955 Architectural Competition for Catholic Institutional Design; and Saint Brigid's church in Los Angeles. Miami Beach's new \$15,000,000 Fountainebleau hotel attracted attention, as did the new Hilton hotels in Dallas, Tex., and Beverly Hills, Calif.

Opposition was generated in architectural circles to the proposed demolition of the United States patent office, designed in the 1830s by Robert Mills, architect also of the treasury building and the Washington Monument. It was proposed to use the site for a commercial parking lot. Also opposed was the proposal to move the east front of the Capitol out about 40 ft., to secure extra space and to give the dome greater apparent support.

Important structures under construction or completed during the year included the 42-story stainless steel Socony-Mobil building in New York city; the 24-story Second National bank, Houston, Texas's largest office building; the Teamsters Union building, one of Washington's handsome office buildings; the American Shakespeare Festival theatre in Stratford, Conn.; the \$17,000,000 Walt Disney amusement park at Anaheim, Calif.; Ohio State university's field house on the campus at Columbus; the \$35,000,000 New York Coliseum at Columbus circle; Los Angeles county's \$18,000,000 courthouse, and the Dallas Memorial auditorium and the Dallas public library. Interesting projected structures were the New York Life Insurance building, Los Angeles; a new barracks building at the U.S. Amphibious base, Coronado, Calif.; the U.S. Air Force academy near Colo-

rado Springs, models of which, unveiled on May 14, set off a series of criticisms from congressmen and architects. Thirty-three buildings of aluminum, stainless steel, glass and native granite were envisioned. Modern in conception were the proposed Inland Steel company's 19-story office building in Chicago; the Tishman Realty company's 13-story office building in Los Angeles, and 36-story office building adjacent to Rockefeller center in New York city; and the 38-story Seagram building in New York.

Other Countries.—The University of Illinois, through its Small Homes council, undertook a giant housing program at Bogotá for the Colombian government. Five university experts assisted government officials and building firms in the improvement and expansion of low-cost housing. In Istanbul, Turk., the Hilton hotel chain opened a palatial modern hotel. In Belgium, plans were announced for the building of a "vertical city" in a tower 400 ft. higher than New York's Empire State building, the structure to be a feature of the Brussels world's fair in 1958. At Stuttgart, Ger., architect Rolf Gutbrod began construction of a musical centre designed to restore Stuttgart's former musical eminence. In Mexico City, the Church of the Virgin Milagrosa by Felix Candela attracted wide attention, as did neighbourhood housing in Rio de Janeiro, Braz. The church is of thin-shell reinforced concrete construction. The fourth congress of the International Union of Architects was held at The Hague-Scheveningen, the Netherlands, July 11 to 16. The ninth Pan-American Congress of Architects convened at Caracas, Venez., Sept. 12 to 22.

(R. NB.)

Areas and Populations of the Countries of the World.

The political entities of the world are listed here with their areas, populations and number of persons per square mile. The latest census or official esti-

mate is given for each country. Areas in square miles are in accordance with the boundaries for the year of the population figure unless otherwise noted. Some of the later boundary adjustments had not been recognized at the end of 1955 by the U.S. government. The subtotals for colonial groupings within continents do not carry density figures. Where two figures are given for a country, the most recent is used in the continental and world totals. The table provides a fundamental basis for country comparisons.

Areas and Populations of the Countries of the World

(For statistical details and dates see separate articles)

Name of continent and state	Area (in sq.mi.)	Population (in thousands)	Persons per sq.mi.
World total	58,326,852	2,644,840	50.5*
AFRICA	11,684,951	215,790	18.5
Belgian colony and trusteeship	925,733	16,675	
British colonies, dependencies, protectorates, trusteeships and condominium	2,998,041	76,651	
Egypt	386,100	23,240	60.2
Ethiopia (incl. Eritrea)	457,124	16,104	35.2
French colonies, trusteeships, protectorates, departments and overseas territories	4,277,188	53,027	
Italian trusteeship	198,275	1,269	6.4
Liberia	43,000	1,250	29.1
Libya	679,358	1,092	1.6
Portuguese colonies	794,959	11,045	
South-West Africa (mandate of Union of South Africa)	317,725	447	1.4
Spanish colonies and protectorate	134,477	1,414	
Tangier, International Zone of	135	183	1,355.6
Union of South Africa	472,733	13,393	28.3
Union of South Africa dependencies	103	Uninhabited	
ANTARCTICA	6,000,000	Uninhabited	
ASIA (exclusive of U.S.S.R.)	10,587,956	1,440,819	136.1
Afghanistan	251,000	13,000	51.8
Bhutan	19,305	300	15.5
British colonies, dependencies, protectorates, protected state and independent state under British protection	246,077	12,021	
Burma	261,757	19,242	73.5
Cambodia	65,958	4,100	62.2
Ceylon, Dominion of	25,332	8,099	319.7
China (including Formosa, Manchuria and Tibet)	3,911,209	601,938	153.9
French associated states	155,100	11,260	72.6
India, Republic of	1,174,313	357,056	304.1
Indonesia	575,893	77,654	134.8
Iran	636,293	21,037	33.1
Iraq	171,599	4,948	28.8
Israel	7,984	1,748	218.9
Japan	142,801	88,800	621.8
Jordan, Hashemite Kingdom of	37,264	1,500	40.3
Kashmir	92,780	4,410	47.5
Korea	85,266	28,600	335.4
Kuwait	8,000	200	25.0
Lebanon	4,015	1,383	344.5
Mongolian People's Republic	591,119	920	1.6
Nepal	54,510	8,432	154.7
Netherlands New Guinea	160,618	700	4.4
Oman and Muscat	82,000	550	6.7
Pakistan, Dominion of	364,737	75,842	207.9
Philippines, Republic of the	115,707	21,848	188.8
Portuguese colonies	8,876	1,312	
Qatar	8,500	30	3.5
Saudi Arabia	617,760	7,000	11.3
Sikkim	2,744	136	49.5
Syria	70,014	3,970	56.7
Thailand (Siam)	198,270	20,302	102.4
Trucial Sheiks	5,792	80	13.8
Turkey	296,185	24,112	81.4
United States possessions (military governments)	888	789	
Vietnam (northern part only)	63,000	13,000	206.3
Yemen	75,290	4,500	59.8
AUSTRALIA and OCEANIA	3,304,879	14,298	4.3
Australia	2,974,581	8,987	3.0
Australian dependency, territory and trusteeship	183,725	1,699	
British colonies, dependencies, condominium, protectorate and protected state	24,898	575	
French colonies	9,199	126	
New Zealand	103,740	2,136	20.6
New Zealand dependencies and trusteeship	1,324	115	
United States possessions, territory, condominiums and trusteeship	7,412	660	
†EUROPE (exclusive of U.S.S.R.)	1,902,922	405,994	213.4
Albania	11,100	1,260	113.5
Andorra	191	6	29.7
Austria	32,374	6,969	215.3
Belgium	11,779	8,841	750.5
British colonies	124	340	
Bulgaria	42,796	7,500	175.2
Czechoslovakia	49,354	12,948	262.3
Denmark (excl. Greenland, incl. Faeroe Islands)	17,117	4,425	258.5
Estonia	17,413	1,200	68.9
Finland	130,119	4,232	32.5
France	212,736	42,774	201.1
Saar	991	981	989.8
German Democratic Republic (East)	41,380	16,500	398.7

Areas and Populations of the Countries of the World—Continued

Name of continent and state	Area (in sq.mi.)	Population (in thousands)	Persons per sq.mi.
German Federal Republic (West)	94,719	49,900	526.2
Berlin	341	3,369	9,879.9
Greece	51,182	7,900	154.2
Hungary	35,905	9,750	271.1
Iceland	39,768	155	3.9
Ireland, Republic of	27,136	2,933	108.1
Italy	116,316	47,783	410.3
Latvia	24,600	2,100	85.5
Liechtenstein	61	14	229.9
Lithuania	31,200	3,000	96.6
Luxembourg	999	308	308.8
Monaco	0.6	22	36,666.7
Netherlands	12,524	10,735	857.2
Norway (including Spitzbergen)	149,284	3,408	22.2
Poland	120,359	27,500	228.8
Portugal	35,529	8,771	246.6
Rumania	91,654	17,150	187.2
San Marino	38	13	342.2
Spain	194,945	28,976	166.6
Sweden	173,564	7,241	41.1
Switzerland	15,941	4,978	312.2
United Kingdom	93,895	50,754	540.0
Vatican City	0.2	1	5,000.0
Yugoslavia	98,700	17,557	177.7
U.S.S.R. (1946 area, 1954 pop. est.)	8,598,678	209,700	24.2
NORTH AMERICA	9,354,832	234,653	25.2
British colonies and dependencies	21,389	3,077	
Canada	3,845,774	15,601	4.1
Costa Rica	19,695	942	47.7
Cuba	44,217	5,823	131.1
Danish colony (Greenland, including ice cap)	840,000	25	0.0
Dominican Republic	18,682	2,404	128.8
El Salvador	8,260	2,158	261.1
French territory and departments	1,205	473	
Guatemala	42,042	3,201	76.6
Haiti	10,748	3,400	316.6
Honduras	43,277	1,608	37.7
Mexico	760,373	28,850	37.7
Netherlands overseas territory (The Netherlands Antilles)	366	181	494.4
Nicaragua	57,143	1,224	21.1
Panama (excluding Canal Zone)	28,753	886	30.7
United States	3,022,387	162,284	53.3
United States possessions	590,521	2,516	
SOUTH AMERICA	6,892,634	123,586	17.9
Argentina	1,084,359	18,919	17.9
Bolivia	424,162	3,162	7.7
Brazil	3,287,195	58,456	17.9
British colonies and dependencies	91,235	469	
Chile	286,396	6,560	22.2
Colombia	439,519	12,657	28.8
Ecuador	105,743	3,567	33.3
French department (French Guiana)	35,135	28	0.0
Netherlands overseas territory (Surinam)	55,143	220	4.0
Paraguay	157,047	1,577	10.1
Peru	506,189	9,396	18.8
Uruguay	68,369	2,801	41.1
Venezuela	352,142	5,774	16.6

*In computing the world density the area of Antarctica is omitted.

†Areas and populations of Baltic republics included in U.S.S.R. totals.

Argentina. A republic occupying the southeasternmost section of South America, Argentina is bounded on the north by Paraguay, Bolivia and Brazil; on the south and west by Chile; and on the east by Uruguay, the Rio de la Plata and the Atlantic ocean. It is the second largest Latin American nation—only Brazil is larger—with an area of 1,084,359 sq. mi. and a population of 18,919,000 (est. 1955), mostly of European ancestry. The capital and leading port, Buenos Aires, had in the 1947 census 2,981,043 (1952 est. 3,403,600). Other leading cities, with 1950 populations, are: Rosario, 467,937; Córdoba, 369,886; Avellaneda, 278,621; La Plata, 207,031; Lanús, 244,473; Tucumán, 194,166; Santa Fé, 168,791; Lomas de Zamora, 125,943; Quilmes, 115,113; Mar del Plata, 114,729; Mendoza, 97,496; and Bahia Blanca, 112,597. Religion: Christian, mostly Roman Catholic. President in 1955: Gen. Juan D. Perón (Sept. 19); Gen. Eduardo Lonardi (Sept. 23–Nov. 13); Gen. Pedro Aramburu (from Nov. 13).

History.—The nine-and-a-half-year-old regime of Pres. Juan Perón was overthrown by the armed forces in Sept. 1955. The revolution was enthusiastically acclaimed in Argentina, for during the preceding year the president had aroused powerful forces of opposition. In late 1954 he had turned against the Roman Catholic Church, which, while recognized since 1946 as one of his government's chief allies, was the only major organization still relatively independent of Peronista control. Perón charged that clerical "troublemakers" had been infiltrating labour unions and student groups and meddling in political activities, es-

ially in the Catholic stronghold of Córdoba province. He sought to hush such activity by arresting priests whom he called enemies of the state. By Sept. 1955, more than 60 clergymen had been detained for showing "disrespect" for the president or for "fomenting disturbances."

Perón insisted that his grievance was against individual clergymen rather than against the church itself. Nevertheless, he undertook a systematic campaign to undermine the power of the church, primarily in the field of education. Hundreds of clerical and proclerical teachers were purged from the state-controlled schools and universities. Catholic religion and morality were removed as required subjects from school curricula. In March the education ministry accused 89 private Roman Catholic schools of having fraudulently padded payrolls subsidized by the government. Subsequently, the government withdrew its financial support, which had amounted to \$6,000,000 a year, for the church's nearly 1,000 schools. In May all religious institutions were made retroactively subject to taxation as of the first of the year. Also in May congress passed a bill calling for the election in November of a constituent assembly to vote on disestablishing Roman Catholicism as the nation's official religion.

The reaction of the church and its supporters to Perón's campaign was one of growing resistance. Priests spoke out from the pulpit against the government. Many Catholics, including one cabinet minister, resigned in protest from government posts. In defiance of a police ban on outdoor religious gatherings, royal Catholics held a number of church processions which they turned into antigovernment demonstrations. Perón retaliated for one such demonstration, which occurred on June 11 on the occasion of a Corpus Christi celebration, by arresting and deporting two Argentine-born prelates, Mgr. Manuel Tato and Mgr. Ramón Novoa, whom he labelled the brains of the "treasonous" demonstrations. The Vatican promptly excommunicated Perón and all other government authorities who had "trampled on the rights of the Church."

On June 16, the same day as the excommunication, a rebellion against Perón by the navy and part of the air force was suppressed by the army under the direction of the army minister, Gen. Franklin Lucero. Though unsuccessful, the uprising was a measure of the growing disaffection for the Perón regime. Reportedly under pressure from his "loyal" army staff, the president launched a campaign of "pacification" to reduce tensions in the nation. An effort was made to placate the church by the release of jailed priests, the halting of anti-Catholic invective in the press, the resumption of salary payments to some clergymen, and the replacement of several officials considered the chief government agitators against the church.

Perón also made peace overtures in July to his political foes, to whom he offered a "hand of friendship." He promised a new era of constitutional government and a reform in the Peronista party. However, opposition parties rejected his peace offer, alleging that basic freedoms were still not being restored. Renewed antigovernment violence in August was answered by Perón with what was generally regarded as a "rhetorical" offer to resign. He then made a speech in which he "submitted" to the demands of his labour supporters that he continue in office. He promised to fight his opponents as never before and exhorted his followers to annihilate five adversaries for every Peronista that might fall.

On Sept. 16, exactly three months after the frustrated revolt in June, a group of army malcontents under the leadership of Gen. Eduardo Lonardi struck against the government from interior garrisons, principally at Córdoba. The movement was supported by the navy, which threatened bombardment of the federal capital by its vessels in the Río de la Plata. On Sept. 19,



WOMAN PRAYING in the ruins of San Francisco basilica, Buenos Aires, after anti-Catholic mobs attacked Argentine churches in 1955

Perón resigned and sought asylum on a Paraguayan gunboat, on which he was later allowed to escape to Paraguay.

On Sept. 23, Lonardi became provisional president of the nation. He dissolved the Peronista congress and promised to restore civil liberties and property unjustly seized under the Perón administration. He allowed an unpopular contract to lapse which had been signed by Perón earlier in the year with Standard Oil Co. of California. This agreement had provided for liberal petroleum exploration and development rights in southern Patagonia for the U.S. company. It had stirred up a nationalistic furor which was considered by many to have contributed to Perón's downfall equally as much as his attacks on the church.

Lonardi's efforts to compose a conciliatory government of both "middle-of-the-road democrats" and right-wing nationalists alienated liberals. On Nov. 13, the army ousted the new president after he refused to fire a number of "reactionary" cabinet ministers. His successor, Gen. Pedro Aramburu, had participated in the September uprising alongside Lonardi. (See also ANT-ARCTICA; FOREIGN INVESTMENTS.) (R. HN.)

Education.—On June 30, 1951, there were 15,874 primary schools with 2,446,138 pupils and 101,646 teachers; 2,069 public secondary normal and special schools with 360,917 students and 46,204 teachers; 32 autonomous schools with 2,544 students and 206 teachers; and 1,132 private schools with 153,926 students and 4,993 teachers. There were national universities at Buenos Aires (41,325 students), La Plata (7,409), Córdoba (9,335), Cuyo (2,596), Tucumán (3,191) and the National

University of the Litoral at Santa Fé (16,325). University professors numbered 3,621.

Finance.—The monetary unit is the peso, valued during 1955 until Oct. 27 at 13.33 cents U.S. currency, official rate, 20 cents, preferential rate, and 7.16 cents, legal free rate. The latter two rates were abolished on Oct. 27. Effective Oct. 28 the official rate was changed to 5.56 cents; a new free market rate, which became operative on Nov. 3, was quoted at 3.12 cents on Nov. 21. The 1955 budget allocated 10,244,700,000 pesos for the national administration, 4,614,300,000 pesos for autonomous institutions and 2,683,000,000 pesos for special accounts. The national debt (all internal) was 34,161,700,000 pesos on Dec. 31, 1953. The debt figures did not include the floating debt at call or the debt of the official agencies (notably I.A.P.I., estimated at close to 10,000,000,000 pesos at the end of 1953) and of provincial and municipal governments. Currency in circulation (May 31, 1955) was 25,920,000,000 pesos; demand deposits (Jan. 31, 1955), 18,589,000,000 pesos. The U.S. department of commerce estimated U.S. direct investments in 1954 at \$425,000,000. The cost-of-living index (Buenos Aires) stood at 374 in April 1955 (1948=100). National income in 1954 was estimated at 104,839,000,000 pesos.

Trade and Communications.—Exports in 1954 were officially valued at 6,721,000,000 pesos and imports at 7,112,000,000 pesos. Leading exports were cereals and linseed (31%), meat (20%), wool (11%), hides (7%) and dairy products (4%); leading imports, machinery (20%), fuel and lubricants (13%), foodstuffs (11%), chemicals (9%) and timber (9%). Leading customers were the U.K. (18%), the U.S. (14%), Germany (10%), Brazil (9%) and the Netherlands (6%); leading suppliers, the U.S. (14%), Brazil (12%), Germany (9%), the U.K. (7%) and France (5%).

Railways (1949) totalled 26,893 mi. In 1952 there were 248,400 mi. of road, of which 41,000 mi. were national and provincial highways. Registered motor vehicles (Jan. 1, 1955) included 314,185 automobiles, 148,505 trucks and 14,903 buses. Commercial air lines flew 11,772,000 mi. and carried 469,900 passengers in 1954. According to *Lloyd's Register of Shipping*, the merchant marine (June 30, 1954) had 400 vessels (100 tons and over) aggregating 1,070,995 gross tons.

Agriculture.—Production figures for the crop year 1954-55 were officially reported as follows (in metric tons): wheat 7,690,000; maize 2,580,000; barley 1,112,000; oats 890,000; rye 844,000; linseed 482,000; cotton 346,000; rice 183,000; millet 124,000; potatoes 1,318,910; tobacco 28,200; sunflower seed 304,500. Grain exports in 1954 (metric tons) included wheat 2,908,170; maize 2,155,386; rye 835,516; oats 691,910; barley 669,512.

The 1952 livestock census showed 45,262,995 cattle, 54,683,731 sheep, 3,989,188 pigs, (census 1947) 7,237,663 horses, 4,933,679 goats. Wool exports in the wool year ending Sept. 30, 1955, were reported unofficially at about 227,130 bales (1953-54: 199,824 bales). Meat production (1954) was about 1,060,000 metric tons. The sea fisheries yielded 70,254 tons in 1954. Exports of quebracho extract were 153,000 tons.

Manufactures.—According to the 1954 industrial census, there were 181,763 manufacturing and mining establishments with 1,536,530 employees. Production figures for 1954 included portland cement 1,680,000 metric tons; cotton yarn 83,400 tons; wheat flour 2,006,400 tons; electric energy 5,476,000,000 kw.hr.; manufactured gas 318,000,000 cu.m.; sulphuric acid 54,000 tons; tires 788,000 units. In 1954 there were 844,000 cotton spindles and 26,987 looms and 470,000 wool spindles and 9,000 looms. The index of industrial production stood at 103 in 1954 (1948=100).

Minerals.—Petroleum production in 1954 totalled 4,200,000 metric tons (about 29,400,000 bbl.), more than 80% of which came from government fields. Production of lead in 1954 was estimated at 28,700 short tons; zinc 20,852 tons; coal 103,000 tons. In 1954, 1,443,000 long tons of coal were imported. (J. W. Mw.)

Arizona. Arizona, the "Grand Canyon state," lies in the southwestern part of the United States, being bounded on the west by the Colorado river and Nevada and on the south by Mexico. The area is 113,575 sq. mi. The population (1950 census) was 749,587, a 50.1% increase over that of the previous decade. Whites numbered 654,511; Negroes, 25,974; Indians, 65,761; Japanese, 760; and Chinese, 1,644. The estimate for the state (July 1, 1955) was 955,000. The capital, Phoenix (1955 estimate), numbered 155,000, city limits, and 335,000, municipal area. Tucson (1955 estimate) numbered 60,000, city limits, and 195,000, municipal area. The chamber of commerce quoted Yuma as 23,000 in 1955. Mesa (1950) had 16,700; Douglas, 9,942; Flagstaff, 7,663; and Prescott, 6,764.

History.—State officers (1955) were: chief justice, Arthur La Prade; governor, Ernest W. McFarland; secretary of state, Wesley Bolin; treasurer, R. T. Williams, Jr.; attorney general, Robert Morrison; superintendent of instruction, Clifton L. Harkins. The first session of the 22nd legislature, beginning Jan. 10, 1955, lasted 84 days, 24 longer than the limit and next to the longest in state history. The main issue that delayed the session was the important educational measure. On Jan. 10 Governor McFarland proposed, among other matters, that the average daily attendance allocations in the public schools be increased from \$115 to \$175. The state had been furnishing \$95



ANTELOPE FAWN netted near Flagstaff by members of the Arizona Game Fish commission in 1955. The baby antelopes are tagged and released annually as part of a continuing study of the migratory habits and life span of animals.

and the counties \$20. The governor indicated that this was equalization for the poorer school districts. Most of the additional appropriation was destined to come from the smaller counties with valuable taxable property. On Jan. 28 the house passed the first bill, 49 to 22, appropriating only \$165 per child per year, the state to furnish \$135 and the counties \$30. The estimated increased cost to the state was \$8,737,000. The senate would not accept this, so the matter was turned over to the senate committees for discussion. On March 21, 11 days prior to the time for adjournment, the senate passed a bill authorizing appropriation of \$150 per pupil. A conference committee was compromised on an appropriation of \$155, but the house rejected that. Finally, on March 29, a compromise was reached for \$157.50, the state to furnish \$127 and the counties \$30.

An additional appropriation of \$45,000 was made to the commission which was to continue its work of revision of the Arizona code. A new boundary commission was named to work on the problem of the boundary between Arizona and California caused by the changing course of the Colorado river. An act relating to public welfare provided that the estate of any person having received old-age assistance should be free from any claim of the state based on such assistance. The only attempt to deal with the hitherto unsolved problem of underground water supply was an appropriation of \$8,700 to be available till June 1955, to make ground water surveys in co-operation with the U.S. Geological survey.

Education.—The enrollment in elementary schools and number of teachers for 1954-55 were, respectively, 166,041 and 5,373; the corresponding numbers in the high schools were 42,793 and 1,763. The appropriation (1955) for the University of Arizona and the two state colleges at Tempe and Flagstaff were, respectively, \$3,683,004, \$2,116,907 and \$671,511.

Social Insurance and Assistance, Public Welfare and Related Programs.—The total number receiving state assistance in Aug. 1955 was 26,614. The state welfare appropriations were: industrial school, \$405,149; state hospital, \$2,232,586; crippled children, \$315,780; dependent children, \$1,442,700; pioneer home, \$170,389; prison, \$1,035,460; support for the deaf and blind, \$362,061; tuberculosis sanitarium, \$292,000; old-age assistance, \$3,508,200.

Table I.—Principal Crops of Arizona

Crop	Indicated 1955	1954	Average, 1944-53
Arley, bu.	11,280,000	13,936,000	5,378,000
Wheat, bu.	1,302,000	588,000	604,000
Oats, bu.	605,000	495,000	464,000
Barley grain, bu.	9,408,000	6,075,000	2,144,000
Potatoes, bu.	1,969,000	1,513,000	1,601,000
Corn, bu.	1,250,000	576,000	406,000
Alfalfa hay, tons.	558,000	583,000	561,000
Alfalfa seed, bu.	64,000	101,333	122,433
Cotton, bales	635,000	911,000	481,000
Grapefruit, boxes	3,000,000	3,500,000	3,019,000
Oranges, boxes	1,180,000	1,400,000	1,023,000

Source: U.S. Department of Agriculture.

Table II.—Principal Industries of Arizona

Industry	All employees 1953	Salaries and wages 1953 (in 000s)	Value added by manu- facture 1953 (in 000s)	Value added by manu- facture 1952 (in 000s)
Primary metal industries	4,369	\$19,403	\$84,402	\$73,225
Fabricated metal products	*	*	*	6,274
Administrative and auxiliary	501	2,220	...	...

*Withheld because the estimate did not meet publication standards, either on the basis of the associated standard error of estimate or on the basis of a consistency review.
Source: U.S. Department of Commerce, Annual Survey of Manufactures, 1953.

Table III.—Mineral Production of Arizona

Mineral	Quantity 1952	Value 1952	Quantity 1953	Value 1953
Clays	247,000	\$ 579,000	197,000	\$ 715,000
Copper	396,000	191,528,000	394,000	225,883,000
Gold (oz.)	112,000	3,932,000	113,000	3,949,000
Lead	17,000	5,319,000	9,000	2,470,000
Iron	53,000	757,000	96,000	1,238,000
Aluminum	1,000	1,987,000	1,000	1,426,000
Pumice	*	*	124,000	426,000
Sand and gravel	1,824,000	1,636,000	3,447,000	2,680,000
Silver (oz.)	4,701,000	4,255,000	4,351,000	3,938,000
Stone	235,000	356,000	442,000	619,000
Coal	47,000	15,651,000	28,000	6,332,000
Other minerals . . . . .	...	5,702,000	...	6,940,000
Total		\$231,702,000		\$256,616,000

Communications.—The Arizona highway department's report (1955) for mileage was: primary state highways, 4,225; county roads, 16,176; federal-aid highways, 2,417; national roads, 8,236. The Arizona corporation commission reported that there were six railroad companies with a total mileage of 2,182.64. It also reported that there were six telephone companies with no available information as to total subscribers. There were four passenger airlines in the state besides a number of individual concerns that furnished passenger service. Phoenix had nine radio and four television stations (1955); Tucson, six and two.

Banking and Finance.—The superintendent of banks reported for June 30, 1955, that national banks had deposits of \$518,515,194; loans and discounts, \$261,078,833; government securities, \$146,710,773. State banks had deposits of \$201,375,415; loans and discounts, \$74,317,749; government securities, \$87,570,480, each item being in excess of that of the same month of the previous year. The state and local taxes for the fiscal year of 1954-55 were \$129,114,065; and the federal taxes were \$167,714,000. The total cost of operating the state government beginning with the fiscal year July 1, 1955, was \$93,941,584. The bonded indebtedness at the beginning of the fiscal year 1954-55 was \$6,434,275.

Agriculture.—Weather periods for 1955 were exceptional. The first three months were noted for decided decline in water flow. During March the Gila river had a runoff of 6,280 ac.ft., 30,000 being the average. Then July and August had a rainfall exceeded only twice in 60 years. The heavy rains of the late season decidedly injured the maturing cotton crop. The rains did bring the ranges into ideal condition to the advantage of the cattlemen.

Manufacturing.—While not the leading industry in Arizona, manufacturing showed a decided gain since 1950. Returns in 1950 were \$142,700,000; in 1953, \$312,000,000. The number employed in July 1954 was 26,900; in July 1955, 31,400. The building of U.S. plants had increased in the industry. The Hughes Aircraft company of Tucson, producer of guided missiles, had a several-million-dollar expansion program. The Fort Huachuca electronics proving ground was another important center. This institution planned to work with the electrical engineering department of the University of Arizona. The large building programs created a demand for many articles produced in Arizona. (H. A. H.)

Mineral Production.—Table III shows the tonnage and value of minerals produced in Arizona for 1953 (preliminary) compared with 1952, for those whose value exceeded \$100,000. In 1953 Arizona was first among the states in barite and copper, third in asbestos, mica and pumice and fourth in both gold and silver outputs. The state was 15th in rank, with 7.8% of the U.S. total value of minerals.

Arkansas. Arkansas, a south central state of the United States, often called the "Land of Opportunity," was admitted to the union in 1836. Its area is 53,104 sq.mi., including 429 sq.mi. of water. Pop. (1950 census) 1,909,511; (July 1, 1955, est.) 1,770,000. The 1950 census figures placed 77% of the population in rural areas compared with 77.8% in 1940. The population was listed as 77.1% native white, 0.5% foreign-born and 22.3% Negro.

Little Rock, the capital city, had 102,213 inhabitants in 1950. Other principal cities are: Fort Smith, 47,942; North Little Rock, 44,097; Pine Bluff, 37,162; Hot Springs, 29,307; El Dorado, 23,076; Fayetteville, 17,071.

History.—A new governor, Orval E. Faubus, was inaugurated in 1955. The general assembly reorganized the state's fiscal organization that had been established two years previously, but it left the legislature with broad post-auditing powers. One of the most significant additions to the governmental organization was the creation of the Arkansas Industrial Development commission to intensify the state's efforts to balance its industrial development with the traditional agricultural-timber-mineral economy. Winthrop Rockefeller, who established his home in Arkansas in 1953, headed the commission, on appointment of Governor Faubus.

The state's tax-supported colleges opened their doors to Negroes for the first time, following the U.S. supreme court's integration decision. Integration in the secondary and high schools was moving at a considerably less accelerated pace. Negro enrollment at the colleges was largely token since one of the state's best schools was operated for Negroes and had been for a half century.

State officials during 1955 in addition to Governor Faubus included Nathan Gordon, lieutenant governor; C. G. (Crip) Hall, secretary of state; J. Oscar Humphrey, state auditor; J. Vance Clayton, state treasurer; Tom Gentry, attorney general.

Education.—For the school year 1953-54 Arkansas had 1,424 elementary schools with an enrolment of 147,311. Teachers and principals in elementary schools numbered 7,988; in secondary schools, 5,831. Expenditures for the year ending June 30, 1954, totalled \$54,975,382. State sources, \$27,503,016; revenue received, \$53,999,164. Arch Ford was commissioner of education.

Social Insurance and Assistance, Public Welfare and Related Programs.—For the fiscal year ending June 30, 1955, old-age assistance grants in the amount of \$21,588,341 were paid to a monthly average of 53,196 recipients. A monthly average of 1,951 blind persons received a total of \$946,185; an average of 771 general relief cases (temporarily disabled) received \$143,648.18; and an average of 4,232 permanently and totally disabled persons received a total of \$1,567,253.

Unemployment benefits paid to about 46,444 persons during the fiscal year ending June 30, 1955, totalled \$7,906,634. There were 458,359 weeks of unemployment and the average weekly payment was \$17.25.

Arkansas maintained one penitentiary and four reformatories at a total expense of \$1,101,923.86 during the fiscal year of 1954. The institutions housed an average of 1,618 adult and 305 juvenile inmates.

Communications.—Expenditures by the state government on highways during the fiscal year ending June 30, 1955, totalled \$34,050,796.92. At the end of that period, the highway system comprised 10,036 mi. County highways, not in the state system, measured 57,326 mi. Paved roads in the state totalled 7,461 mi. In the fiscal year 592 mi. of roads were paved and 122 bridges were built on state highways.

Table I.—Principal Crops of Arkansas

Crop	Indicated 1955	1954	Average, 1944-53
Corn, bu.	17,118,000	8,364,000	24,369,000
Cotton, bales	1,450,000	1,351,000	1,386,000
Cottonseed, tons . . . . .	...	565,000	558,000
Rice, 100-lb. bags	10,625,000	14,651,000	8,237,000
Soybeans, bu.	14,928,000	9,096,000	7,337,000
Oats, bu.	15,960,000	14,040,000	6,532,000
Potatoes, bu.	710,000	819,000	1,954,000
Sweet potatoes, bu.	494,000	341,000	1,066,000
Apples, bu.	80,000	384,000	477,000
Peaches, bu. . . . .	...	984,000	1,901,000
Grapes, tons	2,200	5,000	9,070
Pecans, lb.	4,600,000	2,550,000	4,614,000

Source: U.S. Department of Agriculture.

Table II.—Principal Industries of Arkansas

Industry	All employees 1953	Salaries and wages 1953 (in 000s)	Value added by manu- facture 1953 (in 000s)	Value added by manu- facture 1952 (in 000s)
Apparel and related products	3,460	\$ 6,727	\$ *	\$ *
Lumber and products (except furniture)	23,423	51,545	79,012	68,573
Furniture and fixtures	5,086	13,169	18,834	*
Paper and allied products	3,624	14,853	41,369	37,639
Chemicals and allied products	5,652	20,457	56,177	48,746
Petroleum and coal products	1,394	5,868	19,933	*
Leather and leather products	3,861	8,435	16,668	*
Primary metal industries	1,928	7,980	20,727	20,673
Miscellaneous manufactures	4,229	13,116	16,139	*
Administrative and auxiliary	950	3,820	...	...

*Withheld because the estimate did not meet publication standards, either on the basis of the associated standard error of estimate or on the basis of a consistency review.
Source: U.S. Department of Commerce, Annual Survey of Manufactures, 1953.

Table III.—*Mineral Production of Arkansas*
(Short tons, except as noted)

Mineral	1952		1953	
	Quantity	Value	Quantity	Value
Barite	429,000	\$3,964,000	381,000	\$3,946,000
Bauxite	1,796,000	10,235,000	1,714,000	12,976,000
Clays	553,000	1,514,000	529,000	1,734,000
Coal	873,000	6,839,000	775,000	6,144,000
Natural gas (thousand cu.ft.)	42,325,000	1,735,000	41,510,000	2,200,000
Natural gasoline (thousand gal.)	62,000	4,580,000	58,000	4,123,000
Petroleum (bbl.)	29,440,000	72,420,000	29,681,000	77,170,000
Petroleum gases (thousand gal.)	49,000	2,079,000	55,000	2,562,000
Sand and gravel	5,011,000	4,977,000	4,904,000	4,955,000
Stone	2,967,000	3,346,000	3,061,000	3,865,000
Other minerals . . . . .	...	\$5,998,000	...	6,210,000
Total		\$117,687,000		\$125,885,000

Main track railway mileage was 4,600, airway mileage approximately 1,000. There were 83 established airports. Approximately 236,000 telephones were in use in the state.

Banking and Finance.—Arkansas had 179 state and 54 national banks on June 30, 1955. Deposits in state banks totalled \$430,059,125.42. Deposits in national banks totalled \$493,592,000; resources, \$539,399,000. There were 38 federal savings and loan associations and nine active state building and loan associations.

Total expenditures for the state for the fiscal year ending June 30, 1955, were \$173,674,630.95. Total revenue for the same period, both general and special, amounted to \$206,925,851.02. There was \$63,183,349.93 surplus from allotted funds, appropriated and federal funds.

Agriculture.—The U.S. department of agriculture estimated the value of crops harvested in Arkansas in 1954 at \$397,000,000, a decrease of \$316,790,000 from 1953. Cotton was the state's most valuable crop in 1953, worth \$261,000,000; rice ranked second with a value of \$62,853,000; soybean was valued at \$22,285,000.

Cash receipts to farmers from farm commodities sold during 1954 totalled \$541,000,000, a decrease of 4% from 1953. Livestock accounted for \$171,748,000 or 32% of the total cash receipts. Percentage in distribution remained unchanged.

Manufacturing.—Gross sales or receipts of all manufactured goods for 1954 totalled \$899,000,000; this included \$595,000,000 of nondurable goods; \$304,000,000 of durable goods. Wages in manufacturing as of Sept. 1955 totalled approximately \$56,865,933 and were paid to a monthly average of 80,626 employees. During 1954, the Arkansas Industrial Development commission reported 54 new industries established and substantial expansion made in 43 existing industries, at a total cost of \$10,700,000. The greatest number of new units were listed in food processing, wearing apparel and fabrics plants. (O. E. F.)

Mineral Production.—Table III gives the tonnage and value of mineral commodities produced in Arkansas in 1952 and 1953 (preliminary). It lists commodities valued at \$100,000 or more. Arkansas leads all the states in the production of bauxite and barite and in 1953 was fourth in manganese output. It ranked 24th in value of mineral output, with 0.88% of the U.S. total.

Armies of the World.

The major developments affecting the ground forces of the world during 1955 were as follows: (1) the rearmament of the German Federal Republic was finally started with the ratification of the necessary treaties, and steps were taken by the Bonn government to organize the cadre of the army in early 1956; (2) a treaty with Austria was signed by Britain, France, the United States and the U.S.S.R. and their occupation forces were removed; (3) a series of major proposals for disarmament were made by the great powers; (4) the force level of the North Atlantic Treaty organization levelled off for the first time; (5) Iran announced that it had joined a mutual defense pact with Great Britain, Turkey, Pakistan and Iraq; (6) there were sporadic clashes between the forces of Egypt and Israel along the Gaza strip; (7) arms were offered by the U.S.S.R. and Czechoslovakia to Egypt, Israel and other middle eastern states; (8) serious fighting broke out in North Africa between Arab nationalists and French forces; (9) the SEATO (Southeast Asia Treaty organization) powers established a headquarters at Bangkok, Thailand, and set up a military staff.

Disarmament.—Several major proposals for disarmament which would drastically affect the ground forces were presented during the year.

The U.S.S.R. on May 10 proposed a reduction of armaments and prohibition of atomic weapons in two stages of one year each. It was proposed that the signatories would agree not to increase their armed forces, armaments and appropriations for military purposes above the level of Dec. 31, 1954. The level to which the armed forces were to be reduced was to be: U.S.S.R., U.S. and Communist China 1,000,000 to 1,500,000 men each; France and the United Kingdom 650,000 each. The reduction

to these levels was to be 50% in the first year and 50% in the second year. Other aspects of the proposal included a world conference in the first half of 1956; a cessation of tests of atomic and hydrogen weapons; liquidation of bases on the territories of other states; and broad international co-operation in the field of peaceful uses of atomic energy.

Proposals of the United States were made by Pres. Dwight D. Eisenhower at the Geneva Four Power conference in July. The U.S. called for exchange of complete blueprints of military establishments to include identification, strength, command structure of personnel units and equipment of all major land, sea and air forces including organized reserve and paramilitary and complete list of military plants, facilities and installations with their locations. Exchange of information would proceed from least sensitive to more sensitive, and facilities for aerial photography would be made available to aircraft of other nations or of an international body.

A French plan called for progressive reduction of expenditures for military purposes, transfer of the resultant savings to an international mutual aid development fund and utilization of these funds for capital goods to underdeveloped areas.

The British proposal called for a control unit with the right of full information and inspection on the number of armaments, forces and equipment, military installations, factories, nuclear installations and plants capable of making chemical and biological weapons. The methods of inspection would include aerial reconnaissance, inspection on the ground, budgetary control and observation at strategic points. The control organ would have unrestricted rights of freedom of movement, full use of communications, right of access to all objects, right to investigate breaches and to use technical devices.

NATO.—A decrease in defense expenditures on the part of nearly all members, reduction in the length of military service in several countries, removal of 70,000 first-line French troops and their replacement by reserves not considered up to NATO standards were the principal problems affecting the North Atlantic alliance during the year. Defense expenditures by member nations dropped 2.4% from 1953 to 1954, with the United States down from \$49,499,000,000 to \$43,690,000,000, a drop of 12%; Canada from \$1,970,000,000 to \$1,899,000,000 and the 11 European members from \$11,133,000,000 to \$10,865,000,000. West Germany's indication to NATO of a proposed defense expenditure of \$2,143,000,000, roughly equivalent of the contribution to the support of the three occupation forces before the treaty, was considered inadequate by NATO headquarters.

Strength.—Although the troops of the NATO powers were organized into 90 to 100 divisions, only 48 of these were active and only 16 of the active divisions were left in the so-called "shield" force from the North sea to the Alps. The NATO flank from the North cape to Schleswig-Holstein was considered to be particularly vulnerable, with less than two divisions constituting the land forces under arms. Four British divisions were the core for the defense for Belgium, the Netherlands, Denmark and Norway. The three active Belgian divisions had been depleted by reduction in conscription from 24 to 18 months and consideration was being given to merge the three into one. The Netherlands reduced the number of divisions from five to three, one active and two reserve. Norway increased conscription from 14 to 16 months, not 18 as planned, and maintained only one active brigade rather than the two originally planned. Denmark reduced conscription from 18 to 14 months, and reduced divisional strength from 3½ to 1. The British strategic reserve consisted of three brigades in the United Kingdom against a goal of two divisions that could be on a war basis in 30 days. Italy's planned nine active divisions reached the equivalent

lent of six. The active force of the Greek army was reduced. The U.S. forces in Austria were moved to north Italy after the signing of the Austrian peace treaty and placed under Allied land forces, south Europe.

Training.—All forces intensified their training for nuclear warfare. The British NATO forces experimented with "checker-board deployment" of units self-sufficient even at battalion level. Several large manoeuvres were held in Germany with Exercise "Cordon Bleu," one of the largest, involving more than 100,000 men.

Equipment.—France proposed a limited pooling of arms manufacture for two years to be followed by the creation of a highly centralized supranational control organization over arms. NATO progress in equipment was principally in interchangeability rather than uniformity. Standardization of such end items as tanks, guns and planes made no progress. For example, extensive discussions were held on the problem of making any military tractor so that it could tow any military trailer. Typical of the standardization agreements reached was establishing 24 v. as the standard battery system for military vehicles.

Middle East.—The possibility of an arms race in the area was rendered more imminent by offers of arms to both Egypt and Israel by the communist bloc. The threat of general hostilities between Israel and Egypt was averted only by constant pressure from the UN truce team and Britain, France and the United States. A "northern tier" defensive alliance was created by the signing of a defense co-operation agreement between Turkey and Iraq in February, joined by Britain in March, Pakistan in May and Iran in October. This alliance created consternation in Cairo as Egypt was trying to develop greater co-ordination between the Arab league members, of which Iraq was a member, and in Moscow, which wanted to neutralize Iran in accordance with traditional Russian policy. With the possible intent of replacing the Arab league, Egypt, Syria and Saudi Arabia announced an agreement not to join the Turkish-Iraq pact, and plans for a joint military command to supervise training, arming and deployment of the Arab armies and for co-ordination of war industries and communications.

Two major areas of conflict erupted between Egypt and Israel. Along the Gaza strip patrol clashes brought casualties and reprisals to each side. The UN truce commission proposed joint patrols, only regular troops in the frontier zone, barbed wire at trouble spots, and a commanders' agreement. Egypt closed the Gulf of Aqaba leading from the Red sea to the Israeli port of Elath by guns on the islands of Tiran and Sarafia, and Israel threatened to force the gulf. Both sides agreed to evacuate forces from the El Auja zone on the Sinai border after Israeli forces occupied the area in September, charging the Egyptians with maintaining two positions there illegally under the 1949 armistice.

Egypt.—With a loosely organized army of about 100,000 and lacking heavy equipment, Egypt made intensive efforts to obtain arms to match those of Israel. Both countries had obtained about \$1,000,000 worth of arms each from the United States since 1952. Egypt in the meantime had obtained some Centurion tanks, contracted for in 1949, 2,500 light and heavy machine guns from Spain, and bought 200-300 Valentine tanks from Belgium. A down payment of \$2,800,000 was made on arms from Czechoslovakia.

Israel.—As a result of Egyptian efforts to obtain arms from the communist bloc, Israel proposed military ties with Britain, France and the United States. Proposals called for security guarantees, no change in the balance of power, and integration in the western security program. It was maintained that under the 1950 agreement the three major powers had agreed to maintain the balance of power between Israel and the Arab states.



"PRISONERS" AND "ENEMY" CAPTOR, U.S. soldiers at Stead Air Force base, Nevada, where in 1955 a voluntary course in survival techniques was initiated. Soldiers taking the course were treated as prisoners and subjected to mild forms of torture in an effort to teach them to resist the "brainwashing" practised on U.S. prisoners in the far east during and after the Korean war

The United States was requested to match whatever arms the Egyptians got from the communists.

Approximately 50,000 men were maintained on active duty, with an immediately mobilizable reserve of 200,000. Every able-bodied man under 50 was a well-trained and well-equipped reserve soldier. Every Israeli male at the age of 18 and every immigrant under 30 was required to serve 2½ years and thereafter 30 days each year plus one day each month until age 39, thereafter 14 days a year for enlisted men and 21 days for others. All officers were required to qualify as parachutists or guerrilla leaders. Every reservist was assigned to a mobilization centre where weapons, gear and other equipment were stored.

Iraq.—The treaty of 1930 with Britain was abrogated and replaced by the middle east defense alliance, with a bilateral accord covering the royal air force bases at Shaibah and Habbaniya. Under the area agreement Iraq would provide a supply and communications route to Turkey, particularly to the Turkish NATO forces 1st army in Thrace and 3rd army in the Caucasus. Efforts were made to acquire more U.S. equipment, particularly 105- and 155-mm. howitzers. The goal was to modernize the two existing divisions and create a third mechanized division. U.S. vehicles and engineering equipment designed to increase the mobility and improve communications were received.

Jordan.—Troop strength of the Arab legion was maintained at 20,000.

Lebanon.—Troop strength was 5,000.

Pakistan.—The bilateral agreement with Turkey and the mutual security treaty with the United States were supplemented by a formal defense council under the middle east pact. Military headquarters at Rawalpindi commenced the integration of U.S. equipment, including tanks, into the army.

Saudi Arabia.—Troop strength was 15,000.

Syria.—Troop strength was 40,000.

Turkey.—Although the six armoured brigades were equipped with M-47 Patton tanks, the army was still weak in mobility and communications with an outmoded depot and warehouse system and inadequate road and rail transport.

SEATO.—In February at Bangkok the Manila alliance powers established a secretariat to be composed of the ambassadors of the eight powers: Pakistan, the Philippines, Thailand, Australia, New Zealand, France, Britain and the United States. A military staff group was established under the secretariat, and discussions were commenced among the signatories, with meetings in each



M/SGT. EDDIE PICKETT and his family disembarking at Bremerhaven, Ger., in July 1955, as the U.S. 10th division from Ft. Riley, Kan., arrived to replace the 1st infantry division in Operation "Gyroscope," the largest peacetime army movement in U.S. history

of the member countries to survey existing facilities. (See also SOUTHEAST ASIA TREATY ORGANIZATION.)

Communist China.—It was announced that the defense budget equalled 24.19% of the budget of \$12,563,000,000. The government announced the start of compulsory military service and indicated that 450,000 men in the 18 to 22 year old category would be called up for a three-year period. Strength of the army was maintained at approximately 3,500,000, including 1,000,000 security troops. Official announcement was made of the withdrawal of two more armies (six divisions) from Korea, reducing the total number of armies in Korea to ten. There was little change of the major disposition of the armies during the year, with about 400,000 troops in the area between Shanghai and Canton, of which 100,000 were along the Chekiang-Fukien coast—probably the 12th, 20th and 26th armies.

Nationalist China.—A mutual defense treaty was signed with the United States providing for the defense of Formosa and the Pescadores. The army of approximately 300,000 men was reorganized, but it would be late in 1956 before all of the 21 infantry and 2 armoured divisions were combat ready. Discussions were held with the U.S. military assistance group toward equipping reserve divisions, with the Chinese asking for nine. The disposition of the troops remained practically the same except for additional troops in the Quemoy region, where five divisions garrisoned Quemoy, plus one on Little Quemoy supported by 18 battalions of field artillery plus three battalions of light tanks. Conscription of Formosans was started.

France.—Three major developments affected the organization of the army: the long-term plan estimated to cost 1,125,000,000 fr. (\$3,503,500,000) was rejected; a defense budget of 991,000,000,000 fr. (\$2,834,000,000) for 1955, and 997,000,000,000 fr. (\$2,851,000,000) for 1956 were passed with a four-year plan for capital expenditures on military equipment and

long-range organization of industrial orders for heavy equipment and new units of the army were organized to meet the crisis in North Africa. The end of the war in Indochina saved the government 122,000,000,000 fr. with the withdrawal of approximately 100,000 of the expeditionary force. The contribution to NATO of 14½ divisions consisted of 5 active divisions at 80% of war strength and 9½ divisions at 55% of war strength. Of these units four divisions were in North Africa.

Disposition.—With the French forces in Indochina reduced from 175,000 to 75,000, an agreement was reached with the Vietnam government to withdraw from Saigon. As a result, the 75,000 were disposed at Bienhoa, 35 mi. E. of Saigon; Baria, 60 mi. E. on the South China sea coast; with small units at Tourane and Nhatrang at Annam.

In North Africa, nationalist uprisings resulted in a steady flow of troops from the continent to Morocco and Algiers until strength mounted to more than 300,000. Disposition included a foreign legion battalion at Agadir; a Moroccan regiment at Marrakesh; the 6th Moroccan regiment, 6th Senegalese regiment and 7th artillery regiment at Casablanca; the 22nd Moroccan division and 1st African regiment at Rabat; a Moroccan regiment at Port Lyautey; a foreign legion battalion at Fez; a Moroccan regiment at Taza; a foreign legion battalion at Oujda; foreign legion headquarters at Sidi-Bel-Abbès; the 4th infantry division plus an Algerian regiment at Oran; a division plus an Algerian regiment at Algiers; the 2nd infantry division at Tizi-Ouzou; a division plus an Algerian regiment at Constantine; the 1st parachute combat team at Philippeville; and the 14th infantry division at Bône.

The fighting in North Africa consisted of mainly guerrilla-type raids by the Arabs followed by punitive expeditions of the French forces. Nationalist strength was concentrated in the Aures mountain region of the Constantine district of Algeria and in the Riff area along the border of French and Spanish Morocco, where action occurred in the Aknoul-Boured-Ti-Ouzli triangle in an apparent rebel attempt to open a supply route into Spanish Morocco. Although there were occasional surrenders of arms by revolting tribesmen, there appeared to be a steady flow of arms to the Arabs who used both mortars and heavy machine guns against the French forces.

Training.—Reserves were called up to replace the troops sent to North Africa. Conscripts released from military duty between January and March 31, 1955, were recalled, and those eligible for release on Nov. 1, 1955, were retained on active duty for at least four months in view of the crisis in North Africa. The total of approximately 150,000 men replaced the units sent to Morocco and Algeria. Home guard units were organized in Morocco composed of about one-third Moroccans who had served in the French army, and the balance Europeans.

Equipment.—Most heavy U.S. equipment of the units sent to North Africa was left in France, and French equipment was used. The new 7th mobile division at Freiburg was equipped primarily with French equipment: the AMX light tank, EB armoured reconnaissance car, SSiO electronically controlled antitank missile.

Great Britain.—The army budget was \$1,335,200,000 and strength was 400,000. It was announced that the armed forces would be reduced by 100,000 by early 1958, with 20,000 less in early 1956, and a reduction of 40,000 in each of the following years.

Disposition.—With the 3rd infantry division in the United Kingdom based at Colchester in the Eastern Defense command and the 1st infantry division returning from Egypt to be based in the Salisbury plain area of the Southern Defense command plus the Independent Parachute brigade, the strategic reserve reached planned strength. Three armoured divisions and o

infantry division remained in west Germany, while the 10th armoured division was headquartered on Cyprus with one of its armoured brigades in Libya and one in Jordan. Other dispositions included two infantry divisions in East Africa, 20,000 British and colonial troops in Malaya, two brigades in Hong Kong and one battalion in Korea. Approximately 2,500 British and 1,000 African troops were withdrawn from Kenya, leaving 5,000 British and 7,500 African troops to cope with the Mau Mau. There were about 7,000 troops on Cyprus, and the 1st battalion of the Seaforth Highlanders was dispatched to Aden.

Equipment.—New tanks in use included the Charioteer, a cruiser-type tank of 30 tons with a 20-pounder, reported to be faster than the Cromwell. The Conqueror, with a 120-mm. gun and weighing 60 tons, was issued for use in combination with the Centurion (52 tons and 84-mm. gun). New equipment included a 40-mm. Bofors anti-aircraft gun, the Belgian FN 30 automatic rifle and the Sterling 9-mm. submachine gun which weighed six pounds, carried a bayonet, fired 575 rounds a minute accurately up to 200 yd. and carried a magazine of 34 rounds.

United States.—Of the defense budget passed by congress for fiscal year 1956, the share for the army was \$7,329,953,000. Strength of the army was being cut to 1,027,000, organized into 18 divisions, 11 independent regiments and 136 anti-aircraft battalions. Under Operation "Gyroscope" eight divisions would be kept in the United States and rotated with eight overseas, while the other two would remain in the territories. A continental army command replaced the army field forces headquarters.

The 3rd infantry division in Exercise "Follow Me" at Fort Benning, Ga., and the 1st armoured division in Exercise "Blue Bolt" at Fort Hood, Tex., engaged in extensive studies and tests of organizational units under conditions of nuclear warfare. While the final results were not announced, preliminary indications pointed to smaller, self-sufficient component forces, more mobile, with the communications, transportation, maintenance, supply elements and technical services pooled in support commands. While divisions would probably decrease in size, field armies would become larger and echeloned in greater depth. Regiments would disappear and their comparable unit would be the "combat command" while battalions would be replaced by "battle groups" within the destructive range of a single nuclear blast. Mobility would be greatly increased with more helicopters, tanks and armoured infantry carriers. Infantry firepower would be increased by the T-44 rifle, which under tests fired 20 rounds in less than two seconds. The medium artillery battalion—155 mm.—would be eliminated or replaced by mortars.

The increasing importance of army aviation was indicated by the creation of an Airborne and Aviation department at Fort Benning, Ga., and Camp Rucker, Ala., was named the new headquarters of army aviation. The army had 3,000 pilots and 4,000 planes, with 40% of the latter helicopters. The seven helicopter transport companies were to be expanded to 36 by 1959 and would total more than 700 transport helicopters with an average capacity of 20 or more men.

The congress passed the Reserve Forces act of 1955 which increased the statutory size of the ready reserve from 1,500,000 to 2,900,000 including the members of the reserve serving with active forces. Under the act the president could order to active duty 1,000,000 members of the ready reserve without further congressional authorization. The act provided that men between 17 and 18½ could enlist for eight years, serve three to six months on active duty, followed by 7½ years in the ready reserve during which time there would be 48 compulsory weekly drills and two weeks active duty annually. The army planned on 100,000 to

250,000 volunteers a year for this program, with a goal of a ready reserve of 2,900,000 by 1960. Under the new law, a second category could enlist in the reserve for six years, two of which must be spent on active duty, while a third category could join an organized unit of the national guard or organized reserve. (See also SELECTIVE SERVICE, U.S.)

Disposition.—The 1st infantry division and the 2nd armoured cavalry regiment returned to the United States from Germany and were replaced by the 10th mountain division and the 3rd armoured cavalry regiment. The 508th air-borne regimental combat team in Japan and the 187th air-borne regimental combat team in the United States exchanged places in the first mass unit transfer by air lift. The 25th infantry division took up its permanent post in Hawaii after leaving Korea. Headquarters and the 34th regiment of the 24th infantry division were transferred to Japan from Korea, while the 19th and 21st regiments remained in Korea where together with the 1st cavalry and 1st marine division they constituted the major U.S. combat units.

Training.—Extensive training exercises were conducted in nuclear warfare. At the atomic proving ground in Nevada, Task Force "Razor," composed of tanks and troops of the 723rd heavy tank battalion, conducted the first test of the tactical use of the atomic bomb in breaking an enemy line under actual blast conditions. Other notable training exercises included paratroopers from the 11th air-borne division participating in an exercise to reinforce the Panama Canal Zone, and the 503rd regimental combat team engaging in arctic manoeuvres in Alaska. Training was commenced for all troops in courses of action to be followed when captured, how to resist or avoid interrogation, specializing in escape and evasion, resistance, prison organization and survival.

U.S.S.R.—An announcement was made of an increase in the national defense budget for 1955 over 1954—\$28,250,000,000 compared with \$27,750,000,000. An eastern European unified command under Marshal Ivan S. Koniev was created, and a mutual defense pact signed by the U.S.S.R., Poland, Czechoslovakia, Hungary, Rumania, Bulgaria, Albania and the German Democratic Republic. However, each country retained command of the forces allotted to the unified command. A cut of 640,000 men in the armed forces was announced, but was not believed to affect the total of 110 infantry and 65 armoured

CLEAN UP SQUAD at Ft. Jay, Governors Island, N.Y. Shown in the photograph are members of the Ceremonial detachment who demonstrated their precision drilling with brooms instead of guns before all available personnel turned out to clean up the base in preparation for an open house on Armed Forces day in May 1955



divisions. The garrison of 45,000 was withdrawn from Austria. New field guns of 150-mm. calibre and T-54 tanks were delivered to the forces in Germany.

Australia.—Australia spent 20% of the national budget, or \$440,000,000, for defense. The regular army consisted of 24,230 officers and men, with 95,120 army reserves in the citizen military forces. New equipment ordered for the army included vehicles, rocket launchers, Energa rifle grenades and 120-mm. antitank weapons. Plans were developed for a modern arms plant near Sydney to cost \$50,000,000.

Colombia.—The army was maintained at a strength of approximately 40,000. The battalion that fought in Korea returned home.

Canada.—The 25th infantry brigade returned home from Korea.

Czechoslovakia.—A cut of 34,000 in the army strength of 230,000 was announced.

Denmark.—The defense budget was approximately \$126,000,000. The army had two divisions of 5,000 men each, one stationed in Jutland and one on the island of Sjaelland near Copenhagen. There was a garrison of 800 on Bornholm, and a reinforced battalion of 1,500 in Schleswig-Holstein (which together with an understrength British regiment constituted the NATO shield forces).

East Germany.—An army of 85,000 divided into a northern army corps of 30,000, a southern army corps of 25,000 and the Potsdam division of 10,000 was equipped with more than 1,500 light and heavy tanks including the Stalin Mark II plus howitzers, anti-tank guns, anti-aircraft guns and mortars. Plans were made to expand the force to 300,000.

West Germany.—The defense budget for the first year of rearmament was set at \$2,143,000,000. A Civilian Defense council was established to direct the armed forces. A conscription bill was drafted which would subject all Germans to conscription: those between 18 and 45 to peacetime service—young conscripts to 18 months' service, World War II veterans under 35 to six months and those over 35 to two months. Six representatives, who would be commissioned when the necessary laws were passed, were sent to SHAPE headquarters. The schedule for rearmament was as follows: 6,000 officers and noncommissioned officers on duty by late 1955; recruitment of 150,000 professionals by mid-1956; first conscripts by 1958; a combat-ready ground force by 1960. The ground force would include six armoured divisions of 12,800 men each and a total of 3,000 tanks, six mechanized infantry divisions of 13,600 men each, and three air-borne brigades of 5,000 men each. The infantry divisions would be organized into seven battalions and two combat commands, and each division would have 600 armoured personnel carriers transporting 12 men each. The 12 German divisions would be organized two to a corps, with four corps assigned to the central front and the fifth to Schleswig-Holstein.

Hungary.—A cut of 20,000 men in the army of approximately 300,000 was announced.

Japan.—Defense expenditures came to 3% of the national budget, or \$283,000,000. Defense forces totalled 168,000 and an annual increase of 10,000 was planned, directed toward reaching a ground force of 183,000 by 1958. The ultimate goal was the withdrawal of U.S. forces by 1960.

North Korea.—Reports indicated that there were more than 500,000 in the army, with an additional 1,000,000 or more Chinese communist troops. These troops had 2,000 pieces of artillery, organized into three divisions and one brigade.

South Korea.—A strength of 660,000 was maintained, with 22 active divisions and six more in the process of organization. The 1st army with the 1st, 2nd, 3rd, 5th and 6th corps held the demarcation line. The divisions totalled 13,000 men with tank



U.S. WORLD WAR II VETERANS before Lomonosov State university, Moscow, U.S.S.R., in May 1955. The soldiers, members of the U.S. division which met the Soviet forces on the Elbe river in 1945, were guests of the U.S.S.R. government

and heavy artillery battalions assigned only to corps.

Norway.—Norway maintained an army of about 20,000, with the major unit being the Northern brigade which was stationed north of the Arctic circle along the Lyngen line established by the Germans in World War II, running from Skibotn on the Lyngen fiord to the Finnish frontier.

Philippines.—The last unit of the Filipino battalion in Korea a reinforced rifle company, was withdrawn. An agreement was signed with the U.S. calling for \$9,500,000 to train and equip a new division.

Poland.—A cut of 47,000 in the army of 500,000 was announced.

Rumania.—A cut of 40,000 men in the army of 230,000 organized in 15 divisions was announced.

Sweden.—The defense budget was unchanged at \$395,000,000. All branches of the service were being trained for nuclear warfare. New tactical rules were issued. Improved shelters were being built in solid rock. Army units were being made more mobile without sacrificing firepower. (See also AVIATION, MILITARY; MUNITIONS; NAVIES OF THE WORLD; NORTH ATLANTIC TREATY ORGANIZATION.)

(L. B. K.)

Army, U.S. Department of: see GOVERNMENT DEPARTMENTS AND BUREAUS, U.S.

Arsenic: see MINERAL AND METAL PRODUCTION AND PRICES

Art: see ARCHITECTURE; ART EXHIBITIONS; ART SALES; DANCE; MUSEUMS; MUSIC; PHOTOGRAPHY; PRINTING; SMITHSONIAN INSTITUTION; THEATRE; and the Literature articles such as AMERICAN LITERATURE; ENGLISH LITERATURE; etc.

Art Exhibitions. During 1955, exhibitions from Europe again offered a rich and varied fare for the museum visitor in the United States. Spain sent its first group of art treasures, 100 drawings by Francisco Goya lent by the Prado museum, with 15 more from the Goldiano museum of Madrid. These were shown at the National Gallery of Art in Washington, D.C., and later went to the Metropolitan Museum

of Art in New York city, the De Young Memorial museum in San Francisco and finally to Los Angeles and to the Museum of Fine Arts in Boston.

Through the auspices of the Smithsonian institution in Washington, D.C., a group of drawings and prints from the world-famous Albertina collection in Vienna were brought to the United States and were especially featured at the National Gallery of Art and at the Minneapolis (Minn.) Institute of Arts.

The finest collection of old masters to come to the U.S. in several years was the group of about 70 Dutch paintings of the 17th century lent largely from museums and private collections in the Netherlands with a few additional examples from England and Scotland. These were augmented by about 30 important examples from American collections. The exhibition was shown at the Metropolitan museum, the Toledo (O.) Museum of Art, and in Toronto, Can.

A great collection of French drawings, 14th to late 19th century, was lent to the Art Institute of Chicago, selected from the Louvre in Paris and from other French collections by Mme. Buchot-Saupique, the Louvre's Curator of Prints and Drawings.

A superb group of German old master drawings was assembled by the museums of western Germany and sent to the National Gallery, the Cleveland Museum of Art, the San Francisco Museum of Art and the Fogg Museum of Art at Harvard university. These were about 150 drawings from 20 museums and four collectors covering the period from the 14th to the 20th century.

Revival of interest in the British portrait school was indicated by the important exhibition held at the Columbus (O.) Gallery of Fine Arts of "Sir Thomas Lawrence as Painter and Collector." His brilliance as a painter was already apparent at the age of ten, when Sir Joshua Reynolds called him "the most promising genius" he had ever met. Lawrence owned works by Raphael, Leonardo and Michelangelo.

The Los Angeles County museum and the San Francisco Museum of Art assembled a most comprehensive exhibition of the work of Auguste Renoir, covering a period from 1865 to his death in 1919. In addition to oils, drawings, prints, pastels, watercolours and sculpture were included.

Ancient art came into prominence when the Fogg museum at Harvard university honoured the 75th anniversary of the Archaeological Institute of America with a showing of ancient art in American collections. The Yale Gallery of Fine Arts exhibited Palmyrene and Gandharan sculpture to show the mingling of eastern and western traditions in the early centuries of the Christian era.

"Sculpture in Silver from Islands of Time," organized by the Brooklyn museum, was composed of silver sculpture under 12 inches high, comprising 22 ancient, Renaissance or Peruvian pieces combined with pieces commissioned from contemporary sculptors José de Creeft, Ibram Lassaw, Richard Lippold, David Smith and William Zorach.

The Cloisters of the Metropolitan museum organized a Spanish mediaeval exhibition of paintings, sculpture, manuscripts and textiles to honour Walter W. S. Cook, scholar in the field of Spanish art and for many years the director of the graduate institute of Fine Arts at New York university.

A notable exhibition of manuscripts was shown at the Houghton library at Harvard. Most of the 165 items had been procured by Philip Hofer, the librarian, and covered the period from the 10th to the 17th century. A highlight was a famous Gothic manuscript, the Missal of Noyon.

The Cleveland (O.) Museum of Art organized an outstanding exhibition of Chinese landscape painting, 117 works covering 3,000 years. Earliest was from an incised ewer of the Chou dynasty, 5th to 3rd century B.C., while the greatest landscapes were of the Sung dynasty, 10th and 11th centuries.



PASSER-BY PAUSING to examine a bronze statue which was to be exhibited in the 4th annual Boston (Mass.) Arts festival, 1955. In addition to sculpture, painting, architecture, poetry reading, dancing and theatre were presented

The Art Institute of Chicago honoured Chauncey McCormick, its former president, who died in 1954, with an extremely choice group of 39 French paintings, mostly of the 18th century, and Impressionist and post-Impressionist pictures of the 19th century.

The Baltimore (Md.) Museum of Art celebrated "25 Years of Growth," 200 of their choicest objects acquired since their founding. Most notable benefactors were Sadie A. May and the Cone sisters, whose Henri Matisse "Blue Nude" is world famous.

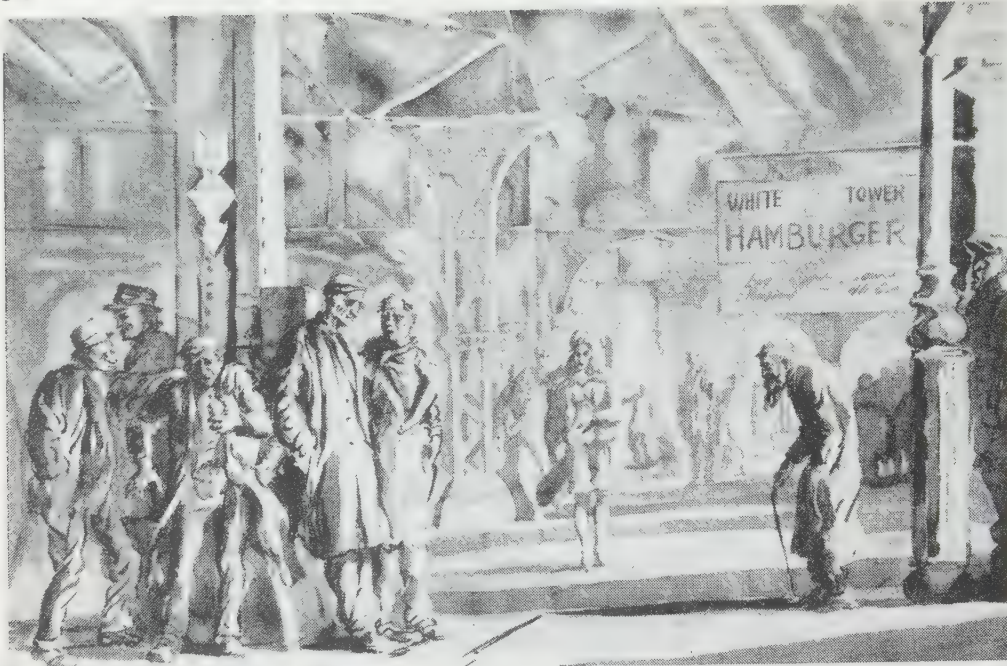
A great exhibition of photography, called "The Family of Man," was assembled by Edward Steichen for the Museum of Modern Art in New York city and a dramatic installation was designed by Paul Rudolph. Enlarged photographs of every phase of life from birth to death in all parts of the world were included.

The Pennsylvania Academy of the Fine Arts, Philadelphia, celebrated its 150th anniversary with an exhibition composed of groups of paintings by their 25 most eminent pupils and teachers (no living artists included). Founded in 1805 by Charles Willson Peale, the academy had as teachers not only Peale but later Thomas Eakins, and as pupils notables including Mary Cassatt, William Glackens, John Marin and Charles Demuth.

In the new building on West 54th street, New York city, the Whitney Museum of American Art combined its two annuals into one large exhibition of oils, watercolours, drawings and sculpture. A renewed interest in figure painting was evinced in this all-invited, no-prize exhibition.

The Chicago Art institute's 61st annual was also all-invited and the prizes were awarded by James Johnson Sweeney, director of the Guggenheim museum, New York city, and two notable painters, Stuart Davis and George L. K. Morris. The \$2,000 Logan prize went to Corrado Marca-Relli for an enigmatic double-figure cloth collage.

For the Corcoran Gallery of Art's 24th biennial in Washington, D.C., only 64 paintings were taken by a very strict jury. The W. A. Clark prize went to John Hultberg for "Yellow Sky";



"WHITE TOWER HAMBURGER," a wash drawing by Reginald Marsh (1898-1954) from the 1955 memorial show of Marsh's work, Whitney Museum of American Art, New York City

the next three prizes in order went to Ivan Albright for "Tin," Larry Rivers for "Figure" and Henry Niese for "The Window."

Carnegie institute's 40th international at Pittsburgh (328 artists from 23 countries) was all-invited by Director Gordon Washburn. The prize jury of five, consisting of René Huyghe, former curator of the Louvre; Afro, Italian painter; Perry Rathbone, new director of Boston's Museum of Fine Arts; Ben Shahn, U.S. painter; and G. David Thompson, Pittsburgh collector, rolled about the galleries in wheel chairs for greater ease, and awarded the first prize of \$2,000 to Alfred Manessier of France for "Crown of Thorns"; second prize of \$1,000 to Rufino Tamayo of Mexico for "Fruit Vendors"; and lesser prizes to Renato Birilli (Italy), Matta (Chile) and Toti Scialoja (Italy).

The *Art News* sponsored the fifth National Amateur competition and awarded the gold medal to Mrs. Gertrude Harbart, a housewife of Michigan City, Ind., for "Mixed Bouquet"; silver medals went to David Goldstein, a Brooklyn dentist, for "Curio Shop," and to Mrs. Sali Frantz of Saginaw, Mich., for "Open Door—Just Watching."

Contemporary Americans and Europeans could be compared through two exhibitions showing the work of 22 European artists at the Museum of Modern Art and 35 Americans at the Whitney museum. The consensus was that top Americans, like Willem de Kooning, Jackson Pollock, Robert Motherwell and Adolph Gottlieb, were more vital and original than the best Europeans, such as Jean Dubuffet of France and Francis Bacon of England.

The Whitney museum showed a memorial exhibition of the work of Reginald Marsh (1898-1954), noted chronicler of the more lusty side of New York life, the Bowery, Coney Island, Fourteenth street and the burlesque. His early death at the age of 56 brought to an end one of the most distinguished careers of any artist in America.

Retrospective exhibitions were held at the Museum of Modern Art of Giorgio de Chirico (Italian, 1888-) and Yves Tanguy (French, 1900-1955), both organized by James Thrall Soby. Their moody, imaginative pictures were important in the development of the surrealist movement. (F. A. Sw.)

Great Britain and Europe.—In London, from Nov. 1954 until the end of Feb. 1955, the Royal Academy of Arts presented

another of its winter exhibitions. The title "European Masters of the Eighteenth Century" was chosen deliberately to indicate that the exhibition was not intended to be a balanced and representative showing of 18th century art. There was, for example, an undue weight of pictures by Canaletto and Guardi. The former, however, had a special interest for Londoners. Canaletto's topographical view of Whitehall and the Thames is amazingly precise in detail yet wonderfully broad in design. It gave an uncannily vivid idea of the capital as it was 200 years ago. There were excellent and characteristic works by Boucher, Chardin, Fragonard, Watteau, Gainsborough, Hogarth, Reynolds, Romney, Stubbs, and, for first-rate Goya portraits and,

a pleasing reminder of a highly skilled but half-forgotten painter, three dramatic pictures, in the manner of Caravaggio, by Joseph Wright of Derby.

In Paris, in February, the Petit Palais presented 100 pictures by Courbet. The exhibition included most of the 53 works that were shown at the Venice Biennale in 1954; the remainder came from the Petit Palais itself. The reinstatement of Courbet as a significant figure was an interesting comment on the tendency toward realism apparent among the younger generation of painters—a tendency that was emphatically underlined by the complete disappearance of abstract painting from the Salon de Jeune Peinture in January.

During January and February the Musée National d'Art Moderne showed about 60 paintings and 20 drawings by Ben Nicholson in a survey which covered every phase of his development from the time of his first one-man show in London. In March this exhibition was shown in Brussels, at the Palais des Beaux-Arts where, shortly after, there was a selection of paintings by the German Franz Marc. Marc, who was killed in World War I, is widely remembered for his much reproduced picture "Three Horses," but for little else.

In the Netherlands, in February, the Gemeentemuseum at The Hague showed 120 works by Pieter Mondriaan, probably the most accomplished exponent of abstract painting. The exhibition traced his gradual discarding of naturalistic elements and revealed his intensifying preoccupation with nonfigurative design. This survey of Mondriaan's output emphasized the considerable extent of his influence, not only on painting, but on interior and industrial design as well.

In London, during April, the Leicester galleries showed pictures by the prolific and bewilderingly variable André Masson. The Institute of Contemporary Art presented the crudely vi-
pictographic symbols of Jean Dubuffet, and at the Lefevre gallery there were Edward Burra's haunting illustrations of his private world. As a contrast to the highly personal visions of these three subjective painters, Londoners were able to see an impressive record of the works acquired during the past 20 years by Liverpool's Walker Art gallery. Among the purchases of old masters were a fine Murillo and two excellent portraits, one by Van Dyck of the Infanta Isabella and the other by Gainsborough of Sir Robert Clayton. The 20th century acquisitions included a sensitive painting of a skull by Victor Pasmore, A

brose McEvoy's portrait of his mother, a notable "Paddington Interior" by Lucian Freud and an admirable work by Harold Gilman.

In June, the outstanding event was the great exhibition of paintings by Giorgione and his followers at the Palazzo Ducale in Venice, It. Perhaps no painter's name has provoked so many arguments over questions of attribution. With this in view, the exhibition was arranged with the intention of showing the greatest number of reasonably authentic Giorgiones, together with a selection of other paintings which bore the unmistakable stamp of his influence.

Another commemorative exhibition in June was a retrospective show at the Musée des Arts Décoratifs in Paris which paid tribute to Picasso's 75th birthday and to the 50th anniversary of his arrival in Paris.

Throughout August, exhibitions in London and Paris were numerous and important. In Paris, the Maison de la Pensée Française presented a wonderful show of paintings by Pierre Bonnard; the Musée d'Art Moderne included further Bonnard canvases in an exhibition called "Bonnard, Vuillard et les Nabis (1888-1903)," and the Galerie Charpentier showed 60 paintings by André Derain. In London, 50 paintings by William Etty were to be seen at the Arts Council's gallery and the Council's exhibition of "Four French Realists" (André Minaux, Ginette Rapp, Roger Montané and Jean Vinay) opened at the Tate gallery. Meanwhile, in Edinburgh, a magnificent collection of paintings, sculpture and graphic work by Paul Gauguin was on view as part of the city's festival. The whole exhibition, together with one or two additions, was transferred to the Tate gallery in September.

In London, the year ended as it began with the winter exhibition of the Royal academy which was devoted to a comprehensive collection of Portuguese art of all periods. (See also ART SALES; MUSEUMS.) (F. W. W.-S.)

Arthritis: see RHEUMATIC DISEASES.

Arthritis and Rheumatism Foundation: see SOCIETIES AND ASSOCIATIONS, U.S.

Artificial Satellite: see PHYSICS.

Artificial Weather: see METEOROLOGY.

Art Sales. During 1955 America's leading auction house, the Parke-Bernet galleries in New York city, in a season of 77 sales totalled \$5,447,634, nearly \$1,250,000 above the previous season. Auction trends were an indication of the economic changes of the country in that the truly great collections of the past had been mostly broken up and replaced by many smaller collections. There continued to be a great interest in modern art, and early Americana, though growing increasingly rare, was in constant demand. While Renaissance furniture, once so much collected, seemed to be no longer desired, there was a great interest in all sorts of *objets de vertu*.

Notable sales were Ruth Vanderbilt Twombly, rugs and tapestries, which brought \$315,185; Katherine Deere Butterworth, old masters, Barbizon school paintings and French furniture, which fetched \$315,185; Alfred H. Caspary, English and American furniture and silver, \$192,747; and Arthur Bradley Campbell, modern paintings, \$162,620. The single painting which brought the highest price of the season was the Pieter de Hooch "Woman Nursing Her Child" from the Butterworth collection, which brought \$34,000. Top modern paintings were Chaim Soutine's "The Old Mill Near Cannes," bringing \$20,500, and Paul Cézanne's "The Water Can," \$19,000. Two series of Louis XIII tapestries, "Rinaldo and Armida" (set of ten) and "The Story of Amintas and Sylvia" (set of eight), went for \$15,000 each

A season's total of \$2,054,739 was taken in by the Plaza Auction galleries in 65 sales. Important sales were the estates of Helen W. Durkee Mileham, Mary Osgood Field Hoving, William H. Coverdale and Arcie Lubetkin.

A lively season was seen in the London auction houses. At Sotheby's 14 drawings were sold by A. G. B. Russell for £15,190, of which Lorenzo Lotto's "Portrait of a Young Man" brought £8,000. Of the drawings from the estate of the Misses Hunte, a pen and ink by Francesco di Giorgio brought £9,500, and a pen and ink by Giovanni Bellini, £4,000. An elephant portfolio of James Audubon's *Birds of America* fetched £9,200.

At Christie's 127 lots from the estate of William Rees Jeffreys fetched £56,344. Highest items were modern pictures: "Portrait of André Derain" by Henri Matisse, £7,035, purchased for the Tate gallery (cost £280 in 1935); "Elderly Woman in a Blue Dress" by Chaim Soutine, £4,725 (cost £90 in 1939); "La Sibyl," an early Picasso, £4,410; "A Woman at Her Toilet" by Pierre Bonnard, £4,410; "The Port of Antwerp" by Eugène Boudin, £3,990.

Highlights of the sale of the Viscountess Bertie of Thame were two small (9½×14 in.) Guardi panels, "San Giorgio Maggiore," which brought £2,730, and "The Dogana and Church of Santa Maria della Salute," £3,360. (In 1885 the pair cost £147 at auction.)

The Baroness van Zuylen van Nyevelt sold nine Nymphenburg porcelain figures, c. 1760, by Franz Bustelli, for £35,647. Two of these, "Lalage" and "Harlequin," went as a pair for £11,130.

An anonymous nobleman sold a painting, "Democritus and Heraclitus," attributed to Rubens, for £17,325. English and French furniture from the collection of Ernest Rehnitz realized £34,000, of which a Louis XVI black lacquer *bonheur-du-jour* brought £5,460.

"A Seated Nude" by Pierre Bonnard sold at the Galerie Charpentier in Paris for 4,055,000 fr., "Young Lady in a Landscape," 1831, by Jean Baptiste Corot brought 10,750,000 fr. and a set of ten chairs and a sofa signed Heurtaut (cabinetmaker to Louis XV) brought the unprecedented amount of 18,000,000 fr. Old masters fetched less than old furniture, as indicated by 1,500,000 fr. received at auction for Lucas Cranach's "The Old Man Agrees." (F. A. Sw.)

Aruba: see NETHERLANDS ANTILLES.

Asbestos: see MINERAL AND METAL PRODUCTION AND PRICES.

ASCAP (American Society of Composers, Authors and Publishers): see SOCIETIES AND ASSOCIATIONS, U.S.

Ascension: see ST. HELENA.

Asia: see AFGHANISTAN; CHINA; etc.

Asian-African Conference. At Bandung, Indonesia, representatives of 29 Asian and African countries met from April 18 to 24, 1955, to discuss their common problems. Long expected to be a rally of the Asian neutralists with the communist bloc, the conference surprised observers in many countries with the freedom of its discussion, the vigorous defense of the western democracies set forth by many speakers, and the variety of the viewpoints expressed.

Originally, the conference was put officially on record by a proposal of Prime Minister Ali Sastroamidjojo of Indonesia in March 1954. The following May the premiers of the Colombo powers approved the participation of their countries in such a conference and at the Bogor, Indon., conference, held in a suburb of Djakarta in Dec. 1954, the list of countries invited was drawn up and the preparation for official invitations made. Though invitation was made at the instance of Indonesia, the

Colombo powers associated themselves with the calling of the meeting.

The label "Asian-African" was not altogether accurate. Important Asian countries, such as the Soviet republics in Asia, were not represented and only five African countries took part. The conference was in substantial part a meeting of former colonial territories. Much of the discussion involved the background of colonialism and the foreground of the cold war.

The three most powerful nations represented were Japan, Communist China and India. Of these Japan was by design the most inconspicuous. The Japanese offered high principles and diplomatic courtesy, but it was evident that they were not interested in involvement with either the anti-colonial wrangle or the recriminations between the friends of the eastern and the western powers. That left Communist China and India in the position of leading powers.

Even the anti-communist press of the world later conceded that Red China stole the show through the performance of its premier and foreign minister, General Chou En-lai. Chou was expected to vilify the west and to launch harangues against the United States. Instead, he took a tone of reasonableness and supported the moralistic affirmations of the Asian neutrals, and in giving them a communist slant he proceeded with considerable calm and candor.

On the part of India, Prime Minister Jawaharlal Nehru was the leading initiator of the conference. He did not control it, and much of the spotlight fell on Chou, but the meeting was in general the kind of meeting for which Nehru's policy had striven.

From a formal point of view, the conference was a legal and proper meeting of many governments—called at the invitation of the Indonesian government in association with other Asian powers—to discuss matters of common concern.

The list of the 29 participating countries showed curious inclusions as well as omissions. It comprised: Japan, Communist China, north Vietnam, south Vietnam, Cambodia, Laos, Thailand, the Philippines, Indonesia, Burma, Pakistan, India, Ceylon, Nepal, Afghanistan, Iran, Iraq, Turkey, Syria, Lebanon, Jordan, Yemen, Saudi Arabia, Egypt, Libya, the Sudan, Ethiopia, the



"LOOK-ALIKES," a 1955 cartoon by Justus of the Minneapolis Star

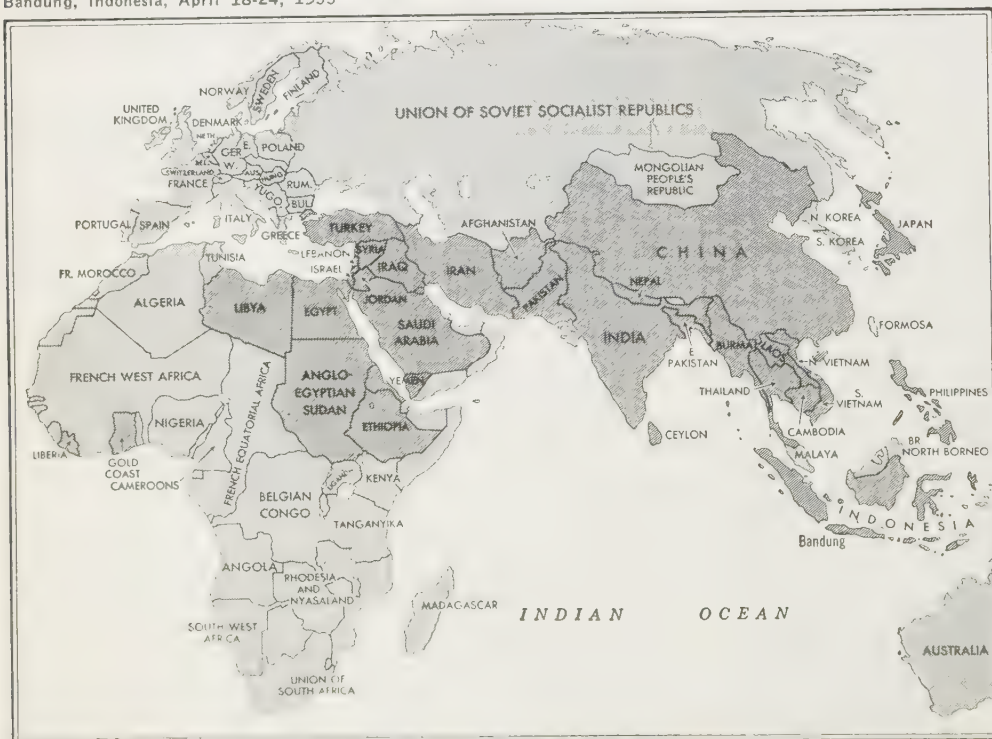
Gold Coast and Liberia. The Central African federation, which was British-founded, was invited but did not participate. However, neither north Korea nor south Korea was invited, nor were Nationalist China, Israel or the Union of South Africa.

Almost all the major nations of the world, with the exception of the Latin-American states, were represented by unofficial delegations or by semiofficial journalists. The United States was present in the person of Rep. Adam Clayton Powell (Dem. N.Y.), himself of African descent.

The democratic point of view was vigorously expounded by Gen. Carlos P. Romulo of the Philippines, by Sir John Kotelawala of Ceylon, by Prince Wan Waithayakon of Thailand and by others.

The conference opened on April 18 and the host, Indonesia's premier Sastroamidjojo, was elected chairman. He and Chou sought to keep the conference calm and orderly, although on the second day discord broke out when pro-western speakers challenged the communist ideology and questioned the methods of communist governments. During the remainder of the conference sustained efforts were made to achieve a substantial degree of unity on the basic issues before the meeting, most of which did not directly concern the cold war. The communists won a considerable degree of approval when Premier Chou stated that he had no intention of bringing

MAP SHOWING nations participating in the Asian-African conference at Bandung, Indonesia, April 18-24, 1955





DELEGATES Tatsunosuke Takasaki, Japan (left), and Gamal Nasser, Egypt, greet each other at Bandung, Indonesia, as the statesmen assembled for the opening of the conference in April 1955. Premier Chou En-lai of China appears directly behind their clasped hands

p quarrelsome subjects: he did this by mentioning, one by one, the controversial subjects which his country did not wish to inject into the discussion.

Prominently discussed at the conference were five highly moral principles worked out by Chou En-lai and Nehru on a previous occasion. These were sometimes cited as the five guiding principles, to which Chou at the conference added a sixth and a seventh. The five principles were: respect for national sovereignty; nonaggression; noninterference by nations in one another's affairs; recognition of racial equality; and the equality of nations. Chou's two new principles were respect of each country for the other's way of life and abstinence by nations from damaging one another economically or otherwise. These principles could have been approved almost anywhere in the world, but their manner of presentation and interpretation left no room for doubt that they were aimed at the United States.

The conference ended on April 24, the last several days having been taken up by committee work. Unlike the SEATO (Southeast Asia Treaty organization) conference, which resulted in a pact and a defense organization, the Bandung conference ended with no organization being established, no commitments made other than general good will, friendliness and possible cooperation, and no legal instrument more binding than an eloquent communiqué. The conference affirmed that Chou's seven points, plus three more supporting peaceful settlement of international disputes, the promotion of mutual interest, and respect for justice, would lead to friendly co-operation which could effectively contribute to the maintenance and promotion of international peace and security while co-operation in the economic, social and cultural fields would help bring about the common prosperity and well-being of all."

For the pro-democratic Asian states, the communiqué represented a triumphant compromise, since Chou's sixth point, concerning pressures, was split into two subpoints, each with a sharp edge: "abstention from the use of arrangements of collective defense to serve the particular interests of any of the big powers" and "abstention by any country from exerting pres-

ures on other countries."

This was characteristic of the conference in its seriousness, its solemnity, and its preoccupation with the ideals of an emerging world. (See also SOUTHEAST ASIA TREATY ORGANIZATION.)

(P. M. A. L.)

Association for the Advancement of Science, American: see SOCIETIES AND ASSOCIATIONS, U.S.

Association of American Geographers: see GEOGRAPHY.

Association of Research Libraries: see SOCIETIES AND ASSOCIATIONS, U.S.: *Research Libraries, The Association of.*

Astronomy. The year 1955 was characterized by important reorganizations in two astronomical agencies, by observational treats in the form of a near-maximum-duration total eclipse of the sun and several naked-eye comets, by announcement of several new conclusions about components of the solar system, and by widespread continuing research in most phases of stellar and galactic astrophysics. Radio astronomy, increasingly important, contributed several new concepts and discoveries.

Mergers.—Harvard College observatory and the Smithsonian institution announced the merger of their facilities for the study of the sun. F. L. Whipple, chairman of the department of astronomy at Harvard, was appointed director concurrently of Smithsonian's Astrophysical observatory, and each staff would have access to equipment and observatories of both, including Smithsonian's mountain stations in Montezuma, Chile, and Table Mountain, Calif. Harvard also figured in an international merger. Its Boyden station in the Union of South Africa would in the future be shared with observatory staffs from Stockholm, Swed.; Uccle, Belg.; Hamburg, West Germany; Dunsink, Republic of Ireland; and Armagh, North. Ire. Co-operative use of the 60-in. reflector and 32-in. special type Schmidt telescope would lead to further study of the southern skies.

Another step in international co-operation was reflected in the announcement that the British and United States Nautical almanac offices would co-operate more fully through sharing of materials prepared by both.

Eclipse.—The longest total solar eclipse since A.D. 717 took

place on June 19–20, 1955. Though it reached a duration of 7 min. 7.8 sec. in the South China sea, it was disappointing. Unlike the much shorter eclipse of June 30, 1954, which passed over land for much of its length, the umbral shadow began in the Indian ocean and ended in the South Pacific. Only Ceylon, Thailand, Indochina, the Philippines and a few scattered islands were in its path. Optimistic astronomers, many of them with elaborate and costly equipment, stationed themselves in these vantage points, chiefly in Ceylon where mountains appeared to offer the best protection against the annoying cloudiness of the southwest monsoons. Preparations had been made for a wide range of research ventures: to measure again the Einstein-predicted bending of starlight around the sun, to determine coronal temperature, to detect possible changes in temperature and concentration of atmospheric ozone, and many others. However, eclipse day in Ceylon was cloudy, and the careful preparations proved futile.

Comets.—For the first time in many years, several comets made a naked-eye or small-telescope appearance. By the end of the summer, seven of these diffuse members of the solar system had been observed with sufficient care that the elements of the orbits could be calculated. Antonin Mrkos, working at the Skalnaté Pleso observatory in Czechoslovakia, discovered Comet 1955e on June 12 near the bright star Capella. It was already of magnitude 6, a diffuse object, with central condensation or nucleus, moving northeast. By the middle of August it had moved through the constellation Canes Venatici and was of magnitude 8 (magnitude 6 is the dimmest visible without telescopic assistance). While it was being watched, another Comet (1955f) was observed in the constellation Pegasus. It was of 8th magnitude. Discovery was credited to A. Bakharev of Stalinabad. Independently and only a few hours later amateurs Karl Krienke and Lewis Macfarlane of Seattle, Wash., sighted the same object and reported it by telegram to the astronomical information centre at Harvard College observatory. Their report actually reached Harvard shortly before the message from the U.S.S.R.

On July 29, M. Honda of the Kwasan observatory in Japan detected Comet 1955g. It reached 6th magnitude in mid-August while in the constellation Auriga.

Mars.—Following an intensive telescopic survey of the planet Mars during the summer of 1954 when it was in favourable opposition, several new discoveries were reported. Yellow-light photographs made by E. Pettit and R. S. Richardson with the 100-in. telescope revealed a huge area that since last seen clearly in 1952 had changed to the characteristic greenish tint of the Martian maria. They also reported a cloud that for a month appeared to re-form each afternoon and disappear each night. W. Sinton and J. Strong made radiometric determinations of surface temperatures, concluding that range is from 77° F. at the equator shortly after noon, to –58° F. in the same location at sunrise. Veteran Mars observer E. C. Slipher, working at Lamont-Hussey observatory in Bloemfontein, S.Af., acquired excellent photographs in light of various wave lengths, including some of Martian cloud belts. Other researchers also reported good seeing, and most were planning to follow up with further investigation of the red planet during its even more favourable opposition in the summer of 1956.

Venus.—Attempts to find evidence of water vapour in the spectrum of Venus had failed. For this reason, it had been conceded by many for several decades that this nearby world is a hot, arid, wind-swept dustbowl. However, polarization studies of the planet by B. Lyot and his successors indicated that water droplets fit his data; dust particles do not. F. L. Whipple and D. L. Menzel therefore revived the theory that water may exist at the planet's surface.

The dense clouds have never permitted a direct view of the surface. Therefore the period of rotation and the orientation of an axis are unknown. G. P. Kuiper, having made a long series of photographs in ultra-violet light, identified atmospheric bands which he believed might be the product of rather rapid rotation of "only a few weeks." He also concluded that the planet's equator is inclined 32° to its orbit, and that the north pole is directed toward a point in the constellation Cepheus.

Jupiter.—This huge planet may have atmospheric electric disturbances of sufficient intensity to radiate signals to earth. But whatever the cause, the huge radio telescope at Seneca, Md., station of the Carnegie Institution of Washington had been receiving signals at a wave length of 13.5 m. which must have originated at the planet, according to K. L. Franklin and B. F. Burke.

New Stars?—The T Tauri type of variable star had been recognized as a nonconformist since 1946, when A. H. Joy noticed that these stars are associated with nebulosities wherever they are found. Equally important, their spectra are non-typical, exhibiting very strong emission lines in a pattern that is more complex than for most other emission-line stars. Recently, G. Herbig proposed cautiously that he had found two of these T Tauri stars in the nebulosity near Orion's sword, where previous photographs revealed no stars, and speculated that they may have developed within the past few years. If so, it marked an important first chapter to a chronological account of stellar evolution. T Tauri types may be the key to a new cosmology.

Red Shift.—Following a 20-year study of about 800 galaxies, M. Humason, N. U. Mayall and A. R. Sandage found new evidence to support the theory of an expanding universe. Sandage stated that the study shows "all galaxies for which data are available partake of the general expansion of space and obey Hubble's linear law," and that each galaxy appears to be receding from others and with a speed directly proportional to distance from the Milky Way. Some distant galaxies appear to be receding with velocities up to 38,000 mi. per second. The possibility exists that the apparent red shift is not produced by actual galactic recession, but by some unknown phenomenon.

Atlas.—The long-awaited first prints of the National Geographic society-Palomar Observatory Sky survey were distributed during September. These superb charts, made with the 48-in. Schmidt telescope, would serve as a basic reference for many years to come. (See also NATIONAL GEOGRAPHIC SOCIETY, p. 10.)

(J. M. CH.)

Athletics: see TRACK AND FIELD SPORTS; etc.

Atlantic Treaty: see NORTH ATLANTIC TREATY ORGANIZATION.

Atomic Energy. A new chapter in the history of atomic energy began in 1955 with a series of events that shifted major attention of the world from the military to the peaceful applications of atomic energy. These included the signing by the United States of bilateral agreements with 27 nations for co-operation in the civil use of atomic energy, the first International Conference on the Peaceful Uses of Atomic Energy and the initiation by the United States of negotiations for the creation of an international atomic energy agency to foster and supervise such peaceful development.

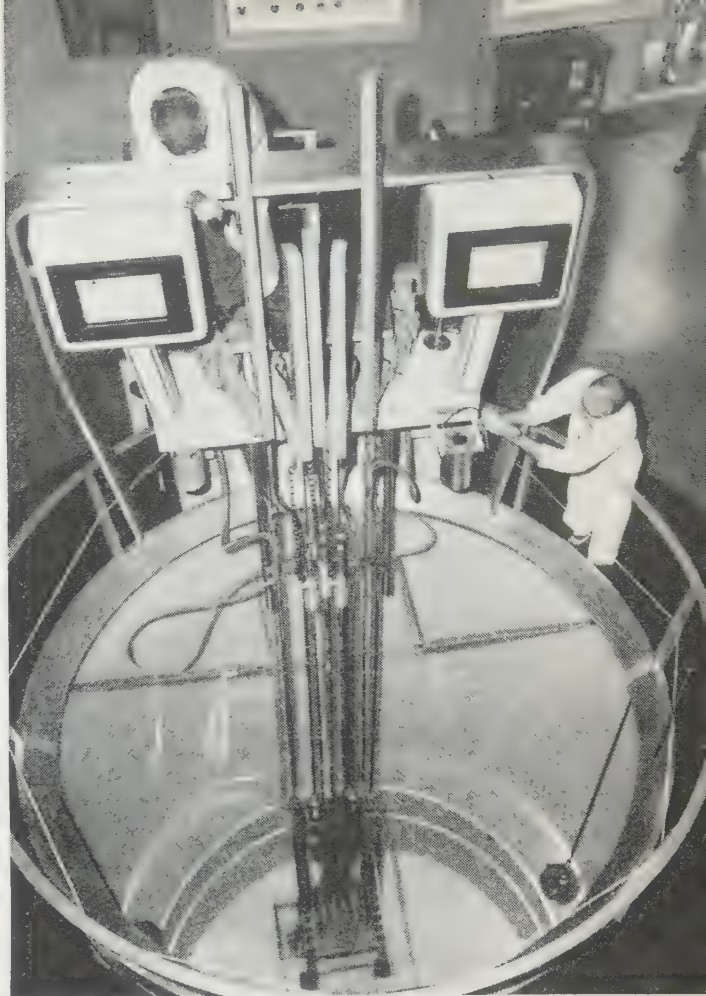
The changed atmosphere of the atomic world was believed to result in considerable part from the realization by the Soviet bloc as well as the western powers that the time had arrived when a war fought with nuclear weapons could only end in mutual destruction and the collapse of civilization, if not the extinction of the human race.



Above: SUBSURFACE ATOMIC BLAST, seventh in the "Teapot" series of detonations in 1955 at the Nevada test site of the U.S. Atomic Energy commission

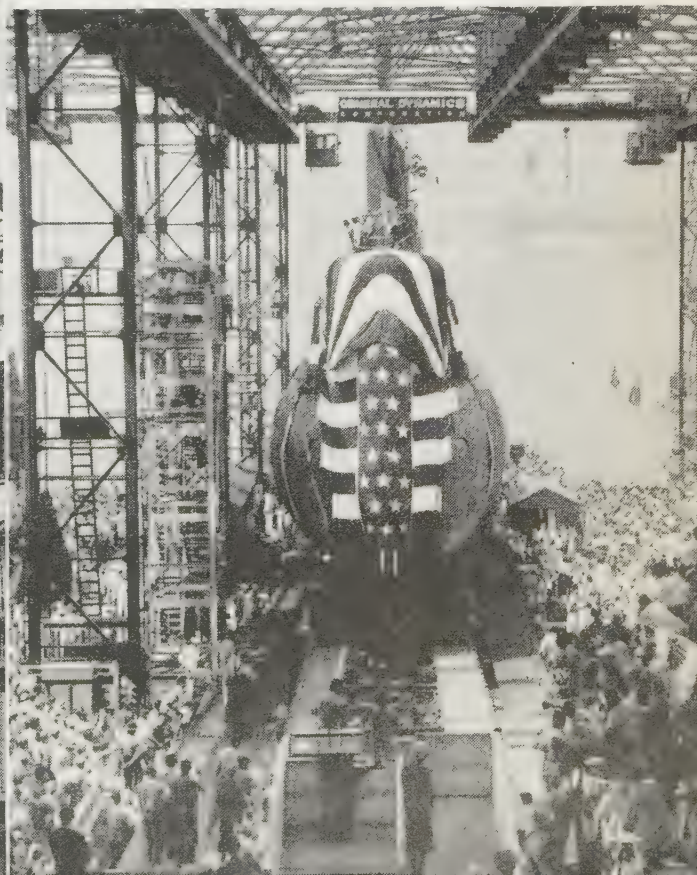
Right: BOILING WATER REACTOR displayed by the U.S. at the Geneva, Switz., International Conference on the Peaceful Uses of Atomic Energy. The reactor was built at Oak Ridge, Tenn., and shipped by air to Geneva for the opening Aug. 8, 1955

Below: CIVIL DEFENSE WORKER tagging a "casualty," one of five mannequins "killed" by a test atomic explosion during Operation "Cue" in 1955



Below left: SPECIAL REPORTS being assembled for shipment to foreign technical libraries by employees of the information section of the U.S. atomic energy plant at Oak Ridge

Below: LAUNCHING of the "Sea Wolf," second U.S. atomic powered submarine, July 21, 1955, at Groton, Conn.



However, there was no relaxation in the development of nuclear weapons. Tests were held by both the United States and the U.S.S.R., and Great Britain announced its intention of holding such tests in 1956.

It must also be noted that the United Nations subcommittee on disarmament had made little progress up to the end of Sept. 1955.

Atoms for Peace.—The progress of developing peaceful uses for atomic energy in 1955 had its inception in an address by Pres. Dwight D. Eisenhower before the general assembly of the United Nations on Dec. 8, 1953. In this address he proposed the creation of an international pool of atomic fuel for peaceful purposes and an international agency affiliated with the United Nations to administer it.

The way for United States participation in such a program was cleared by congress on Aug. 17, 1954, with the passage of the Atomic Energy Act of 1954, revising the original act of 1946. Secretary of State John Foster Dulles discussed the plan further before the United Nations general assembly on Sept. 23, 1954, and proposed that the assembly consider the advisability of an international conference on atomic energy in 1955.

On Dec. 4, 1954, the United Nations general assembly approved both President Eisenhower's proposal for an international agency and the suggestion for an international conference. Dag Hammarskjöld, secretary general of the United Nations, appointed Gunnar Randers of Norway as his special consultant in arranging the conference. Subsequently he appointed an advisory committee consisting of delegates from the United States, the U.S.S.R., Brazil, Canada, India and France.

Bilateral Agreements.—By July 1955, the United States had effected bilateral agreements on atomic energy with 27 nations. Of these agreements, 23 were essentially similar, providing that the United States would furnish the necessary information for the construction and operation of a nuclear reactor for research purposes and also would lease a sufficient amount of enriched uranium for its operation. Such agreements were made with Argentina, Brazil, Chile, Nationalist China, Colombia, Denmark, Greece, Israel, Italy, Japan, Korea, Lebanon, the Netherlands, Pakistan, Peru, Philippines, Portugal, Spain, Sweden, Thailand, Turkey, Uruguay and Venezuela. President Eisenhower announced that to carry out these agreements the United States would make available 200 kg. (440 lb.) of enriched uranium instead of the 100 kg. which it had originally offered.

More extensive agreements were signed with Switzerland, Belgium, Canada and Great Britain. The agreement with Switzerland provided for the sale to that country of the research reactor which the United States subsequently exhibited at the International Conference on the Peaceful Uses of Atomic Energy. The price of the reactor was set at \$180,000. Agreements were also made to sell heavy water for use in research reactors to Italy, India, France and Australia.

The Belgian Agreement.—The United States and Great Britain had made an agreement with Belgium in 1944 for the purchase of uranium ore from the Belgian Congo and other Belgian territory. It stipulated that when the time came for the civil use of atomic energy Belgium should participate on equitable terms. As a consequence an agreement was made in 1955 under which the United States agreed to exchange information on power as well as research reactors and to sell to Belgium such amounts of enriched uranium as Belgium might need for an industrial power program.

Great Britain and Canada.—It will be recalled that British and Canadian scientists went to the United States during World War II and collaborated in the development of the first atomic bomb. This close co-operation was severely restricted when the U.S. congress passed the Atomic Energy Act of 1946. Both Brit-

ain and Canada, however, went forward with extensive atomic energy programs and Britain created and tested atomic bombs of its own.

Under the 1955 agreements the U.S. would exchange both classified and nonclassified information with Britain and Canada in the nonmilitary field. Provision was also made for the transfer of instruments and devices. The U.S. also agreed to sell to Canada such amounts of enriched uranium as it could without impairing its own program.

The Geneva Conference.—Seventy-two nations and several specialized agencies of the United Nations were represented at the first International Conference on the Peaceful Uses of Atomic Energy in Geneva, Switz., Aug. 8–20, 1955. Each nation was permitted five official delegates but an unlimited number of technical advisers, bringing the official attendance to 1,260. In addition about 800 unofficial observers and newspaper correspondents were present. The conference was under the auspices of the United Nations and sessions were held in the Palais des Nations, the original home of the old League of Nations and now the European headquarters of the United Nations.

Homi J. Bhabha, head of the Indian Atomic Energy commission, was president of the conference. Walter Whitman of Massachusetts Institute of Technology, Cambridge, Mass., was secretary general and Victor Vavilov of the U.S.S.R. was deputy secretary general.

The great significance of the conference lay in the fact that it lifted the "radioactive curtain" that had concealed the details of atomic research. A total of 1,071 scientific papers covering virtually every phase of the nonmilitary use of atomic energy were scheduled for publication in the proceedings of the conference, but time sufficed for the actual presentation of only half that number. A vast amount of scientific data, hitherto secret, was revealed, particularly in the papers presented by delegates of the United States, Great Britain, the U.S.S.R., France, Canada, the Netherlands and the Scandinavian countries.

The situation was summed up by Whitman, who stated that sufficient information had been revealed at Geneva to enable any nation with the requisite technical skill to build a nuclear reactor for the operation of an electric power plant.

Atomic World's Fair.—Between sessions of the Geneva conference, delegates and visitors thronged the halls of the Palais des Nations in which the first "atomic world's fair" had been set up, a series of exhibits and displays sent to Geneva by many of the nations taking part in the conference.

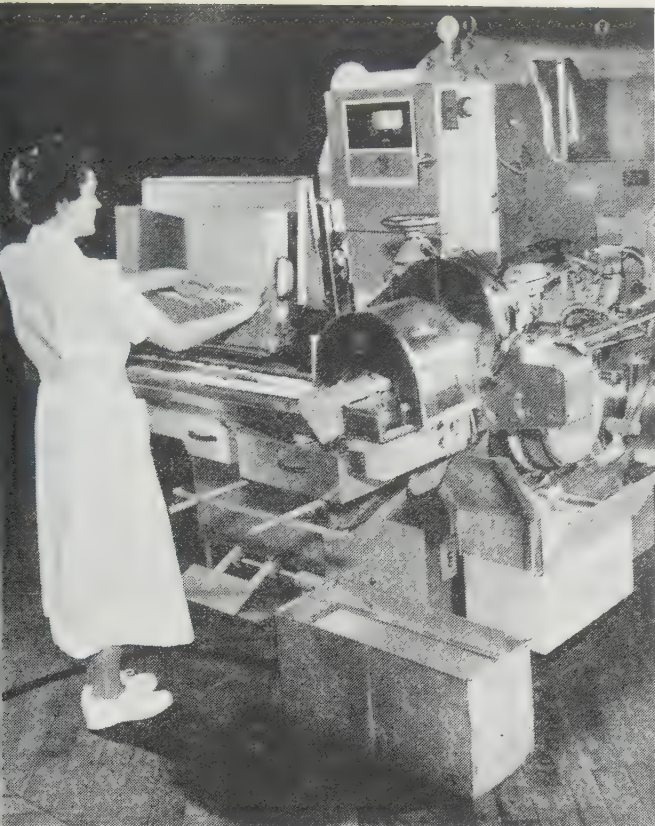
The United States had the largest display. Approximately 100 industrial firms and 50 academic and research institutions cooperated with the U.S. Atomic Energy commission in assembling it. It included models of all the reactors in the commission's five-year reactor program, a model of the Idaho chemical processing plant, actual reactor fuel elements and a wide variety of devices and instruments for the utilization of radioactive isotopes in scientific and medical research, industry and agriculture.

The U.S. was the only nation to exhibit an actual nuclear reactor. This was constructed at Oak Ridge, Tenn., and transported to Geneva by plane. It was housed in a special building erected on the grounds of the Palais des Nations.

The reactor was immersed in a pool of water 10 ft. in diameter and 21-ft. deep which served as a moderator, a coolant, and an effective shield against radiations. The core of the reactor consisted of 18 kg. of uranium enriched to 20% with Uranium 235.

The Soviet exhibits included a model of the 5,000-kw. power plant which the U.S.S.R. had in operation, models of several research and experimental reactors and a medical display.

Great Britain exhibited models of a number of power reactors.



MICROFEED CONTROL SYSTEM, a device containing a signal activated by beta particles introduced in 1955 for use in maintaining uniform quality in production of cigarettes

as well as of research types.

In addition to the exhibits in the Palais des Nations, an atomic "trade fair," not under conference auspices, was held in Geneva's downtown exhibition hall. British industrial firms had the largest exhibits in this fair.

Use of Hydrogen.—Although the subject of hydrogen fusion had been omitted from the agenda of the Geneva conference, Homi J. Bhabha of India, president of the conference, introduced it into his address at the opening session. He predicted that within 20 years a way would be found to control the basic reaction of the hydrogen bomb for the release of atomic energy for industrial purposes. He indicated that deuterium, the double-weight hydrogen occurring in heavy water, would be employed.

"When that happens," he said, "the energy problems of the world will truly have been solved forever, for the fuel will be as plentiful as the heavy hydrogen in the oceans." About one part in 5,000 of any given sample of water consists of heavy water.

At subsequent press conferences both Adm. Lewis L. Strauss, chairman of the U.S. Atomic Energy commission and head of the U.S. delegation, and Sir John Cockcroft, director of Britain's Atomic Energy Research establishment at Harwell, Eng., and head of the British delegation, disclosed that researches were under way in their respective organizations on the utilization of the hydrogen reaction for peaceful purposes. They indicated, however, that no "breakthrough" had yet occurred and that at present there was no known method of putting hydrogen fusion to work for the good of mankind.

Importance of Thorium.—A paper presented at the Geneva conference by John V. Dunwirth, head of the reactor physics group of the British Atomic Energy Research establishment, indicated that thorium might exceed uranium in importance as a source of atomic fuel. Thorium is believed to be from 4 to 10 times as abundant as uranium.

It had been known since 1940 that thorium, like uranium-238, will undergo fission with fast neutrons. However, as is the case with uranium-238, it will not sustain a chain reaction because of the high probability of neutron capture. But just as uranium-238 can be converted to plutonium in a nuclear reactor, so thorium can be converted into uranium-233, an isotope of uranium which will sustain a chain reaction.

Dunwirth indicated that thorium would be superior to natural uranium for the construction of a breeder reactor, that is, a reactor which would create more atomic fuel than it consumed while delivering heat to a power plant at the same time.

Until now, the chief use of thorium has been in the manufacture of gas mantles. About three-fourths of the thorium used in the world has come from the monazite sands of India. The next most important source is Brazil, but deposits occur also in North Carolina, South Carolina, Idaho and the Malay Archipelago.

New Reactor Designs.—The Geneva conference disclosed the rapid advances that had been made in the design of nuclear reactors, particularly the breeder type of reactor. Sir John Cockcroft described a breeder reactor that produced twice as much atomic fuel as it consumed. He pointed out, however, that the device was only an experimental one. It was the first fast neutron reactor to be built in Great Britain.

Atomic Fuel from Granite.—The world's reserves of uranium and thorium were greatly extended by the development of techniques for extracting the few parts per million of these atomic fuels which occur in ordinary granites everywhere in the crust of the earth. The new development was reported to the Geneva conference by Harrison Brown of the California Institute of Technology, Pasadena, Calif., who headed the team of scientists which carried on the researches.

Atomic Disarmament.—On Sept. 30, 1954, the U.S.S.R. proposed that the world make a new attempt to reach an agreement on atomic weapons and armaments in general. A month later the U.S.S.R. joined the U.S., Canada, Britain and France in sponsoring a resolution calling upon the United Nations Disarmament commission to revive its subcommittee which had met without success in 1953. The subcommittee consisted of representatives of the five nations sponsoring the resolution. It met in London in Feb. 1955 but suspended further deliberations after 12 weeks of meetings.

A new approach to the problem was proposed by President Eisenhower on July 21 at the Geneva conference of the heads of the Big Four Powers. He proposed that the United States and the Soviet Union exchange military blueprints and permit aerial inspection. The purpose of this would be to prevent the secret massing of weapons and planes that would be required for a surprise attack with atomic weapons.

The subcommittee of the United Nations Disarmament commission resumed negotiations on Aug. 29, 1955, with the Eisenhower proposal as one of the important items on its agenda.

Atomic Bomb Tests.—On Oct. 26, 1954, the U.S. Atomic Energy commission announced that the U.S.S.R. had been conducting a series of nuclear explosions since the middle of the previous month. The Soviet Union began another series of tests in Aug. 1955.

A series of 14 nuclear explosions were staged by the U.S. Atomic Energy commission at its Nevada test site between Feb. 18 and May 15, 1955. The tests were known as Operation "Teapot." Two detonations took place on March 29, the first time that two nuclear tests were ever staged on the same day. The tests were believed to include the prototype of an atomic warhead for an intercontinental guided missile, nicknamed a "city-buster."

In May 1955, the commission conducted Operation "Wigwam"

in the eastern Pacific ocean. The principal purpose of this test was to study the effects of a deep underwater nuclear explosion.

Great Britain announced on Sept. 12, 1955, that it intended to hold two series of atomic bomb tests in Australia in 1956.

Hydrogen Bomb Fall-Out.—In its first official report on the effects of a hydrogen bomb explosion, issued on Feb. 15, 1955, the U.S. Atomic Energy commission disclosed that the H-bomb exploded on March 1, 1954, contaminated a 7,000 sq.mi. area with a lethal radioactive fall-out. This is an area about one-seventh the size of New York state. The report stated further that the total amount of radiation received by residents of the United States as the result of all U.S., Soviet and British atomic bomb tests was "about the same as the exposure received from one chest X-ray."

Atomic Submarines.—The world's first atomic-powered ship, the U.S. submarine "Nautilus," put out to sea on Jan. 17, 1955. This marked the start of a series of exhaustive sea trials. Built over a period of three years, the "Nautilus" cost \$50,000,000.

A sister submarine, the "Sea Wolf," was launched on July 21, 1955, at the Electric Boat division of the General Dynamics corporation, Groton, Conn. The navy had two other atomic submarines scheduled for early construction.

Ford Atomic Prize.—Adm. Lewis L. Strauss announced at the Geneva conference on Aug. 8, 1955, that Henry Ford II and his brothers, Benson and William Clay Ford, had made a grant of \$1,000,000 to provide an annual award of \$75,000 and a medal to individuals or groups anywhere in the world, without regard to nationality or political belief, for contributions to the development of peaceful applications of atomic energy. The brothers explained that the award was being created as a memorial to their father, Edsel Ford, and their grandfather, Henry Ford.

Bohlen Visits Soviet Plant.—The Russian 5,000-kw. atomic power plant was described in detail at the Geneva conference by D. I. Blokhintsev. On Sept. 2, 1955, the U.S.S.R. invited U.S. Ambassador Charles E. Bohlen and the chiefs of 10 other foreign diplomatic missions to visit the plant. The visit took place on Sept. 6. They were told that the plant consumed 30 g. of uranium a day, the equivalent of 100 tons of coal in terms of thermal energy.

Whitfield Withdraws Name.—On March 16, 1955, President Eisenhower nominated Allen Whitfield, Des Moines, Ia., lawyer and Republican leader, to fill the vacancy on the U.S. Atomic Energy commission. Democratic congressmen almost immediately voiced their opposition to the appointment. On July 8, Whitfield requested President Eisenhower to withdraw his name.

Teller's Account.—On Feb. 25, 1955, Edward Teller of the University of California, Berkeley, published an account of the events leading up to the achievement of the hydrogen bomb in *Science*, official journal of the American Association for the Advancement of Science, under the title of "The Work of Many People." The article had obviously been written to destroy the myth that Teller had created the hydrogen bomb virtually singlehanded over the opposition of other atomic physicists. It named many scientists who took part in the development and was generous in its praise of J. Robert Oppenheimer, wartime head of the Los Alamos laboratory.

Atomic Power.—For the first time in history atomic energy was used to furnish all the electricity used by a small town. This occurred on July 17, 1955, when Arco, Ida., for an hour received all its electric power from an experimental atomic power plant at the National Reactor Testing station 20 mi. away.

Starting July 18, 1955, electricity generated by the nuclear reactor operated by the General Electric Co. at West Milton, N.Y., was fed into the transmission lines of the Niagara Mohawk Power corporation. The power company paid three mills

per kw.hr. for it. The reactor was the prototype for the submarine, the "Sea Wolf."

A number of private firms announced their intention of entering the atomic power field. The Consolidated Edison Co. of New York disclosed its intention of spending \$40,000,000 on the construction of a nuclear power plant. It planned to start construction in 1956.

Plans were also being made for atomic power plants by the Detroit Edison Co. and associates, by the Commonwealth Edison Co. of Chicago, by the Consumers of Public Power District of Columbus, Neb., and by several other groups.

Dixon-Yates Contract Cancelled.—President Eisenhower ordered the cancellation of the Dixon-Yates contract on July 1, 1955. The contract, originally negotiated by the U.S. Atomic Energy commission by the president's order, provided for a private utilities group headed by Edgar Dixon and Eugene Yates to build a plant to feed electricity into the Tennessee Valley authority system to replace power going to the atomic plant at Paducah, Ky. The contract was the subject of a long and bitter controversy in congress. (See also BUDGET, NATIONAL; PHYSICS; PUBLIC HEALTH ENGINEERING; URANIUM.)

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Audio-visual Education: see MOTION PICTURES.

Australia, Commonwealth of. Australia is a realm of the Commonwealth of Nations, situated in the southern hemisphere. Areas and populations of the federated states, Northern Territory and Australian Capital Territory are given in the table. Apart from

State or territory	Capital (with pop. June 30, 1954, census, prelim.)	Area (in sq.mi.)	Population	
			(1947 census)	1954, census, prelim.
New South Wales	Sydney (1,863,217)	309,433	2,984,838	3,423
Victoria	Melbourne (1,524,062)	87,884	2,054,701	2,452
Queensland	Brisbane (502,353)	670,500	1,106,415	1,318
South Australia	Adelaide (484,535)	380,070	646,073	797
Western Australia	Perth (348,596*)	975,920	502,480	639
Tasmania	Hobart (95,223)	26,215	257,078	308
Northern Territory	Darwin (1,566†)	523,620	10,868	16
Australian Capital Territory	Canberra (28,277)	939‡	16,905	30
Totals		2,974,581	7,579,358	8,986

*Including Fremantle. †1947 census. ‡Including 28 sq.mi. at Jervis Bay (federal port, 90 mi. E.N.E. of Canberra). §Excluding aborigines: full-blooded (1947) 46, half-caste 271,179.

larger state capitals there was only one city with population more than 100,000 in 1954: Newcastle, N.S.W., 178,086. Territories under the administration of the commonwealth of Australia but not included in it comprise Papua and the trust territory of New Guinea (see PAPUA-NEW GUINEA), Norfolk Island (13 sq.mi.; population, 1954 census, 942), the island territory of Nauru (8 sq.mi.; population, 1954 census, 3,400), Ashmore and Cartier islands, Heard and Macdonald islands (159 sq.mi.), Cocos (Keeling) Islands (5 sq.mi.; pop., 1954 est., 624) and the Australian antarctic territory (2,472 sq.mi.). Language: English. Religion (1947 census): Anglican 2,957,032; Roman Catholic (including Greek rite) 1,586,000; Methodist 871,425; Presbyterian 743,540; Baptist 113,000; Church of Christ 71,771; Lutheran 66,891; Congregational 243; other Christian 198,769; Jewish 32,019; other non-Christian 4,543; indefinite and no religion 45,036; no reply 824. Queen, Elizabeth II; governor general in 1955, Field Marshal Sir William Slim; prime minister, Robert Gordon Menzies.

History.—Politically, 1955 was marked by the sudden e

ence of long-developing schism within the Labour party. Labour formed the opposition in the federal parliament, but at the beginning of the year occupied the treasury benches in five of the six state legislatures. After the parliamentary leader of the Labour party, Herbert Evatt, appeared as a barrister before the royal commission on espionage and defended various communists and communist sympathizers, the political wing of Catholic Action launched a campaign against Evatt both within and outside the party. Evatt, with the support of Catholic members of the Labour party who did not endorse the political deals and practices of Catholic Action, retaliated by having the party proscribe the "A. L. P. industrial groups," anticommunist activist squads within the trade unions, organized and directed by Catholic Action. Evatt claimed the groups were saboteurs that sought to capture the party. Six Catholic federal Labour members and one Protestant left the Labour party and formed a "corner" party which they styled the Australian Labour party (Anti-Communist).

At the same time, supporters of Catholic Action's political wing defected from the state Labour government in Victoria and thus precipitated a state election. Labour lost the election. But every Catholic Action Labour defector lost his seat, although most were men of high standing in "safe" seats—a state which generally was interpreted as evidence that the Australian electorate would never support splinter parties. Labour seemed vulnerable to disrupters from both left and right through its lack of a firm political platform; most of its harder objectives had been attained long before.

With all the superficial signs of boom the Australian economy for the second year in succession was in near equilibrium, after years of inflation which reached a climax in 1951. But the federal treasurer, Sir Arthur Fadden, warned of a persistent tendency for Australia to spend, especially abroad, more than it earned. Twice in the year the government decreed import cuts of increasing severity in an attempt to curb the drain on overseas funds.

With a declared objective of discouraging private spending, the budget, presented in August, contained no tax concessions. Further to discourage spending, the government asked the banks to restrict advances, especially advances to hire-purchase finance companies and for the financing of imports. From June 1953 to June 1956, credit issued by hire-purchase firms to the public had increased fourfold.

In June 1955 the federal parliament exercised for the first time its constitutional power to send to jail a citizen for breach of parliamentary privilege. By a vote of 55 to 12 (not in party lines), the house of representatives sent two men to jail for three months. Each was called separately to the bar of the house, and each confessed to publishing in a suburban newspaper articles "intended to influence and intimidate a member of parliament."

After 126 days' hearings, most of them in public, the royal commission on espionage ended. The commission was established to investigate allegations made by Vladimir Petrov, former third secretary at the Soviet embassy in Canberra, and his wife Evdokia, both of whom defected in April 1954. The report found that several Australian citizens both for profit and from political sympathy had aided the Soviet intelligence organizations; but none had committed an offense under existing law. The commission found that since the establishment of an Australian counterespionage organization in 1948-49, Soviet political espionage in Australia had been negligible. Knowledge of the alertness of Australian counterespionage had inhibited and frustrated successive Soviet agents, including Petrov. Petrov and his wife were unable to inform the commission on military espionage. They reported that they did not know who,

if anybody, within the embassy controlled it. Diplomatic relations with Australia, which the Soviet government "suspended" after the "Petrov provocation," remained suspended. But the day the royal commission report was tabled in the house of representatives, the U.S.S.R. for the first time since 1945 admitted Australian newspaper correspondents. This was five months after the general easing of restrictions on British and U.S. correspondents.

Natural increase (with a birth rate of 23 per 1,000) accounted for 55% of the population growth of 1,407,515 between the 1947 and 1954 censuses, and immigration for 45%. Australia's population was estimated to have reached 9,000,000 by late 1955.

In October the country received its 1,000,000th assisted migrant since World War II; she was an English girl. Of the 1,000,000 migrants, 49% came from the United Kingdom, 11% from Italy, 7% from the Netherlands and 7% from Poland. In the year ended in June 1955, Australia received 124,000 assisted migrants, 9,000 in excess of the target; the target intake for 1955-56 was 125,000. Of current intake, 49% were British, 16% Italians, 10% Germans and 9% Greeks (prosperity in the Netherlands and strong competition from Canada and New Zealand stemmed the flow of the non-British migrants most favoured by the government—the Dutch).

In October, for the first time in peace, Australia sent troops (all regulars) beyond Australian territory. A battalion was sent to Malaya; government statements did not make it clear whether they would join in the war against the Malayan communists or whether they were solely to help guard Malaya from external aggression. Since 1949 Australia had made a comparable token contribution to R.A.F. bomber strength in Malaya.

During 1955 secondary industry gained potential through the opening of a major new steel strip mill, a publicly owned aluminum production plant and two new oil refineries. There was in 1955 no workable production of oil.

In publishing, biographies and histories predominated in the serious field. There was a full-length biography by Patricia McCaughey of *Samuel M. McCaughey*, pioneer pastoralist; one of *John Macarthur*, pioneer sheepbreeder, by M. H. Ellis; and *Wainwright in Tasmania*, by Robert Crossland, a biography of a gifted convict whose character has long been disputed. *Select Documents in Australian History 1851-1900* was the second volume of C. M. Clark's collection. *Australia: A Social and Political History*, edited by G. Greenwood, was a symposium by six university history teachers. (R. J. GE.)

Education.—Schools (1952): government (including primary, secondary, junior technical) 7,620, pupils 1,087,990, teachers 38,407; private (all types) 1,926, pupils 347,831, teachers 13,714; vocational (1951) 146, students 159,310, teachers 6,784. Teachers' training colleges 15. Universities (1954): 10, students (full-time only) 16,976.

Finance and Banking.—Monetary unit: Australian pound, with an exchange rate of £A1.25 = £1 sterling, and £A0.45 = U.S. \$1. Budget: (1954-55 actual) revenue £A1,059,000,000, expenditure £A989,000,000; (1955-56 est.) revenue £A1,114,700,000, expenditure £A1,066,100,000 (excluding special appropriation of £A48,500,000 for commitments outside normal budget). Total public debt: (June 1954) £A3,606,800,000, of which £A351,200,000 to U.K.; (June 1955) £A3,749,400,000. Currency circulation: (Oct. 1954) £A353,000,000; (June 1954) £A345,000,000. Bank deposits: (Nov. 1954) £A1,231,000,000; (June 1954) £A1,241,000,000. Gold and foreign exchange holdings: (Sept. 1954) U.S. \$1,131,000,000; (Dec. 1954) \$1,133,000,000.

Foreign Trade.—(1954) Imports £A752,700,000, exports £A741,900,000. Main sources of imports: U.K. 47%; other sterling area 15%; U.S. and Canada 14%; France and other continental European Payments union countries 14%. Main destinations of exports: U.K. 37%; other sterling area 17%; France 8%; other continental E.P.U. 16%; U.S. and Canada 8%. Main exports: wool 48%; wheat 7%; butter 3%.

Transport and Communications.—Roads (1954): 813,500 km. Licensed motor vehicles (June 1954): cars 1,199,833, commercial vehicles 606,899. Railways (1954): 43,780 km.; freight, 10,092,000,000 ton-km. Shipping (July 1954): merchant vessels of 100 gross tons and over 384; total tonnage 594,129. Air transport (1953): kilometres flown 80,840,000; passenger-kilometres 1,484,710,000; freight, 54,725,000 ton-km.

Telephones (June 1954): 1,475,513. Licensed radio sets (1953): 1,968,000.

Agriculture.—Main crops (metric tons, 1954): wheat 4,534,000; oats 490,000; barley 588,000; maize 110,000; potatoes 457,000; sugar (raw value, 1954) 1,343,000. Livestock (Sept. 1954): sheep 126,890,000; cattle 15,589,000; horses 825,000; pigs 1,185,000. Wool production (metric tons, clean basis, 1954): 323,000. Dairy production (metric tons, 1954): milk 6,012,000; butter 180,000; cheese 49,200. Meat production (metric tons, 1954): beef and veal 734,400; pork 92,400; mutton and lamb 387,600.

Industry.—(1954) Fuel and power: coal (metric tons) 20,058,000; lignite 9,480,000; manufactured gas 1,224,300,000 cu.m.; electricity 14,465,000,000 kw.hr. Raw materials (metric tons): pig iron 1,889,000; crude steel 2,257,000; copper (smelter) 39,430; refined lead 242,900; zinc (smelter) 106,300; tin concentrates (1953. Sn content) 1,500; gold (1954) 1,116,100 fine oz. Manufactured goods (metric tons, 1954): wool yarn 20,110; cement 1,913,800. New dwelling units completed (1954): 77,086.

Austria. A republic of central Europe, Austria is bounded north by Germany and Czechoslovakia, east by Hungary, south by Yugoslavia and Italy and west by Switzerland. Area: 32,374 sq.mi. Pop.: (1951 census) 6,933,905; (1954 est.) 6,969,000. Language: German 98%, other 2% (mainly Slovene in Carinthia). Religion (1939): Roman Catholic 88.27%, Protestant 5.35%, Jewish 1.26% (0.2% in 1945), other 5.12%. Principal towns (pop., 1951 census): Vienna (cap.) 1,766,102; Graz 226,453; Linz 184,685; Salzburg 102,927; Innsbruck 95,055; Klagenfurt 62,782. President in 1955, Theodor Körner; chancellor, Julius Raab.

History.—In a speech to the supreme soviet on Feb. 8, 1955, V. M. Molotov, Soviet minister for foreign affairs, declared that the delay in concluding the Austrian state treaty was unjustified but that guarantees must be found against another *Anschluss* and against Austria's participation in any coalition before the treaty could be signed. While amplifying these remarks to the Austrian ambassador in Moscow, Molotov brought to the fore the dramatic reversal of the Soviet policy towards Austria—agreement between the powers about Germany was no longer regarded by the Soviet government as an indispensable prerequisite to the conclusion of the Austrian treaty. On March 24 Raab was invited to visit Moscow. This invitation was accepted and on April 11 an Austrian delegation consisting of Raab; Leopold Figl, the foreign minister; Adolf Schaerf, the vice-chancellor; and Bruno Kreisky, a secretary of state, flew to Moscow. The communique issued April 15 disclosed results which in view of previous Soviet intransigence surpassed the wildest hopes. The Russians were not only prepared for a speedy conclusion of the treaty and evacuation of Austria by all foreign troops by the end of the year; they would also release all Austrian prisoners of war and civilian internees held in the U.S.S.R. and they were prepared to grant substantial improvements in the economic clauses of the treaty.

The three western powers, on being invited by the U.S.S.R. to a conference of foreign ministers to be held in Vienna, counterproposed a preparatory meeting of ambassadors. This took place and after some initial difficulties the treaty was ready for signature by the foreign ministers. On May 14 the foreign ministers arrived in Vienna and the following day the treaty was signed at the Belvedere palace.

Throughout Austria the signing of the treaty was received with great enthusiasm. There was music and dancing in the streets, buildings were bedecked with flags and all church bells were rung for 15 minutes. Immediately after the signing ceremony the foreign ministers appeared on the balcony of the Belvedere and were acclaimed by the vast crowd below. They then drove through the crowded streets to a luncheon given by the president of the republic at the *Hofburg* and in the evening as guests of the government they attended a great banquet at Schönbrunn palace.

The state treaty proper together with two other instruments, the declaration of neutrality and the Austro-Soviet agreement

concluded in Moscow, thenceforward regulated Austria's status in the postwar era. The state treaty provided for the establishment of a sovereign and democratic Austria within the frontiers of 1938. The *Anschluss* was forbidden and rights of non-German minorities were guaranteed. Austria was allowed to keep an armory of whatever size it wished, but atomic and other special weapons were forbidden. There were no reparations but Austria had to buy back from the U.S.S.R. the former German properties which had been under Soviet control and pay for them \$150,000,000 (their value was estimated to be only \$40,000,000, but was in the old draft treaty this sum had to be paid in currency to the U.S.S.R. now accepted payment in goods instead). A further sum of \$2,000,000 was to be paid by Austria for the unconditional return of the assets of the Danube Shipping Company. The oil fields of eastern Austria, including refineries and the distributing company with its numerous filling stations, were to revert to Austria against deliveries of 10,000,000 tons of crude oil to the U.S.S.R. for a period of ten years.

The neutrality declaration, which came into force on Nov. 30, 1955, became an integral part of the constitution and approximated the position of Austria to that of Switzerland. It contained the following passages: "With the object of the lasting and perpetual maintenance of its independence . . . Austria declares that it will on its own free will its perpetual neutrality and will maintain and defend it with all the means at its disposal; Austria will never join a military alliance or allow the establishment of military bases of foreign states on its territory." It was further emphasized that Austria's neutrality was compatible with membership in the United Nations.

The withdrawal of occupation troops was completed by October 25, 1955, and the responsibility for setting up an army now devolved upon the Austrian government. Conscription was introduced by the Armed Forces act of Sept. 7 and fixed for a period of 18 months. Existing gendarmerie and frontier guards provided the nucleus of the new army.

Difficult problems were raised by the return of the former German and then Soviet properties into Austrian hands. Immediately after the signing of the treaty the German Federal government vigorously protested against a clause contained therein which prohibited the return to German ownership of any assets worth more than \$10,000. This clause was aimed at preventing German economic penetration of Austria. Raab pointed out to the Germans that these assets had been handed over by the Potsdam agreement to the U.S.S.R. which had then sold them to the Austrians on condition that they were not to go back to the Germans.

In terms of the proportion of their share capital the Soviet properties represented 100% of the oil industry, 59% of the leather goods industry, 40% of iron and other metal goods, 30% of machine and machine-tool production and 17% of machine industry. Some of the firms concerned were to be nationalized under the Nationalization act of 1946; others were to revert to their pre-German owners, while the future of yet another group was uncertain. Many of the factories required considerable investments to make them competitive in a free market and their requirements would compete with those of the other Austrian industries. On the other hand, it was estimated that these undertakings had, while under Soviet control, handled annually \$20,000,000 as profits abroad.

The integration of the Soviet properties into the Austrian economy must be seen in a context of continuing economic expansion with inflationary tendencies already apparent. At the end of June the number of those registered as seeking work was 76,572, representing a decrease of 36% over the same figure of the previous year. But a shortage of certain types of skilled labor



FLAG-WAVING CROWD in Vienna, May 15, 1955, as treaty granting Austrian independence was signed at Belvedere palace

was already noticeable. Liberalization of foreign trade continued apace, the percentage of goods that could be imported from O.E.E.C. (Organization for European Economic Cooperation) countries without license being brought up to 90%. Signs of prosperity such as the ever-increasing figures for the registration of new cars were not wanting and some anxiety regarding the balance of payments position was being felt in the latter part of the year.

An important question raised by the ending of the period of foreign occupation was that of the continuance of the government coalition between the Christian Democrats and the Social Democrats. It was felt in some quarters that little good would come of Austria's regained liberty if it presaged a return to the conditions of internal political warfare which had marked the first republic. Fortunately there were no signs of a major crisis. Local elections in Styria and Lower Austria showed a further strengthening of the two coalition parties at the expense of the communists and the neo-Nazi group (*Verband der Unabhängigen*).

It was a happy coincidence that the Austrian liberation was completed at the same time as the rebuilding of the two great theatres which formed its particular glory, the Vienna Burgtheater and the Vienna state opera. The former was opened with *König Ottokars Glück und Ende*, a patriotic piece by Grillparzer eulogizing Austria's historic mission. The opening performance on Nov. 5 in the new opera house—claimed to be the most modern in the world—was turned into a national festival. Composers, singers and opera directors from all over the world, as well as the leading personalities of industry and politics, filled the audience. Beethoven's *Fidelio* was performed and it was hoped that this paean on freedom with its final triumphant chorus would in some way echo the feelings and aspirations of a new free nation.

(V. T. E.)

Education.—Schools (1953): primary 5,202, pupils 813,310, teachers 35,935; secondary 171, pupils 73,020; vocational (postprimary) 527, pupils 122,498; teachers' training colleges 51, students 4,648. Institutions of higher education (1953) 14, students 20,011, teachers 3,041.

Finance and Banking.—Monetary unit: *schilling*, with an exchange rate of 72.58–73.02 to the pound sterling and 26.08 to the U.S. dollar. Budget (1954; 1955 est. in parentheses): revenue 20,016,500,000 schillings (18,408,800,000 schillings); expenditure 20,770,700,000 schillings (19,657,300,000 schillings). Internal debt (1954) 11,618,300,000 schillings; external debt 2,052,300,000 schillings. Gold and foreign exchange holdings (Mar. 1955) U.S. \$359,000,000. Currency circulation (Dec. 1954; Feb. 1955 in parentheses): 11,980,000,000 schillings (11,730,000,000 schillings). Bank deposits (Dec. 1954; Feb. 1955 in parentheses): 16,-

440,000,000 schillings (16,720,000,000 schillings).

Foreign Trade.—(1954) Imports 16,988,000,000 schillings; exports 15,852,000,000 schillings. Main destination of exports: Germany 24%; Italy 17%; other continental European Payments Union countries 20%; U.S. and Canada 5%; Latin America 4%; U.K. 4%. Main sources of imports: Germany 36%; Italy 8%; other continental E.P.U. 18%; U.S. and Canada 10%; U.K. 5%; Latin America 4%.

Transport and Communications.—Roads (1953): 28,500 km. Motor vehicles in use (1953): cars 74,500; commercial vehicles 52,200; Federal railways (1954): 6,026 km.; passenger-km. (1953) 5,032,000; freight, ton-km. 5,213,000. Telephones (Jan. 1954): 458,006. Licensed radio receiving sets (1953): 1,629,000.

Agriculture.—Main crops (metric tons, 1954): wheat 451,000; barley 313,000; oats 334,000; rye 369,000; maize 134,000; beet sugar (raw) 211,000; potatoes (1953) 3,293,000; grapes for wine (1953) 89,000. Livestock (Sept. 1954): cattle 2,300,000; sheep 297,000; pigs 2,643,000; horses 259,000; mules and asses 2,000; goats (1953) 311,000; poultry (Sept. 1953) 8,000,000.

Industry.—Fuel and power (1954): coal 173,300 metric tons; lignite 6,284,000; electricity 7,703,000,000 kw.hr.; manufactured gas 328,900,000 cu.m.; crude petroleum (1953) 3,000,000 metric tons. Raw materials (metric tons, 1954): iron ore, 30% metal content, 2,722,000; pig iron 1,355,700; crude steel 1,653,000; aluminum 57,200; copper (electrolytic) 8,300; magnesite (1953) 812,800; timber (1953) 9,900,000 cu.m. Manufactured goods (metric tons, 1954): woven cotton fabrics 13,800; cotton yarn 21,200; wool yarn 10,900; rayon staple fibre 36,800; cement 1,617,800; paper, including newsprint (1953) 298,000; nitrogenous fertilizers (N content, 1953–54) 107,800.

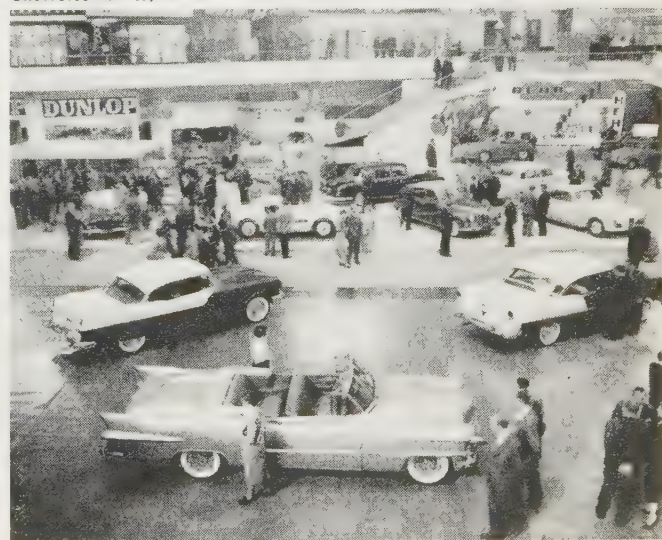
Autobiography: see AMERICAN LITERATURE; etc.

Automobile Accidents: see ACCIDENTS.

Automobile Industry. The most eventful year in recent automobile industry history, 1955 saw cars produced in the United States faster than ever before. From the beginning of the year, manufacturers turned out vehicles at a higher rate than they had in 1954. Almost monthly, too, more cars were produced than in the same month of 1950, previous top production year.

Not until the end of August, when a number of large producers shut down for changing over to the 1956 models, did a week's output drop below that of the corresponding week of the preceding year. By that time, 1955 car production had passed the entire 12-month 1954 total, previously third in all-time production. September, the height of change-over time, saw output drop to its slowest pace of the year, but by the end of the month the passenger car total was pushing the 6,000,000 mark and approaching the runner-up year of 1953. As the car makers swung into full production of their 1956 lines in October, it appeared certain that the record total of 6,665,863 achieved in 1950 would be eclipsed early in November and that the 1955 final figure would approach or exceed 8,000,000.

INTERNATIONAL AUTOMOBILE EXHIBITION at Frankfurt, Ger., in Sept. 1955. Shown in the foreground are three products of General Motors corp., U.S. Left to right: Pontiac hardtop, Cadillac "El Dorado" sports convertible, Chevrolet hardtop





"TINKERS TO EVERS TO CHANCE," a comment on the proposed guaranteed annual wage for auto workers by Green of the *Providence (R.I.) Journal* in 1955

Trucks and buses, while not built at a record-breaking pace, nevertheless ran ahead of the 1954 performance. An anticipated volume of 1,250,000 commercial vehicles was expected to put the grand total of U.S. vehicle production for the year over 9,000,000. More than 150,000,000 vehicles had been produced by the industry in its 56-year recorded history, about 62,000,000 of which were still in service at the end of 1955.

The record-smashing production and sales were achieved only by dint of aggressive selling efforts by manufacturers and dealers throughout the country. In view of the high production in 1953 and 1954, it was felt in some quarters that the saturation point of the new car market was being approached. Particularly in late summer and early fall was this opinion manifested, when automobile dealers offered large discounts in price and extremely liberal credit terms in the "clean-up" of 1955 stock before the appearance of the 1956 models.

In volume of production and sales, practically every manufacturer improved significantly on his 1954 performance, but there was some adjustment of the different companies' "shares" of the market, percentage-wise. Again the big three—General Motors corporation, Ford Motor company and Chrysler corporation—divided between 94% and 95% of the passenger car sales.

Foreign cars, led by the German Volkswagen, made an appreciable gain in the United States market in 1955. Increasing their sales by more than 80% over 1954, the import cars accounted for 0.62% of the United States total, as compared with 0.48% a year earlier. Almost half the foreign cars sold in the country were Volkswagens.

Employment.—The year was marked by negotiation of new labour contracts between all major automobile companies and the United Automobile Workers of America. The previous contracts of General Motors and Ford expired almost simultaneously in the spring. Seeking a guaranteed annual wage for its members, the union did not reach that objective, but was able to win a provision in the new contracts for payments to supplement state unemployment compensation during periods of idleness. In both cases the supplemental payments were to bring unemployment income up to 60% to 65% of regular wages. Both General Motors and Ford reached agreement with the U.A.W. very shortly after expiration of the old contracts, and were able to avoid strikes of any great consequence. Both companies made concessions amounting to wage increases of about 20 cents an hour, counting the unemployment pay, annual improvement factor, pension plan increase and other benefits.

Payments by these companies into the unemployment fund began in June. Workers would become eligible for supplemental unemployment payments June 1, 1956. Chrysler, third member of the big three, reached a contract similar to the General Motors and Ford pacts on Sept. 1. However, the American Motors corporation (Nash and Hudson) agreement, signed about the same time, provided for postponement of payment to the company into the supplemental unemployment compensation fund until Sept. 15, 1956, with payments to workers not to begin until a year later. The other manufacturers (Studebaker-Packard corporation and Willys Motors, Inc.) still were involved in negotiations at the middle of October, but it seemed likely that Studebaker-Packard, at least, would agree to a supplemental unemployment pay supplement.

With production going at a fast pace throughout practically the entire year, average employment in the industry was about 910,000, including more than 700,000 production workers. Both figures were among the highest in history.

Engineering.—Continuing increases in horsepower, severe new V-8 engines, and the passing of the straight eight were prominent engineering events of 1955. Chevrolet, biggest producer and seller in the auto industry for many years with six, came out with its first 8-cylinder engine, a 162-h.p. V-8, and Plymouth, the Chrysler corporation entry among the popular "low priced" cars, joined Ford and Chevrolet in the V-8 class with two V-8's, of 157 and 167 h.p. Ford, in turn, raised its V-8 to 162 h.p., or 182 h.p. with power pack. All three offered power packs for 10 to 20 additional horsepower.

The power pack, usually consisting of a 4-barrel carburetor, a modified intake manifold and a dual exhaust system, was offered by practically every manufacturer and proved to be very popular.

Table I.—Monthly Factory Sales of U.S. Vehicles

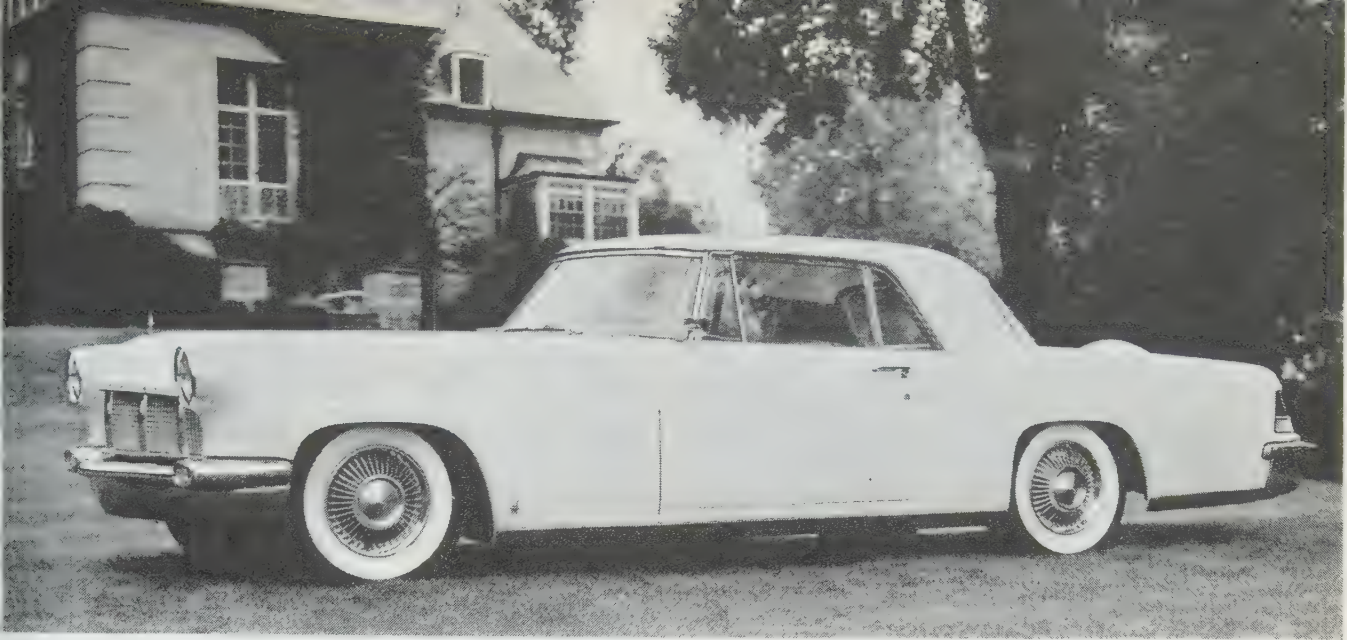
	1954	1955	Percentage increase
January	551,134	725,379	31.6
February	534,145	744,942	39.5
March	633,054	894,597	41.3
April	631,769	881,840	39.8
May	588,611	849,393	44.4
June	598,876	767,182	28.1
July	530,415	768,621	44.9
August	521,450	716,163	37.3
September	369,942	600,000*	—
October	287,705	—	—
November	587,785	—	—
December	766,185	—	—
Total	6,601,071	9,000,000†	—

*Estimated. †Not available. ‡Forecast.

Table II.—Motor Vehicle Registrations in U.S.

Privately owned vehicles				
Year	Passenger cars	Buses*	Trucks	Total
1910	458,377	—	10,123	468,500
1920	8,131,522	—	1,107,639	9,239,161
1930	22,972,745	40,507	3,518,747	26,531,999
1940	27,372,397	72,641	4,590,386	32,035,424
1942	27,868,746	102,093	4,608,086	32,578,925
1943	25,912,730	106,702	4,480,176	30,499,608
1944	25,466,331	106,581	4,513,340	30,086,252
1945	25,691,434	112,253	4,834,742	30,638,429
1946	28,100,188	119,937	5,725,692	33,945,817
1947	30,718,852	128,983	6,512,628	37,360,463
1948	33,213,905	132,603	7,209,961	40,556,469
1949	36,312,380	135,002	7,692,569	44,139,951
1950	40,185,146	143,206	8,272,153‡	48,600,505
1951	42,525,217	143,290	8,657,921‡	51,326,428
1952	43,653,545	145,227	8,853,063‡	52,651,835
1953	46,289,129	141,255	9,195,697‡	55,626,081
1954	48,323,909	140,003	9,444,394‡	57,908,306
Privately and publicly† owned vehicles				
1942	27,976,259	139,274	4,887,067	33,002,600
1943	26,009,073	152,324	4,726,737	30,888,134
1944	25,566,464	152,592	4,760,250	30,479,306
1945	25,793,493	162,125	5,079,802	31,035,420
1946	28,213,336	173,585	5,986,081	34,372,902
1947	30,845,350	187,457	6,808,691	37,841,498
1948	33,350,894	196,726	7,537,911	41,085,531
1949	36,453,351	208,929	8,028,016	44,690,296
1950	40,333,591	223,652	8,637,969‡	49,195,212
1951	42,682,591	230,461	9,035,744‡	51,948,796
1952	43,817,580	240,485	9,243,264‡	53,301,329
1953	46,460,094	244,251	9,608,936‡	56,313,281
1954	48,498,870	248,346	9,875,331‡	58,622,547
1955§	50,954,000	252,000	10,128,000	61,334,000

*Incomplete. Many states did not segregate buses from passenger cars or trucks in years. †Includes farm trucks registered at a nominal fee in five states. ‡Excludes military vehicles. §Preliminary. Source: U.S. Bureau of Public Roads.



ONTINENTAL MARK II, introduced by the Ford Motor company in Oct. 1955. Similar to its predecessor, the Lincoln Continental, out of production since 1948, the Mark II was about 18 ft. long and 4 ft. 8 in. high, lowest of all U.S. mass-produced cars

more popular than the companies had hoped. So great was the demand for the engines with the additional power that dealers found it impossible to fill all their power pack orders.

Larger, more powerful cars met public demand for improved power and performance by offering optional engines which provided as much as 300 h.p.

Average compression ratio of all U.S. makes went up from 6.64 to 7.96, with two cars boasting the high ratio of 9.0:1. The highest in 1954 had been 8.7. In 1954 the lowest compression ratio in the industry was 6.8, but in 1955 none was below 7.20. The average 1955 American car could deliver up to 173.1 brake h.p., a rise of 22.3 over 1954. Engine displacement went up only .6 in. to 270.7 while speed at maximum horsepower rose 264 p.m. to 4,279. Average car weight for engine power went down from 24.88 to 22.05 lb. per horsepower.

One new development that might be the harbinger of another trend appeared in 1955. This was the torsion bar suspension introduced by Packard. The new suspension, which eliminates the springs used in the conventional type, is designed to smooth out and level the ride, regardless of roughness of the road. Small electrically-driven hydraulic pumps are incorporated into the suspension to level the car laterally as well as longitudinally.

The automatic transmissions continued their rapid rise in

popularity, 69% of the new cars sold during the year being equipped with this feature. Total sales of the "automatics" increased from 3,200,000 in 1954 to about 5,500,000 in 1955.

Newer conveniences such as power brakes and power steering likewise were in greater demand than in 1954. During 1955, about 24% of new car purchasers asked for power brakes and 25% requested power steering. These were up from 18% and 19% respectively a year earlier.

Air conditioning, relative newcomer in the field of added conveniences to the motorist, showed a sharp increase in demand. More than 175,000 of the units were installed in new cars purchased during the year, more than triple the 1954 sales of automobile air conditioning. Less spectacular but still significant was the rise in sales of power-adjusted seats and powered window lifts, both of which passed the 500,000 mark for the first time.

Tubeless tires became standard throughout the industry in 1955, and 12-v. electrical systems were incorporated in all makes of one large manufacturer.

The tremendous upsurge in customer demand for power assists continued a trend that had been evident since the end of World War II. The automatic transmission, first in the parade of recent developments designed to lighten the driver's work, made its first appearance in the late 1930s. As late as 1949, only one new car out of four was an "automatic," but by 1954 the proportion had risen to 58%, and the 69% for 1955 indicated

that predictions of 100% automatic transmissions in the future might not be far wrong.

Even the Chevrolet-Ford-Plymouth group installed automatic transmissions in more than half of their output. Average for the rest of the industry was close to 90%.

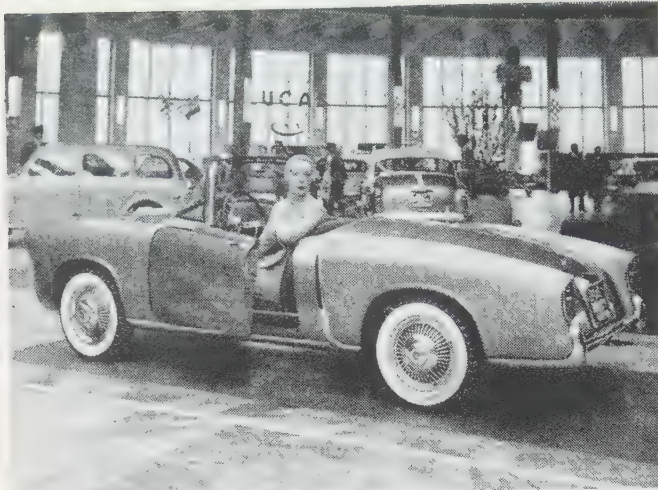
The trend toward more luxury in motor cars is illustrated also by the shift to 8-cyl. engines. Only 32% of new car sales in 1940 were eights. In 1947 the proportion had risen only to 35.7%. The postwar swing to more powerful cars is reflected by increase to 61% eights in 1954 sales, and in 1955, with Chevrolet and Ply-

Table III.—Exports and Imports of Motor Vehicles by Producing Countries

	1954 Exports				1954 Imports			
	Passenger cars	Trucks	Buses	Total	Passenger cars	Trucks	Buses	Total
United States	173,312	180,109	4,541	357,962	34,554	479	0	35,033
Canada	19,037	9,703	0	28,740	38,519	6,371	292	45,182
Subtotal	192,349	189,812	4,541	386,702	73,073	6,850	292	80,215
Australia	—	—	—	—	107,803	33,169	—	140,972
Austria	48	1,764	—	1,812	24,527	4,825	—	29,352
Belgium	11,240	2,445	8	13,693	93,878	18,773	78	112,729
Czechoslovakia	—	—	—	—	—	—	—	—
Denmark	1,242	322	—	1,564	39,214	17,343	206	56,763
Finland	0	0	0	0	12,288	2,251	—	14,539
France	105,276	33,715	1,225	140,216	7,716	529	37	8,282
Germany (west)	246,537	51,617	—	298,154	4,658	757	—	5,415
Hungary	—	—	—	—	—	—	—	—
India*	0	0	0	0	10,546	4,516	—	15,062
Italy	40,758	3,058	320	44,136	1,947	412	94	2,453
Japan	161	848	97	1,106	14,976	1,267	74	16,317
Netherlands	4,888	1,174	53	6,115	36,175†	14,151	54	50,380†
Norway	0	0	0	0	13,912	7,557	393	21,862
Poland	—	—	—	—	—	—	—	—
Spain	—	—	—	—	6,013‡	2,217‡	—	8,230‡
Sweden	2,365	5,785	—	8,150	85,187	5,566	—	90,753
Switzerland	—	52	—	52	40,205	3,873	—	44,078
U.S.S.R.	—	—	—	—	—	—	—	—
United Kingdom	366,084	123,652	3,080	492,816	4,660	684	—	5,344
Yugoslavia	0	0	0	0	271	330	29	630
Subtotal	778,599	224,432	4,783	1,008,814	503,976	118,220	955	623,161
Grand total	970,948	414,244	9,324	1,394,516	577,049	125,070	1,257	703,376

*Fiscal year March 1955. †Omits exports of vehicles assembled from parts for assembly imported. ‡First seven months of 1954.

Source: Automotive Division, U.S. Department of Commerce.



ITALIAN FIAT SPORTS CAR displayed at 1955 automobile show at Torino, It., in 1955. The cars of 67 manufacturers were shown

mouth in the 8-cyl. field for the first time, 75% of all new cars sold boasted eight cylinders.

A shift in the market pattern during 1955 was further illustrative of the public's desire for more of everything in its cars. The popular low-priced three—Chevrolet, Ford and Plymouth—obtained a smaller share of the market than a year earlier. Combined sales of the three makes were 57.5% of the U.S. total in 1954. Despite the fact that they all sold more cars in 1955, their percentage of the market declined to about 52. This change was evident in all sections of the country.

New emphasis was placed on safety features by the automobile industry in 1955. Some makes of cars offered safety seat belts as optional equipment, and several had padded instrument panels to minimize the likelihood of injury in collisions. Safety research during the year gave promise that new features would be forthcoming to protect driver and passengers. Practically every manufacturer worked on development of a safety door latch that would not open from the impact of a collision. At least one make had safety latches as standard equipment beginning in June.

Styling.—The vast majority of all cars produced in the United States during the year had more than one colour. Some makes offered optional three-tone paint, and others, while confined to two colours, were divided into three-colour areas. The choice of colours was expanded, also, with many colours appearing that previously had never been seen on automobiles.

The popularity of the hardtop, or sport coupé, increased tremendously during the year, this style taking second place in sales behind the four-door sedan. Two cars offered a four-door hardtop for the first time, and the new body style won wide and eager public acceptance from the start.

The hardtop had as its principal structural feature elimination of the centre post extending to the top of the car. Unlike the "soft-top" convertible, it had a steel roof, but still gave the feeling of openness characteristic of the convertible. Before 1955, no manufacturer had ventured to suspend doors from the centre post, secured only at the lower end.

Tinted heat-absorbing glass likewise gained in popularity during 1955. A year earlier, slightly more than 2,000,000 buyers asked for the special glass. The total was well over 3,000,000 in 1955. (See also MOTOR TRANSPORTATION.) (C. F. KE.)

Automobile Insurance: see INSURANCE.

Automobile Racing.

A series of accidents resulting in a heavy toll among drivers and spectators alike threatened to bring the sport to a complete

stop in 1955. Included among the casualties was the American champion, Bill Vukovich, who was seeking his third straight victory in the Indianapolis (Ind.) 500-mi. classic on May 3. Leading the field after 140 mi., Vukovich ran into a four-car tangle of wreckage on the backstretch. Vukovich's death was the second attributed to the 1955 race, for Manuel Ayulo of Buena Park, Calif., had died on May 17 after crashing into a retaining wall during a practice run the day before.

Alberto Ascari, Italian ace and only pilot ever to capture the world championship two consecutive years (1952–53), was killed on May 26 while testing a borrowed car at Monza, It. Among the many other drivers killed during the year were such stars as Armando Francois, Italy; Mario Alborghetti, Italy; Mike Keen, Great Britain; Charley Miller, United States; Jerry Hoyt, United States; Piero Valenzano, Italy; and Jack McGrath, United States.

The worst accident in the sport's history took place at Le Mans, Fr., on June 11 when a Mercedes crashed into another racer, burst into flames and catapulted over a retaining wall into the crowd. The toll from flaming gasoline and flying debris was 82 dead, including the driver of the Mercedes, Pierre Levegh of France. Mike Hawthorne of Britain went on to win the 24-hr. sports car grind in a Jaguar. On June 13, the French government banned all racing until safety rules to prevent repetition of such a tragedy could be drawn up. On July 1, Italy barred all open road racing for the balance of 1955 after a temporary suspension had been put into effect on June 1. The American Automobile association announced (Aug. 3) that it would sever all connections with the sport after 1955.

Averaging 128.209 m.p.h. in a John Zink Special and driving without relief, Bob Sweikert of Indianapolis took top honor in the 1955 Indianapolis 500-mi. race. His total elapsed clocking was 3 hr. 53 min. 59.53 sec. Sweikert won \$76,138 in prize money. An all-time record total of \$270,050 was distributed for the blue-ribbon event of American racing. Tony Bettenhausen, Terre Haute, Ind., who was relieved by Paul Russo, drove a Chaparral Special to second place. Jimmy Davies, Pacoima, Calif., was third in a Bardahl and John Thomson, Springfield, Mass., was fourth in a Schmidt Special. Walter Faulkner, Long Beach, Calif., piloting a Merz Special, was fifth among the 14 drivers to finish. Sweikert proved one of the year's top scorers. Driving his Zink Special he won the 100-mi. race at the New York State fair (Syracuse) in 1 hr. 6 min. 43 sec. It marked his second straight triumph in the event. Among his many other victories was that at the Heidelberg raceway in Pittsburgh, Pa., on Aug. 14, when he drove to three track records.

Two world standards for stock cars went by the boards on Aug. 27 at St. Paul, Minn. Jerry Draper, East Moline, Ill., set a mark of 5 min. 10.88 sec. in the first heat of 10 laps (5 miles). Then Ernie Derr, Keokuk, Ia., improved that time in the second heat when he was caught in 5 min. 03.58 sec. Bob Hilmer, Dysart, Ia., set a new time of 6 min. 15.93 sec. in the consolation race of six miles. The records are International Congress of Automobiles association marks. Tim Flock, Atlanta, Ga., Jimmy Bryant, Phoenix, Ariz., Tommy Hinnershitz, Reading, Pa., John Thomson, Springfield, Mass., Jimmy Romaine, Youngstown, Pa., Frank Mundy, Atlanta, and Carroll Shelby, Inglewood, Calif., were other drivers consistently among the leaders in 1955 racing.

Major Speed Records.—The usual number of trials at Bonneville Salt Flats in Utah were missing. However, a Dodge stock car, selected at random from an assembly line, passed the 15,000-mi. mark for a marathon run and broke two world unlimited records that had stood since 1937. The car averaged 102.80 m.p.h. for 15,000 mi. and 102.92 m.p.h. for six days. Previous standards were 87.91 m.p.h. and 88.33 m.p.h.

Pan-American Road Race.—Umberto Maglioli won



SPECTATORS RUNNING from burning racer at Le Mans, Fr., just after the car crashed June 11, 1955, during the annual Le Mans endurance race. Eighty-two persons were killed in the worst motor racing disaster in history.

18,000 top prize in the 1954 race from Tuxtla Gutierrez to Cuernavaca in Mexico that ended Nov. 23, 1954. The Italian speedster pushed his Ferrari to a record elapsed time of 17 hr. 40 min. 26 sec. to better the mark of 18 hr. 11 min. for unlimited sports cars set in 1953. Ray Crawford, Pasadena, Calif., won with a Lincoln among U.S. big stock cars and Tommy Drisdale, El Paso, Tex., drove a Dodge home first in the smaller group. Gonzalvo Sanesi, Italy, in an Alfa Romeo, won in the European stock car class and Hans Hermann, Germany, drove a Porsche to victory in the European small sport car division. The tortuous grind cost the lives of five competitors and several spectators. The Mexican government suspended the 1955 event, barring all racing from federal highways until ample assurance of safety for spectators could be given.

Major Grand Prix Races, 1955.—Following is a résumé of the leading events:

British (Aintree)—Sterling Moss, England's top driver, defeated his Mercedes-Benz teammate and world champion, Juan Manuel Fangio of Argentina, by a half length. Moss was the first Briton to win since this race was started in 1948.

Belgian (Francorchamps)—Fangio led all the way to take the 315-mi. test, with Moss second.

Swedish (Kristianstad)—The Mercedes-Benz continued its domination of the world racing scene as Fangio won, with Moss 10 yd. behind at the finish.

Dutch (Zandvoort-on-Sea)—Fangio beat Moss, with Italy's Luigi Musso, in a Maserati, third.

European (Monte Carlo)—Maurice Trintignant, France, in a Ferrari, won with a record average of 65.66 m.p.h. Fangio, Ascari and Moss failed to finish.

Naples—Ascari drove a Lancia to victory.

Tour de Sicily (Palermo)—Won by Italy's Piero Taruffi, driving a Ferrari.

Argentine (Buenos Aires)—Fangio triumphed as Guiseppe Farina, Italy, brought a Ferrari in second.

Mille Miglia (Brescia, It.)—Moss and his Mercedes scored a record-breaking victory in the road race of about 1,000 mi. on May 1, roaring over the course at 98.53 m.p.h. to beat the former mark of 87.96 m.p.h. John Fitch, U.S., was first in the grand tourism class for cars above 1,300 c.c. He drove a Mercedes.

Italian (Monza)—Fangio won the 26th annual event on Sept. 11, with Taruffi a close second. The race was held on a new closed course. The triumph put Fangio far ahead of all rivals for the 1955 world driving championship.

Watkins Glen (New York)—Top prize in the eighth annual race in upstate New York was won by Sherwood Johnson, Greenwich, Conn., who drove a Jaguar D. (T. V. H.)

Aviation, Civil. In the closing year of the first full decade following World War II, the air transportation industry in the United States continued a growth in passenger and freight traffic that, having begun uncertainly in the opening years of the decade, had by 1955 acquired stability, direction and extraordinary scope.

This growth was impressive and prescient of growth to come. Gross revenues for the industry in 1954 were in excess of \$2,500,000,000. The profit picture was somewhat complicated, however, by differing conditions affecting trunk lines and local service, regional, territorial and helicopter air lines. The large United States carriers did well, independent of subsidy.

Since Dec. 31, 1945, the U.S. air lines had invested more than \$850,000,000 in new equipment and in related facilities. Over the period 1939 to 1955, however, the price of the average air line ticket in the United States rose only 3.7%, and in 1955 the average price of an international ticket was actually 24.2% less than it was in 1939. With the growth of low-fare air coach or tourist-class service, it was clear by the end of 1955 that the price of the average fare would continue low in relation to the service provided and to the cost of other comparable services and commodities.

The air transport industry in the United States was gradually overcoming one of its economic problems: government subsidy. The domestic trunk line system in 1955 was virtually 100% free of subsidy, although the system of local service air lines was still dependent on government assistance.

This pronounced over-all trend toward subsidy-free operation was perhaps the most encouraging economic portent the industry had. Earl D. Johnson, president of the Air Transport Association of America during 1954, said in his annual message that "the ability of the industry to pay its own way is particularly important in view of the heavy expenditures anticipated if the air lines are to fulfil their promise of still greater usefulness. It is expected that at a minimum the U.S. domestic industry must spend one and a half billion dollars during the next ten years for new flight and related equipment."

Johnson's appraisal found an international echo in the report of Sir William Hildred, director general of the International Air Transport association, on the occasion of the tenth anniversary of that organization: "We are an industry," Hildred said, "that has to live by expansion; we cannot afford to rest on our laurels. It is our duty, and it is expected of us, ever to provide quicker and more efficient service for passengers, cargo and mail with the most up-to-date equipment available. We are still aiming at cheaper passenger service and at opening up the cargo market in a big way. Our capital expenditures on long-haul aircraft last year [1954] amounted to about \$200 million. . . . It will, I think, be that much again this year."

Recognizing this, air lines of many countries—England, the United States, France, the Netherlands and Italy, to name a few—placed orders for new equipment to meet the competitive exigencies and the calculated growth in passenger and cargo volume of the next three to five years.

In civil aviation generally, the year 1955 was one in which an aircraft took off for a regularly scheduled flight somewhere in the world every five seconds of the day and night. It was a year in which the scheduled air lines of the world served 3,500 cities from New York to Bangkok, from Nome to Sydney, from Oslo to Cape Town.

United States.—Commercial air transportation in the United States embarked in 1955 on a new and momentous—though long-anticipated—cycle of development. First, Trans-Canada Air Lines, on the New York-Toronto run, and then Capital Airlines, a regional air line operating largely in the eastern and southern United States, introduced the turboprop-powered transport into

domestic competition, using the British Viscount. Then, in June, American Airlines, the largest domestic trunk line, ordered the first U.S.-built commercial turboprop from the Lockheed Aircraft corporation—the Electra. The order was for 35 of these four-engine turboprop aircraft, with delivery to begin in the latter part of 1958 and to be completed in the middle of 1959. Characterized as a medium-size transport, the Lockheed Electra would nevertheless have a cruising speed in excess of 400 m.p.h., would seat 64 with a lounge for six persons and would accommodate 4,000 lb. of air freight, express and mail. Later in the year, American Airlines gave the Allison division of the General Motors corporation an order for Allison's Model 501 turboprop engines, rated at 3,750 h.p., to power the Electra. At about this time, Eastern Airlines announced that it had ordered 40 of the new planes.

Operationally, larger and faster aeroplanes—of which the 360-m.p.h. Douglas DC-7 was outstanding—and the continued improvement of navigation and traffic control facilities enabled U.S. domestic air lines in 1954 to reach a new high in revenue passenger-miles flown—16,768,000,000, or 13.5% higher than in 1953. The projection for 1955 indicated a total for the year considerably in excess of 18,000,000,000 revenue passenger-miles.

Total domestic air line operating revenues for 1954 exceeded \$1,000,000,000. Net profits were slightly more than \$50,000,000. This was a somewhat better return, translated into percentages, than that experienced by the world air transport industry.

As part of the general domestic picture, the 14 local service air lines, developed to link the country's important intermediate cities with one another and with the larger centres, flew 30,000 route miles with 160 aeroplanes in 1954. They served 440 cities in 42 states, providing the only air line service to 260 of those cities. In 1955 the local service carriers estimated that they would carry approximately 3,000,000 passengers, with passenger revenues probably exceeding \$35,000,000. Under a new law passed early in the year, the local service carriers, for ten years classified as an "experiment" by the Civil Aeronautics board, the industry regulatory agency, and only temporarily certificated to operate, were authorized to receive permanent operating certificates.

Statistics released during the year continued to show U.S. air line growth since 1938, the year the Civil Aeronautics act, regulating civil aviation in the United States, was passed. The number of air lines certificated to operate over specific routes had increased from 22 to 59. Aeroplanes in service increased in that period from 345 to 1,454; the number of passengers carried in a single year increased from 1,586,000 to 35,184,000; the number of people employed rose from 13,300 to 118,000; and total air line payrolls increased from \$27,396,000 to \$526,182,000.

The domestic industry established a new safety record during 1954, with .09 fatalities per 100,000,000 passenger-miles flown—the lowest ever reported by the domestic air lines. This was more than six times better than the record of .56 per 100,000,000 passenger-miles for the domestic air carriers in 1953.

The volume of airmail service in 1954 reached an all-time high, with the U.S. air transport industry, domestic and international, carrying a total of 116,809,000 ton-miles. The total for 1955 was expected to run even higher, possibly exceeding 125,000,000 ton-miles.

Meanwhile, the experimental test of flying nonlocal first-class mail between major cities in the United States continued through its second year. The Air Transport association reported that during the first year of the test senders of letters saved nearly 10,000,000,000 hr. in delivery time. Hundreds of millions of letters reached their destinations an average of 11½ hr. sooner than if they had moved by surface means. The associa-

Table I.—Revenue Air Traffic, 1953
Contracting States of International Civil Aviation Organization

Contracting states as at Dec. 31, 1953	Passenger- km. flown	Passenger ton-km.	Cargo ton-km.	Mail ton-km.	Totals
(In thousands; one kilometre equals 0.62137 mile)					
Afghanistan	—	—	—	—	—
† Argentina	306,181	29,193	4,475	1,856	35,120
† Australia	1,471,577	135,860	57,273	10,585	203,745
Austria	—	—	—	—	—
Belgium	447,901	44,526	16,209	3,728	64,474
* Bolivia	31,825	2,760	1,290	270	4,440
Brazil	1,482,643	103,785	72,629	2,624	179,522
† Burma	43,700	3,540	1,357	405	5,707
† Canada	1,424,863	128,902	15,120	8,973	152,202
Ceylon	20,089	1,525	755	73	2,337
† Chile	95,287	8,836	1,178	82	18,175
† Colombia	415,403	37,386	58,700	435	96,523
* Cuba	146,580	14,660	1,280	140	16,180
* Czechoslovakia	10,000	780	100	20	1,020
Denmark	220,858	20,544	4,425	1,698	26,765
* Dominican Rep.	4,940	435	115	40	5,530
Egypt	32,259	3,226	972	43	4,200
El Salvador	—	—	—	—	—
Ethiopia	30,670	2,700	2,455	56	5,281
Finland	72,209	6,534	420	171	7,125
† France	1,651,596	152,564	40,033	19,142	211,275
† Greece	43,720	3,654	1,071	127	4,974
* Guatemala	4,855	430	130	30	5,445
* Haiti	1,080	95	30	10	1,215
* Honduras	32,475	2,860	535	180	3,680
* Iceland	26,675	2,505	825	60	3,390
India	385,773	34,459	21,068	5,360	60,257
Indonesia	168,393	12,935	5,934	1,511	20,379
* Iran	14,445	1,190	195	20	1,455
Iraq	13,766	1,270	222	18	1,516
Ireland	105,953	8,671	1,351	388	10,493
Israel	128,077	12,094	4,044	542	16,980
Italy	229,183	21,222	3,312	1,788	26,110
† Japan	134,461	10,490	255	145	10,990
* Jordan	6,255	550	90	35	7,035
* Korea	3,385	300	165	80	4,030
* Lebanon	42,885	4,010	1,480	40	5,515
* Liberia	1,200	110	15	5	1,330
* Libya	2,440	215	50	10	2,715
Luxembourg	—	—	—	—	—
† Mexico	1,344,811	103,550	32,610	6,840	143,350
Netherlands	1,179,321	112,194	38,054	7,906	158,150
New Zealand	228,026	20,629	4,944	1,068	26,675
* Nicaragua	6,035	530	2,260	70	2,865
Norway	260,011	24,376	6,939	1,909	33,225
Pakistan	41,508	3,412	1,504	334	4,260
Paraguay	—	—	—	—	—
† Peru	78,519	6,250	4,980	120	11,279
Philippines	227,666	23,542	7,927	1,403	32,838
† Poland	39,622	2,964	594	190	3,756
Portugal	42,211	3,770	549	302	4,522
Spain	285,932	28,593	1,387	502	30,984
Sweden	345,548	32,012	6,848	2,634	41,104
Switzerland	328,401	30,860	4,845	2,198	37,064
* Syria	5,100	440	85	25	5,650
Thailand	31,205	2,421	1,408	271	2,969
Turkey	66,296	4,972	1,084	100	7,252
Un. of S. Africa	254,745	22,303	3,104	3,461	28,929
United Kingdom	2,308,128	208,111	49,661	29,278	287,650
United States	29,211,933	2,579,375	531,016	151,460	3,261,829
* Venezuela	299,740	21,360	6,220	1,930	25,510
Total for 61 States	45,838,360	4,046,480	1,025,577	272,691	5,344,108

*Estimated data.

†Provisional data.

†Data for France include operations performed by Air France only.

Note—Figures cover total scheduled services, including international and domestic operations. Final data, except where indicated.

Source: International Civil Aviation Organization, June 6, 1955.

tion said that the scheduled air lines co-operating in the test, which was being conducted on a space-available basis between New York, Washington and Chicago and other eastern seaboard cities, and between 17 major cities in California, Oregon, Washington, flew 9,600,000 ton-miles of mail the first year. Postage revenues to the post office department amounted to \$29,500,000, of which the department paid the air carriers \$1,830,000 for flying this mail. Seven trunk air lines and local service carriers were participating in the test, serving large and intermediate-sized cities in 23 states.

The increasing volume of passenger and cargo traffic brought increases in the size of the commercial air line fleet during the year. The Douglas Aircraft company delivered 31 aircraft—six DC-6bs and 25 DC-7s and DC-7bs—to seven air lines. The bulk of their production in 1955, however, was military. Lockheed Aircraft corporation delivered 54 Super Constellation's, and the Convair division of the General Dynamics corporation delivered the last 13 of its Model 340 twin-engine turboprop aircraft, to United States domestic and international air lines.

(C. R. SHAW)

Great Britain and Europe.—Big increases in traffic took place in most parts of Europe during the year, and on many of the long-distance routes there was a marked improvement. To a large extent, the rise was seasonal. For instance, the increase

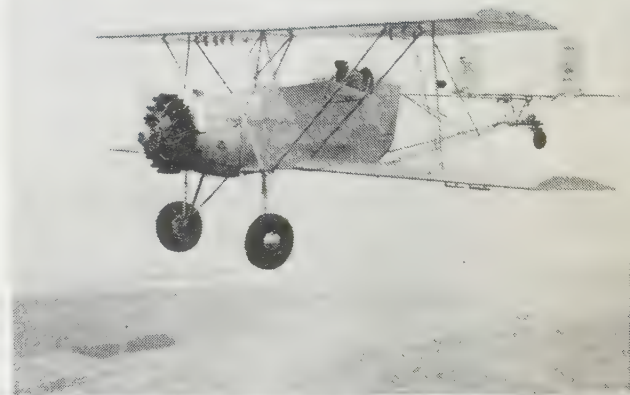
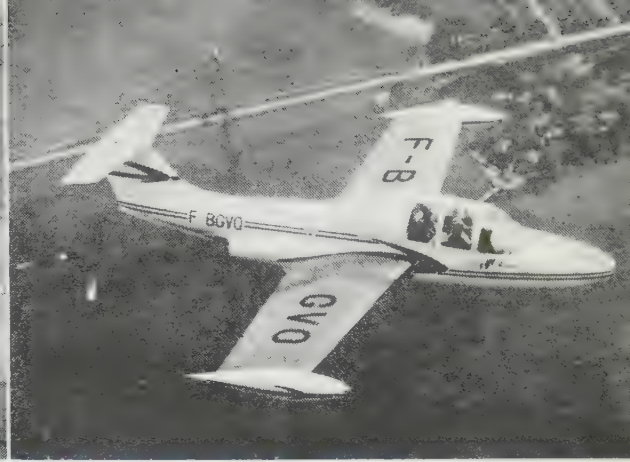


Above left: VISCOUNT TURBOPROP airliner, first turbine-powered aeroplane to be placed in regularly scheduled commercial service in the U.S. in July 1955. The British-built Viscount had been in service for several years on British lines

Above right: JET-POWERED EXECUTIVE PLANE, the "Paris," a French-designed plane introduced in the U.S. by Beech Aircraft corporation in 1955. A four-passenger monoplane, it was capable of 410 m.p.h. and a range of about 1,000 mi.

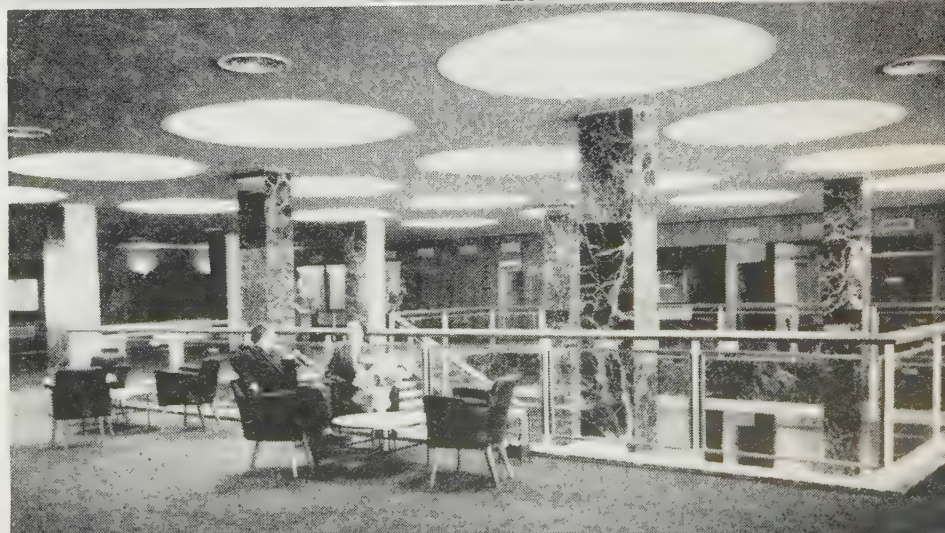
Right: LARSON D-1, biplane especially designed for agricultural aviation, first flown in March 1955

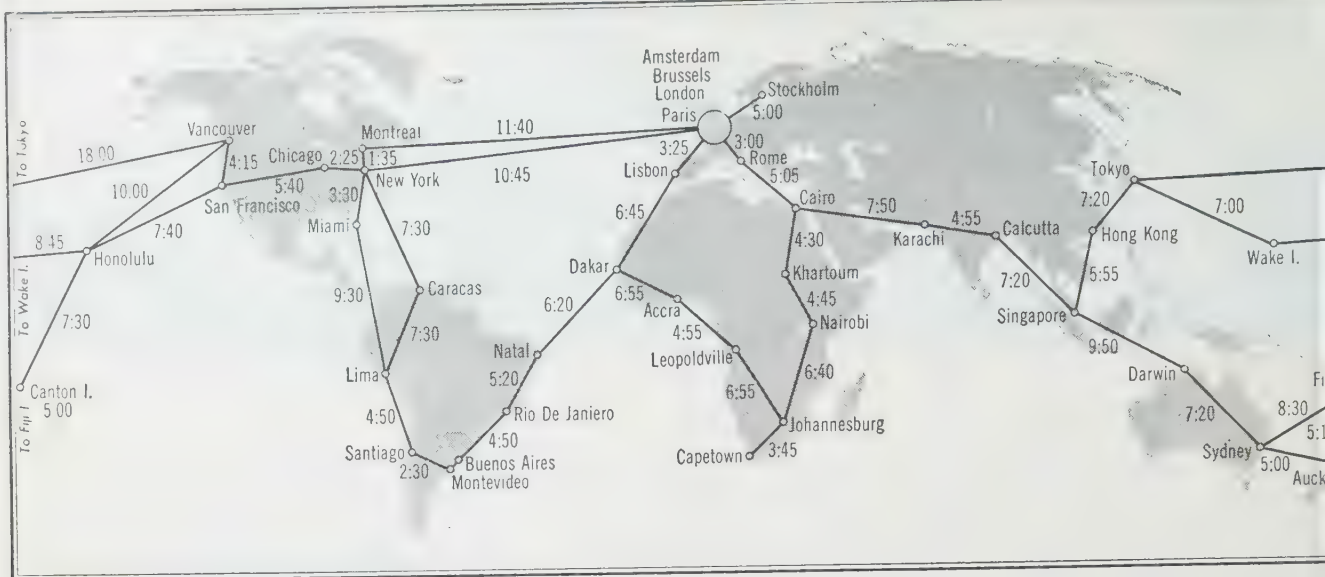
Below right: GUIDE BEAM, a 300,000,000 candlepower searchlight installed near La Guardia airport, New York city, in 1955 to guide departing planes away from residential sections near the field, thereby reducing noise and safety hazards in the neighbourhoods



Above: OPENING of San Juan, P.R., international airport, May 21, 1955. U.S. military personnel and equipment were present as the ceremonies inaugurating the \$15,000,000 terminal were combined with the observance of Armed Forces week

Right: PASSENGER LOUNGE of the London, Eng., airport opened in April 1955





WORLD AIR DISTANCES IN HOURS, 1955. Time shown is for fastest scheduled passenger flights, including stopover time

passenger traffic at British airports was only 4% in April, but it had advanced to more than 25% in July and August. The heavy increase in passenger traffic in late July and August actually became an embarrassment to British European Airways (B.E.A.), which had to charter extra aircraft. There were signs that its operations would yield a much bigger profit than in the previous financial year, and there were similarly good prospects for British Overseas Airways corporation (B.O.A.C.).

In part, the traffic reflected the acquisition of suitable aircraft by the principal nationalized operators; in part it arose from the opening of additional services by new or revived operators. Deutsche Lufthansa (D.L.H.) returned to the operational field in the middle of the year, first with internal services in western Germany, then with international services from Hamburg and Frankfurt to London, Paris and Madrid, and finally with regular services across the North Atlantic. In the United Kingdom, there was some expansion of the services run by independent operators; two new motorcar ferries were opened between Southend-on-Sea and Calais, and between Scotland and Northern Ireland; and two independent companies started freight services, Airwork between the U.K. and New York city, and Hunting Clan between England and various parts of Africa. The Portuguese line also began a new service between Lisbon and Rio de Janeiro. Canadian Pacific Airways (C.P.A.) joined Scandinavian Airlines system (S.A.S.) on the arctic route, running services from Amsterdam through Greenland to Vancouver to link up with its services to Honolulu and Australia, and from Vancouver by way of the Aleutians to Tokyo.

The growth of traffic was to be explained mainly, however, by the provision of extra capacity on regular routes (a process begun in 1954 when new aircraft were coming into service on a number of lines) rather than by an expansion of the fleets. This conclusion must be modified in respect of those operators which had depended on the Comet jet liner: B.O.A.C., Air

France and South African Airways (S.A.A.). In consequence the suspension of the Comet I's, some services had to be reduced. B.O.A.C. in fact abandoned its services between England and South America. This disorganization had its effect on revenue of the companies concerned. In the financial year ended March 31, B.O.A.C.'s net profit was only £261,687, little more than a quarter of the profit made in the previous year. Air France, on its first accounting, showed a loss of £580,000. Most other companies had a satisfactory year financially. B.E.A. made a profit of £63,039 as against a loss of more than £1,750,000 in the preceding year. Aer Lingus showed a profit of £25,428. Dutch Airlines (K.L.M.), Swissair and S.A.A. likewise reported profits, but in most instances these were proportionate to the increase in traffic. In the first six months of 1955, Swissair carried more than 250,000 passengers for the first time. Most operators were satisfied that tourist fares, introduced in April 1953, were mainly responsible for the marked rise in passenger traffic.

The attention of aircraft constructors and operators was directed to turboprop aircraft. The jet liner had become a slightly less immediate concern through the setback to the development of the Comet. The decision of its makers to concentrate on the transatlantic Comet IV and the new requirements that its supercharged fuselage should be tested for fatigue strength meant that no Comet could be expected on the routes before 1958. Another jet transport, the British C.1, had attracted some attention through its use of the Comet bypass engine, which showed in tests a notable economy in consumption. However, in November its development was continued through a government decision and the Comet IV remained Britain's only jet airliner in prospect. Aircraft for shorter stages began to come forward during the year. The Herald already adopted by B.E.A. for some internal services, was added to the Queen's flight and ordered for Jersey Airlines. The Herald 40-seater began test flying and at a price of £150,000 attracted orders. The biggest—for 24—came from Australian

Table II.—Financial Results of United Kingdom Corporations

(Financial year, April 1—March 31)

Item	B. O. A. C.*		B. E. A.	
	1953-54	1954-55	1953-54	1954-55
Operating revenue . . .	£38,361,337	£36,866,199	£14,773,170	£17,141,314
Operating expense . . .	36,203,546	35,746,979	15,975,721	16,589,000
Operating profit (+) or loss (-)	+2,157,791	+1,119,220	-1,202,551	+552,314
Nonoperating expense (net)	1,092,394	857,533	571,246	489,275
Profit (+) or loss (-) for year†	+1,065,397	+261,687	-1,773,797	+63,039

*Figures exclude profit or loss on disposal of assets and redemption of stock.

†After payment of interest on capital.

Table III.—United Kingdom Civil Air Traffic: Scheduled Services

Item	All services		Internal		International
	1953-54	1954-55	1953-54	1954-55	1953-54
Miles flown (000) . . .	60,525	60,257	8,611	9,309	51,914
Passengers carried (000)	2,192	2,493	855	1,016	1,336
Passenger-miles (000) . . .	1,448,452	1,537,570	154,857	186,127	1,293,595
Freight (short tons) . . .	62,064	75,644	3,523	4,660	58,541
Freight (000 short ton-miles)	33,393	37,335	616	817	32,779
Mail (short tons)	9,980	10,418	2,502	2,701	7,478
Mail (000 short ton-miles)	19,893	20,226	418	452	19,475

onal Airways (A.N.A.). The Dutch Friendship fitted with two part turboprops was also on offer. The French Caravelle, with jet engines slung from the fuselage near the tail, was ordered by Air France. (See also AIRCRAFT MANUFACTURE; AVIATION, MILITARY; CIVIL AERONAUTICS ADMINISTRATION; JET PROPULSION.) (E. C. SD.)

Agricultural Aviation.—Preliminary estimates indicated that aeroplanes covered about 50,000,000 ac. in applying insecticides, herbicides, fungicides, fertilizers and the like to farm and forest lands in the United States during 1955. This represented an increase of about 20% over 1954. In certain other areas of the world, notably Africa, Australia and several Asian countries, aerial application of insecticides, fertilizers, seeds, etc., was just starting to receive recognition as a means of combating insect pests and enhancing soil fertility.

Cotton continued to be the crop most heavily treated by aerial application. However, millions of acres of timber land were sprayed for budworm and gypsy moth in the United States and Canada, and hundreds of thousands of acres of pasture lands were treated for grasshoppers in western and midwestern states. Many areas of the world had turned to the aeroplane for effective results in ridding heavily populated sections of house and yard pests. As an example, the government of Yemen utilized an American-made twin-engine plane to spray whole towns and villages for relief from hordes of mosquitoes.

At least three new prototype planes designed especially for agricultural work appeared during the year, all having certain desirable characteristics for their intended purpose: Texas Agricultural and Mechanical college's Ag-3, Larson's D-1 and Snow's -1. Since a very large portion of all consumed agricultural chemicals was being handled through aeroplane operations, the chemical industry was devoting much of its research facilities to perfecting compounds which would be more readily adaptable to aerial application.

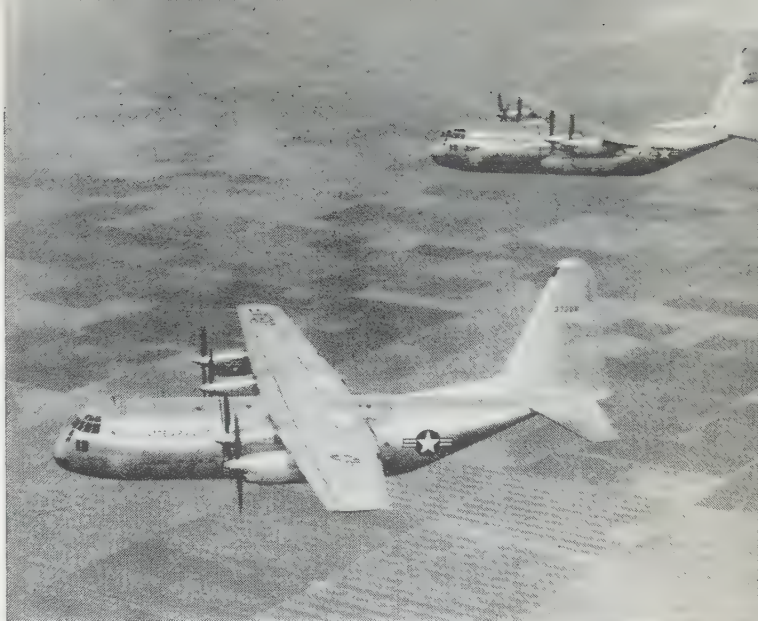
With the aid of the Civil Aeronautics administration and the Texas Aerial Applicators association, the Texas A. and M. college system started a school for agricultural pilots in Oct. 1955. At about the same time, a privately owned flying school in California announced a similar course. These schools were the beginning of the answer to a long-felt need for specialized training of commercial pilots in basic fundamentals and safe flying practices of agricultural aviation. (W. D. AN.)

Aviation, Military. **United States Air Force.**—During 1955 the United States air force made considerable progress toward the established goal of 137 wings by mid-1957. The programmed build-up permitted the strengthening of the world-wide strategic air forces as a force capable of instant retaliation in the event of aggression and the equipping of the tactical air forces with nuclear weapons to increase their value as a deterrent to aggression. The number of air divisions in the air defense command was increased roughly one-third, and a major expansion and reorganization of the air defense of the U.S. occurred.

The air defense command was completely modernized with all-weather jet-fighter and interceptor aircraft. The radar warning system was expanded with progress of construction of the Distant Early Warning (DEW) line across northern Canada and completion of the first of a series of offshore installations (Texas towers) in the Atlantic.

The air force stepped up its base production program to meet its goal of 137 wings. Bases in North Africa were now operational. Bases in the NATO (North Atlantic Treaty organization) countries were being extended and improved. Rapid progress was being made on bases in Spain.

The air force's ability to operate heavy and medium bombers



AIR FORCE TRANSPORTS, two prototypes of the C-130 Hercules, shown flying together for the first time in June 1955. Powered by 3,750 h.p. turboprop engines, the planes could take off or land in a distance of eight aeroplane lengths

in all parts of the world from bases on the North American continent and from within the U.S. was steadily increasing.

A reappraisal of Soviet capabilities in development and production of modern aircraft, as highlighted by the jet aircraft displayed over Moscow in May, caused the air force to take certain immediate and specific steps to speed its weapons program. Production of the B-52 long-range bomber was accelerated by 35%. Production of the F-101 fast, all-weather interceptor and the smaller F-104 supersonic day fighter was also accelerated.

Several new aircraft made their appearance or went into production in 1955. Jet B-47s had replaced propeller-driven aircraft in all medium-bomber and reconnaissance units, and the replacement of the heavy-bomber B-36, which was no longer in production, by the jet B-52 was begun. The B-58, which was expected to fly faster than any other production bomber ever built, was readied for production.

The early model jet-fighter aircraft such as the F-86 were gradually being replaced with aircraft of the 100 or Century series, such as the F-101 Voodoo, a long-range interceptor and escort fighter with atomic bomb-carrying capabilities. Jet tanker aircraft were being developed for mid-air refuelling.

A radical aeronautical development of several years previous was revealed in September with the announcement of the reasons for a new pinch-waisted design in military aircraft which had produced increases in supersonic speeds of up to 25%. The pinching of the fuselage at the point where the wings are attached greatly reduces the drag rise that occurs at speeds that approach and go beyond the sound barrier, thus enabling the aircraft to attain greater speed without an increase in power. This new development had already been applied to the supersonic jet F-102A, a delta-wing interceptor first unveiled in 1954.

The air force's initial turboprop (turbine-propeller)-powered fighter, the XF-84H, successfully test flown in July, combined the long range and ability to carry heavy loads of propeller-driven aircraft with the higher speed of jets. A new turboprop air freighter, the C-130 Hercules, went into production as a successor to the C-119 Flying Boxcar, to add the elements of speed and quantity (in addition to greater load capacity) to overseas-supply and troop-carrier missions.

The rocket-powered X-2, the first aeroplane in history designed and built to probe the so-called thermal barrier, was the supersonic successor to the famous X-1A which exceeded 1,650

m.p.h. in Dec. 1953. Both of these aircraft were designed solely for flight research purposes.

The development of atomic energy had given the U.S. a family of nuclear weapons which could now be carried by all tactical fighter-bombers and light bombers, giving tactical units greater striking power. In addition to developing nuclear weapons and aircraft to deliver them, the air force was planning to use atomic energy in the development of a new type plane. The A-plane was, however, basically a means to extend aircraft range, which could be accomplished in other ways.

Guided missiles were becoming an increasingly effective element in the air force's weapons system. Two squadrons equipped with the Matador, the first operational missile already in production, were deployed in Europe, and two more squadrons were in training in the U.S. Other guided missiles had been announced. The Falcon, an air-to-air missile, was in production for use by interceptor squadrons; the Bomarc and the Rascal were under accelerated development. The rocket-powered Atlas, also under development, was an intercontinental ballistic missile (ICBM) launched by rocket motors developing thousands of tons of thrust and millions of horsepower within seconds, which would travel at speeds of several thousand miles per hour.

In May four F-84 Thunderjets completed a routine nonstop flight of 4,840 mi. from Tokyo, Jap., to Newcastle, Austr., in 12 hr. 2 min., with mid-air refuelling. Also in May an air national guard pilot, Lieut. John M. Conroy, flying alone in an F-86 Sabrejet, flew a coast-to-coast round trip in little more than 11 hr. The pilot breakfasted in Los Angeles, lunched in New York and returned to Los Angeles for dinner in 5 hr. 27 min. 37 sec., breaking the former east-to-west flight record by almost two hours. In-flight refuelling was used.

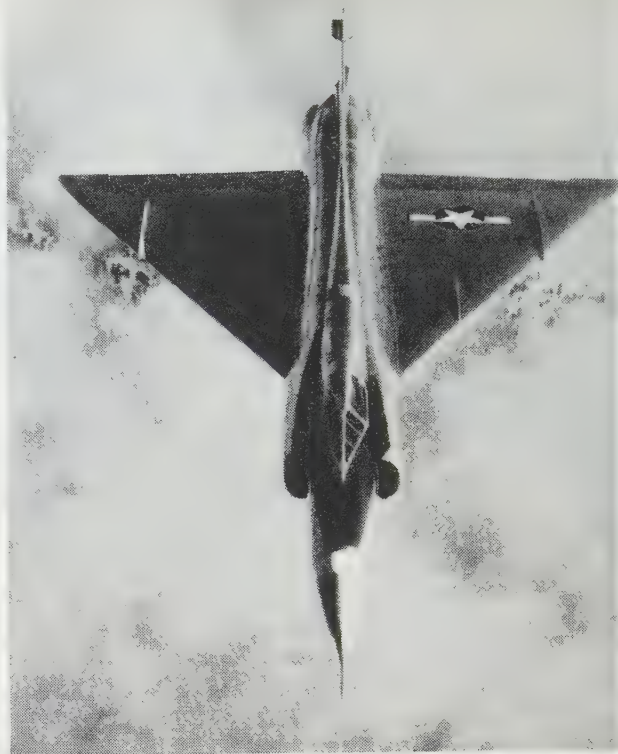
In August ten F-84F jet Thunderstreaks set two new world's records, one for time, one for nonstop mass-flight distance, by flying 5,118 mi. from England to Texas in 10 hr. 48 min. at an average speed of 480 m.p.h. In-flight refuelling was accomplished. Also in August, an F-100C Super Sabre set the world's first speed record for straightaway flight faster than sound, more than 822 m.p.h. or 1.23 times the speed of sound.

History's biggest troop air lift, the "swapping" of more than 7,000 army paratroopers between the U.S. and Japan, began July 7, the 18th air force performing the massive manoeuvre with C-124C Globemaster transports.

Recognizing the increased importance of technically trained and experienced personnel to an all-jet air force, the air force in 1955 concentrated on such long-range problems as the improvement of service attractiveness in order to retain experienced personnel and the development of future leaders through improvement in the ROTC program and the establishment of the Air Force academy. By the end of the year these efforts, supported by new legislation, were bringing results, one measure of which was the increase in the re-enlistment rate from 22% to 35% in Sept. 1955. In August, nevertheless, the air force announced a plan to cut its basic training period by nearly 50% (11 weeks to 6 for all recruits selected for technical training) to increase the flow of technically trained personnel to operational units.

On July 11 the U.S. Air Force academy was dedicated at the temporary site at Lowry air force base near Denver, Colo., and the first class of cadets, numbering 306, began the intensive preparation as future officers of the regular air force. On Sept. 11, Pres. Dwight D. Eisenhower made an informal inspection of the academy and watched a parade of cadets. (See UNITED STATES AIR FORCE ACADEMY.)

On July 21, 1955, the air force had 956,000 men (138,000 officers and 818,000 airmen) in 124 wings, with a total of around 24,000 combat aircraft. Air force civilian strength on this date



WASP-WAISTED VARIATION of the U.S. air force jet interceptor, the F-102A, shown in flight April 15, 1955

was 312,000. The air reserve numbered 260,000 officers and airmen and the air national guard 55,000.

Secretary of the Air Force Harold E. Talbott continued in office until Aug. 13, when he was succeeded by Donald A. Quarles (q.v.). In June Gen. Nathan F. Twining was reappointed to a second term as chief of staff, U.S. air force. (See also AIRCRAFT MANUFACTURE; NATIONAL GUARD.) (N. F. T.)

United States Navy.—Naval air operations literally covered the waters of the globe during 1955. Carriers operated the U.S. 6th fleet in the Mediterranean and with the 7th fleet in the western Pacific. En route to distant stations, they rounded both the Cape of Good Hope and Cape Horn. A patrol squadron returned to Whidbey Island, Wash., from the far east by way of the Indian and Atlantic oceans while others patrolled from Newfoundland, Newfoundland and North Africa, and yet another among the first U.S. forces to operate in Spain. Helicopters and patrol planes conducted ice reconnaissance for ships en route to arctic waters and helicopters surveyed the antarctic ice in preparation for Operation "Deep Freeze." Carrier aircraft and helicopters aided disaster victims in the Caribbean, Central American and New England areas. The 7th fleet completed significant operations in support of national objectives in the western Pacific under delicately balanced international tensions.

Under the firm belief that strength lies in striking power rather than in mere numbers, primary emphasis in the aviation program was on the improvement of weapons, materials, maintenance and the techniques required to exploit them. Commissioning the U.S.S. "Forrestal" on Oct. 1, launching the U.S.S. "Independence" on Oct. 8, laying the keel for the U.S.S. "Independence" in July, completing the third steam catapult and angled deck installation, beginning the first assault helicopter aircraft conversion and the practical completion of the HR2S helicopter development to meet marine corps tactical commitments marked both actual and potential increases in fleet air strength.

Although new aircraft deliveries continued on the downward trend first noted in 1953, several new models reached

et. Among carrier planes placed in operation, the F7U Cut-throat added a high-performance fighter with missile launching capability, while the FJ-3 Fury, which in January established an unofficial climb record of 10,000 ft. in 73 sec., added high-altitude interceptor capability. Fighters in flight test included the F8U, which exceeded the speed of sound on its first flight; the FJ-4, an improved version of the operational Fury; the A4D Skyray, world speed king and newest holder of the climb record with 56 sec. to 10,000 ft.; and the F11F, which incorporated many design refinements including the "coke bottle" fuselage. In the attack category, tests of the A3D and A4D demonstrated the speed, range and carrying capacity characteristic of heavy offensive power. Trends in aircraft development and in training for their employment were toward all-weather operations and increased potential for delivering atomic weapons. Substantial numbers of operating aircraft and all models under development had these capabilities.

In patrol aircraft the new P5M-2 Marlin seaplane and the P2V-7 Neptune landplane with supplemental jet engines both demonstrated acceptable ability to detect and attack submarines. The P6M SeaMaster, a swept-wing jet seaplane, first flew in July. Designed for mine laying and reconnaissance, and adaptable to other tasks, this plane was expected to open horizons of operational use hitherto untouched by seaplanes. The new PG-2 and ZSG-4 airships replaced old equipment in two of the four antisubmarine squadrons.

Three major guided-missile systems were introduced: Sparrow, an air-launch interceptor, Regulus I, a surface-bombardment type, and Terrier, a surface-launched air defense missile. Terrier firings on the U.S.S. "Mississippi" provided practical experience for trainees destined to serve aboard the missiles cruiser "Boston" in 1956. Regulus launching and firing exercises were conducted about the submarine "Tunny," the missiles cruiser "Los Angeles" and the aircraft carrier "Hancock." Addition of this weapons system to the fleet arsenal raised the level of air defense to a degree commensurate with advances in nuclear weapons and jet aircraft, and also added high destructive power and increased versatility to offensive capabilities. (See also MARINE CORPS, U.S.; NAVIES OF THE WORLD.)

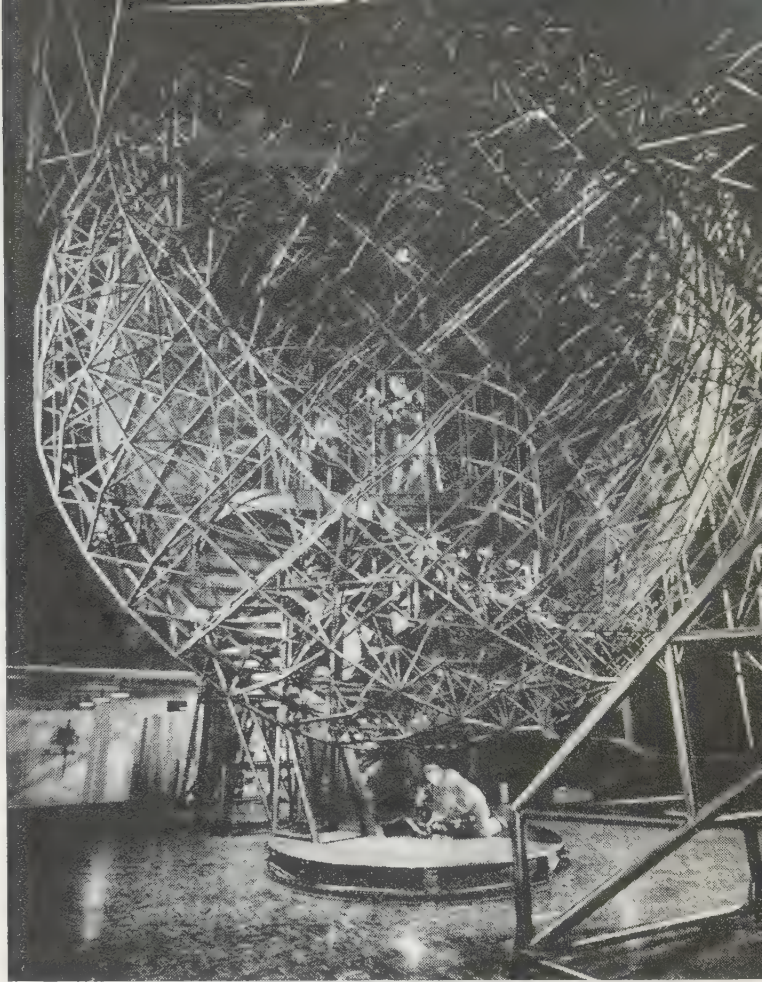
(T. S. C.)

Air Forces of the World.—The first serious attempt to break through the veil of secrecy that normally surrounds the power potential of the east v. the west occurred in 1955 with Pres. Dwight D. Eisenhower's dramatic suggestion of mutual inspection of aeronautical installations. By the end of the year, however, no definite indications were forthcoming that the proposal might be acceptable to the U.S.S.R. Meanwhile, western powers continued to build up their aerial strength by augmenting their own air armaments and by mutual contribution to the common cause through NATO.

Under the U.S. offshore procurement program a limited number of U.S.-designed aircraft and components were coming out of certain selected European aircraft factories. At the same time the major powers of the western group were coming up with prototypes of improved equipment for NATO. Notable in the latter group was the agreement to build lightweight, high-performance fighters in the category of the British Folland Midge and the French modifications of the Mystère and Vautour.

As in past years, the capabilities of Soviet aviation were kept well under wraps. Glimpses of new aircraft at aviation displays provided material for much speculation, but authentic data were lacking both as to quality and quantity of Russian aircraft. The assumption was, however, that Soviet air technical capabilities were at least equal to those of the United States.

U.S.S.R.—As in previous years, whatever of U.S.S.R. air capabilities was learned could be gleaned only from observation



CELESTIAL NAVIGATION TRAINER, a rotating mechanical model of the northern skies, used at Mather Air Force base in California in 1955 to teach navigators how to use star fixes in trans-polar flights

of Russian aircraft in flight and from reports originating from scattered sources outside the Soviet Union.

Once more the flying demonstration put on by the Soviet air force during the May day celebrations in Moscow revealed some details of new military aircraft and possible clues to recent Soviet activity and potentialities. New jet fighters and bombers were disclosed, and some known bombers appeared in larger formations than previously. One source reported that at least 50 supersonic day fighters were displayed publicly for the first time. These aircraft featured wings with a sweep back of about 60° and a low-set horizontal tail, with performance estimated in the 1,000 m.p.h. class. Also seen were 30 new all-weather fighters which had thin, straight wings and engine air intakes on both fuselage sides. Another feature of the display was a formation flight of nine swept-wing bombers each fitted with four turboprop engines driving contrarotating propellers. The configuration of these aircraft suggested additional uses as aerial tankers or long-range strategic reconnaissance aircraft.

Approximately 50 twin-jet Badger (type 39) bombers and 10 Bison (type 37) bombers participated. In the previous year's May day ceremonies only nine Badgers and one Bison were noted. In some quarters this increase in the numbers of these bomber aircraft, and the introduction of the new bomber and fighter types, were considered to be evidence of a step-up in Soviet development and production of military jet aeroplanes.

Further unconfirmed details were learned of the Bison and the Badger. The Bison, supposedly comparable in performance with the B-52, appeared to have aerodynamic twist in the wing and was equipped with tip fuel tanks. The landing gear was of the tandem type located fore and aft of the bomb bay; two outrigger wheels were installed in the wing. The Badger resembled the B-47 in size and seemingly had tricycle landing gear. Details



U.S. NAVY SEAPLANE TRANSPORT, R3Y Tradewind, 80-ton turboprop plane designed for speeds of more than 350 m.p.h.

of armament on either of these types were scanty.

The Soviet designer S. Ilyushin was credited with a new swept-wing bomber, the IL-28-2. It was stated to attain a speed of 621 m.p.h. and to be in production. A four-engined, straight-wing turboprop bomber was reported unofficially, credited to a new designer, V. Myasishchev. The Ilyushin IL-13 was described as a long-range bomber equipped with turboprop power plants; it was a low-wing configuration with modest sweep-back on wings and tail.

At the flying display at Moscow's Tushino airport on Air Force day, July 3, approximately 50 hitherto unknown twin-jet all-weather fighters made their first appearance. These were followed by a similar number of single-jet supersonic fighters, possible successors to the MIG-17. Also shown for the first time were four twin-rotor helicopters outfitted for carrying troops and supplies.

The U.S.S.R. had developed a new power plant from the Junkers diesel aeroengine which gave reconnaissance aircraft a range of 8,700 mi., according to a Soviet occupation official in east Germany.

The U.S.S.R. was reported to have a string of 21 guided-missile bases along the Baltic coast, stretching from Porkkala point near Helsinki, through Estonia and Latvia, around the Gulf of Riga to Liepaja and down through Lithuania and Poland into east Germany. Four bases were said to be situated on the Estonian islands of Saaremaa and Hiiumaa, the largest of which could allegedly fire 800 missiles an hour. Gains in the development of intercontinental ballistic missiles were mentioned in one official statement.

Great Britain.—The so-called "V" bomber force (to be made up of Vickers Valiants, Avro Vulcans and Handley-Page Victors) appeared to be slowly gaining in momentum during 1955. All three of these machines had been in prototype stages for some time but during the year one of them, the Valiant, was actually delivered to squadrons for service testing. In the meantime, the lightweight bomber, the twin-jet Canberra, was produced in quantity and in various versions, and formed the backbone of British bomber squadrons. One of these planes made a spectacular round-trip crossing of the Atlantic between dawn and dusk in late August.

Great emphasis was being put on research, particularly in the field of short take-offs and landings. The so-called "flying bedstead" demonstrated that vertical take-offs were possible from pure jet reaction. Research was also going forward in so-called boundary layer control and various forms of jet deflectors for

this same purpose.

Work continued through the year to improve the thrust of engines of all types. This was supplemented by active work in liquid-fuel rocket motors both for assisted take-off and use in guided missiles.

It was well known that extensive guided missile research experimentation was continuing both in England and at the guided missile range at Woomera, Austr., but little information was being released from these areas.

As was customary, Great Britain put most of its new aircraft on display at Farnborough in early September. This was reported as the largest such display ever staged there. The exhibition totalled 307 stands. Forty-one aircraft took part in the flying display, and the static display brought the total number of planes exhibited to nearly 60. Of these, 16 made their maiden display at Farnborough. In addition R.A.F. formations participated for the first time, with flights of Valiant and Handley-Page aircraft. Many of the machines shown the previous year as prototypes appeared in 1955 in production form, e.g., R.A.F. Hawker swept-wing fighters and Vickers Valiant "V" class bombers. There was seen also a formation of Short Seamew light submarine aircraft, which were in production both for the R.A.F. and the royal navy. Among the aircraft flown at Farnborough were the Avro Vulcan four-jet delta bomber, the Avro Canada CF 100, and the Folland Gnat lightweight fighter. Another technical development of note was the new Rolls-Royce Conquest turbojet engine which was flown in an Avro Ashton.

Announcement was made in July of a new photoreconnaissance version of the English Electric Canberra twin-jet bomber. Known as the Canberra Mark 9, it was ordered in quantities by the R.A.F. Under production for the R.A.F. were the Hawker Hunter F.1 (Rolls-Royce Avon) and F.2 (Armstrong Siddeley Sapphire). Also in large-scale production was the F.4 with a new version of the Avon. The British ministry of supply let a contract for the DH 110 jet fighter for the royal navy. This two-seat day and night all-weather fighter, powered by two Rolls-Royce Avon turbojet engines. An R.A.F. operational squadron was being equipped with Vickers Valiants, with the Handley-Page Victor and Avro Vulcan being in service elsewhere. The 700-m.p.h. Hawker Hunter Mark IV jet fighter was put into service with the R.A.F. in Germany in April. The Avro Ashton, Britain's smallest and lightest fighter, the Folland Gnat, made its maiden flight in July. The Bristol Orpheus turbojet was also making its initial air test. Several Short Seamews were nearing completion and were to be delivered to the R.A.F. coastal command. They would have folding wings, presumably to allow them to

operate from fleet air arm carriers if required.

France.—Although several interesting prototypes were shown at the French air display in June 1955, actual production of military aircraft lagged during the year. The most notable contribution toward the NATO effort was the selection toward the end of the year of two basic fighter types, the Mystère IV and the S.O. Vautour, as stripped-down lightweight fighters comparable with the British Folland Gnat. The expectation was that such planes, because of their simplicity, could be produced in quantity and be used as defensive armament against long-range bombing attacks. Dassault was producing a series of modifications of the Mystère IV. This plane was first flown two years earlier but appeared during 1955 in various versions, day and night fighters.

A so-called Super Mystère which was flown during the year was said to have exceeded the world speed record. An entirely new model of delta-wing design intended as an interceptor fighter was reported having been test flown in June.

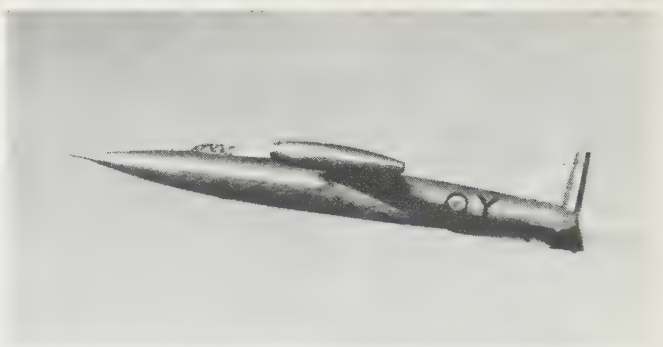
A twin-jet S.O. 4050 Vautour was in production as an all-weather fighter (two-seat), as a ground attack aircraft (single-seat), and a bomber (two-seat). The first preproduction model was officially handed over to the French air force in March, and the first of 140 production models were to be delivered in the spring of 1956. This aircraft could carry a variety of military loads, including a tactical A-bomb, with little change in performance.

Italy.—The first North American F-86K to be assembled by Fiat in Italy was successfully test flown during 1955. The Fiat design G.82 by Gabrielli, a swept-wing jet trainer powered with a Rolls Royce Nene engine, was said to have flown 638 m.p.h. in level flight. A new lightweight tactical fighter powered with a Bristol Orpheus engine was ordered by NATO. The U.S. air force and the Italian air force jointly ordered three prototypes of lightweight Arietes from Aerfer of Naples. The Fouga 170R Magister jet trainer was test flown in June.

Sweden.—Sweden announced a ten-year plan for modernization of its defenses, in which guided missiles would play a leading role, to parallel the Soviet guided missile bases along the Baltic coast. Sweden test flew its SAAB J-35 1,000-m.p.h. fighter in 1955.

The SAAB J-29 Flying Barrels were still in production. Delivery began of the 750-m.p.h. all-weather SAAB Lansen.

West Germany.—The new air force, planned to be an integral part of the Allied air forces central Europe, was to be purely tactical, supported by six squadrons of transport aircraft. Total strength was expected to be 80,000 officers, noncommis-



FRENCH JET FIGHTER, the Trident, which on May 2, 1955, passed through the sound barrier while still climbing and was claimed to have additional power in reserve in its booster rockets

sioned officers and airmen, and 1,326 aircraft, organized into 20 wings, each consisting of three squadrons. Training was to begin in 1955, with readiness for operational duty expected in 1958. The first men of the west German armed forces to be called up would be about 200 pilots who would begin a NATO jet conversion course in Germany. They would be followed by a number of German staff officers who would complete a staff course at NATO headquarters at Paris. According to the U.S.-German military aid agreement announced in July 1955, the Germans would receive a number of F84F's for their fighter-bomber wings and RF84F's for their reconnaissance wings. Expected to be established were six major maintenance and repair bases which would serve all 20 wings. Once plans were set, the U.S. air force would guide training courses for an initial 600 volunteers: 120 for flight instructor positions, 400 as technical instructors and 80 in flight-control methods. Each of these courses would last approximately four months.

Thereafter, recruitment and induction of German air force service personnel would commence.

Spain.—It was reputed that the former German designers W. Messerschmitt, E. Heinkel and C. Dornier were serving as consultants to aircraft companies in Spain. The first Spanish-built jet plane made a trial flight in August. It was built by Hispano Aviación. One of the designers was Willi Messerschmitt. In Jan. 1955 the Spanish government was reported to be forming three new fighter and bomber squadrons for 1957, with the aid of aircraft deliveries from the United States. Types were expected to be similar to those used in the Korean war.

Japan.—A Japanese defense ministry spokesman reported that defense plans included 1,200 aircraft by 1960-61. In 1955 Japan had 6,000 air force personnel. The naval force was to have 165 aircraft. The air force would be composed of 450 F-86F jet fighters, 150 F-86D all-weather fighters and 472 trainers. The Japanese, during the summer, signed an agreement with the U.S. whereby 70 North American F-86F Sabres and about 100 Lockheed T-33A jet trainers were to be assembled, with U.S. aid, in Japan.

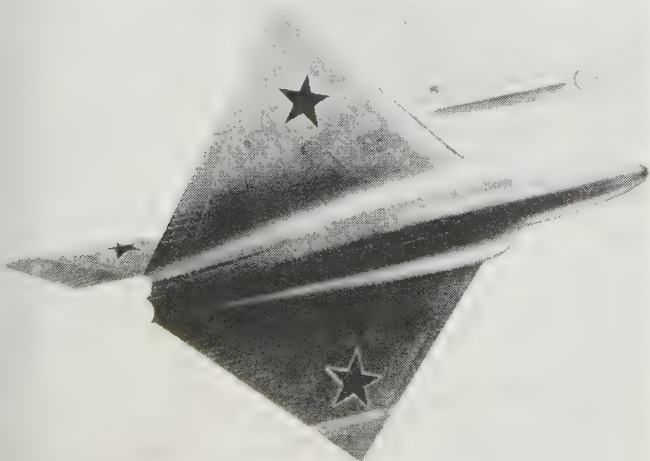
Japanese manufacturers began development work on three types of two-place light jet trainers powered with the French Turboméca Marboré II or Japan jet engine JO-1.

(See also ARMIES OF THE WORLD; AVIATION, CIVIL; CIVIL AERONAUTICS ADMINISTRATION; JET PROPULSION; MUNITIONS.)

(S. P. J.)

Avocados: see FRUIT.

Awards and Prizes of 1955: see AMERICAN LIBRARY ASSOCIATION; ANTHROPOLOGY; ART EXHIBITIONS; GEOGRAPHY; LIBRARIES; LITERARY PRIZES; MATHEMATICS; MINERALOGY; MOTION PICTURES; NOBEL PRIZES; PULITZER PRIZES; RADIO AND TELEVISION; ROMAN CATHOLIC CHURCH; SOCIETIES AND ASSOCIATIONS, U.S.; THEATRE; etc.



ARTIST'S SKETCH of Soviet experimental plane, a double delta jet interceptor capable of a 70° angle of climb. No official U.S. comment was made after publication of the drawing in *Air Force* magazine in March 1955

Azores: see PORTUGAL.

Bacteriology. **Chemotherapy in Tuberculosis.**—With the advent of streptomycin in 1944, Selman Waksman provided the first practical antibacterial weapon in the fight against tuberculosis. In less than two years of use it became apparent that this antibiotic was effective in limiting the spread of infection in some cases but in others the tubercle bacillus developed a tolerance for the drug, making its administration ineffective.

The discovery of two other tuberculostatic agents, para-amino-salicylic acid and isoniazid, shortly led to a system of combined therapy with streptomycin. Although the frequency with which resistant organisms developed was greatly reduced by this attack from two or three antibacterial pathways, a number of patients requiring prolonged therapy sometimes developed tolerance to one or all of these drugs. During 1955 two more agents were added to the antitubercular armamentaria, pyrozinamide and cycloserine. The former had been used some time earlier with very limited effectiveness and could not be shown to have any action on freshly isolated *Mycobacterium tuberculosis* in the test tube. Its use gradually was abandoned in favour of para-amino-salicylic acid and isoniazid. During the year, however, workers at the U.S. army's Tuberculosis centre discovered that pyrozinamide was very active in limiting the growth of tubercle bacilli which had become resistant to isoniazid. The drug was therefore being re-evaluated in combined therapy with isoniazid and streptomycin. Cycloserine, obtained from a soil streptomycete, showed some promise in treatment of those cases where resistance to the other antibiotics had developed. Although both pyrozinamide and cycloserine upon prolonged ad-

ministration at high dosage levels are toxic, the effective concentrations required to inhibit the bacilli are sufficiently low that neither agent when properly used need be dangerous.

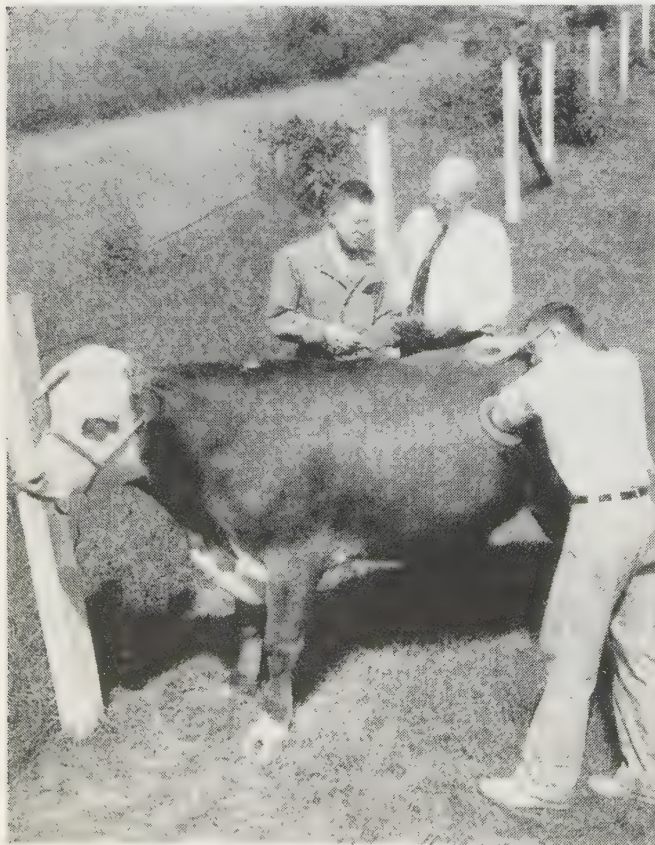
Versatile Millipore Filters.—Available as an item of mass production during 1955 was a filtering medium with a uniform cell structure that approaches unimolecular dimensions which may be likened to a submicroscopic honeycomb section. The volume defined by this material is approximately 80% voids, or about 50×10^6 pores per square centimetre. As a filter it acts as a two-dimensional screen in providing a barrier to suspended particles, and because of this retained particles are in a virtual plane defined by this surface. Retained microorganisms may be cultured on the surface when the bottom of the filter sheet is placed in wetting contact with liquid nutrients. The liquid medium diffuses through the porous sheet, thus supplying the deposited microorganisms by capillarity.

Bacteriologists of many interests found this filter a valuable tool in their work. In water and sewage sanitation, the liquid to be checked can be drawn through the filter. After the filter has been placed in a plate containing the proper selective medium and incubated, the colonies indicative of faecal pollution can be sought and counted when present. Similar methods were being employed by firms wishing to check the sterility of large or small quantities of a liquid product. By adjusting the selective action of the medium in which the filter was incubated, this technique was used to determine the content of each of several specific bacteria in a product. Equally successful were efforts to check the bacterial pollution of air. This technique could prove extremely valuable in the event of a threat of bacteriological attack, by functioning as an air monitor. In this case there would be a disadvantage in that the results of each check would not be available until the end of the 12- to 18-hour incubation period.

These filters were recently adapted as monitors of industrial pollution of air by acid aerosols and metal fumes. Likewise, their use in measuring the radioactivity of dust in the air was demonstrated.

The Mystery of the Yellow Bacillus.—Bacteriology laboratories around the country had for several years frequently isolated a "yellow" bacillus from patients with a disease resembling tuberculosis. Morphologically the organism resembles *Mycobacterium tuberculosis*. Unlike the tubercle bacillus, however, the organism produces colonies ranging in colour from cream to yellow, does not easily infect guinea pigs, and is not susceptible to existing tuberculostatic agents. This disease appeared to have a gloomy prognosis, which, however, might have been only a reflection of the severity of cases observed. It was not known whether the organism occurred in mild infections as well. The problem was further complicated by the frequent observation that the typical tubercle bacillus growing on artificial media containing isoniazid or para-amino-salicylic acid sometimes produce a few coloured colonies. Likewise, yellow organisms have been isolated from some patients who previously harboured susceptible, typical tubercle bacilli. It was not yet known whether the yellow bacillus was a new species, as some workers had proposed, or a natural mutant which chemotherapy had selected and hospital contacts were spreading.

Cariou Teeth.—Tooth decay may be widespread in a tooth long before the dentist can detect a cavity. A group of scientists at the University of California had evidence which indicated that bacteria may penetrate tooth enamel in minute threadlike chains, making a microscopic hole. Once beneath the enamel, the bacteria may spread out and destroy the dentine. *Lactobacillus acidophilus*, long thought to produce acid which eventually destroys the enamel, may not be a major factor. Frank Orla showed that enterococci (common intestinal members of the



"FISTULATED" STEER at Virginia Polytechnic Institute, Blacksburg, Va., undergoing examination by bacteriologists, biochemists and nutrition experts to determine the processes by which cows convert plants into meat and milk. Each of the experimental cows had "windows" cut into its side, thus permitting scientists to observe digestion or to remove the contents of the stomach for examination, as the photograph shows. The operation and subsequent examination are painless to the animal.

streptococcus family), when painted on the teeth of germ-free rats, produced caries. Microscopic sections of the teeth revealed that the enterococci had deeply invaded the decayed areas. These infections occurred in the absence of lactobacilli.

Psittacosis.—Psittacosis or parrot fever is a virus-caused lung disorder, something like pneumonia or influenza. The disease gets its name because it was first discovered in parrots and birds of the parrot or psittacine family. It has been found likewise in pigeons, canaries, chickens and turkeys. The nonparrot form is called ornithosis. Humans get it from contact with sick birds and from dust that gets contaminated with virus. During 1954 an outbreak of 97 cases developed in turkey-processing plants in Texas. Although there were no deaths, the disease was severe, and there were some relapses in patients treated with antibiotics.

During 1955 steps were proposed to eliminate this threat to bird-lovers and poultry raisers by treating the birds with achromycin or aureomycin. Breeders who employed this practice reported that the virus had been eliminated from their birds.

Antibiotics in the Orchard.—In the first successful large-scale commercial orchard trial using sprays of terramycin and streptomycin mixtures, fire blight was checked with 98% efficiency in controlled tests in Marysville, Calif. Fire blight causes annual losses of \$70,000,000 in the U.S., and has destroyed pear growing east of the Mississippi. It has also made inroads on commercial apple production.

These antibiotics were also being used on hitherto uncured bacterial diseases of tomatoes, peppers, beans, walnuts and potatoes. (See also POLIOMYELITIS; SALK, JONAS EDWARD.)

(L. J. LEB.)

Badminton. Joseph Alston of South Pasadena, Calif., and Eddy Choong, the defending champion from Penang, Malaya, met in the final round of the American Badminton association's open tournament in April 1955, with the laurels going to Alston. The competition, held at Long Beach, Calif., drew a field of the world's top players and Alston took the men's singles honours with a quick triumph at 15-5, 15-8. Margaret Varner of South Hadley, Mass., dethroned Judy Devlin of Baltimore, Md., as queen of the women contestants, winning by 6-11, 12-9, 12-9, to avenge the loss she had suffered in the 1954 title match. Alston paired with Wynn Rogers of Arcadia, Calif., to set back Eddy Choong and Daryl Thompson, Vancouver, B.C., 15-6, 12-15, 15-9, for the men's doubles crown. The Devlin sisters, Judy and Sue, again won the women's doubles event, conquering Janet Wright, San Francisco, Calif., and Thelma Welcome, Glendale, Calif., 15-10, 15-9. Rogers and Dorothy Hann, Los Angeles, Calif., carried home the mixed doubles prize by subduing Joseph and Lois Alston, 8-15, 15-11, 15-9. Roy Lockwood and Richard Fleming, Glendale team, took the veterans' doubles by conquering Wayne Schell, West Newton, Mass., and Fred Fullin, South Norwalk, Conn., 17-14, 12-15, 15-13.

John Kevorkian, Watertown, Mass., retained the boys' singles title in the United States junior tourney at Cleveland, O., in April. Other victors included McGregor Stewart, Baltimore, girls' singles; Kevorkian and Gary McFarlane, Lewiston, N.Y., boys' doubles; Norma Slauer and Nancy Metcalfe, Marblehead, Mass., girls' doubles; Kevorkian and Norma Slauer, mixed doubles.

Margaret Varner scored a surprise in the women's final of the all-England championships at London in March when she defeated Judy Devlin in the ultimate round, 9-12, 11-5, 11-1. Wong Peng Soon of Malaya beat the defending titleholder, Eddy Choong, 15-7, 14-17, 15-10, in the men's event. Other victors were Iris Cooley and June White, England, women's doubles;

Finn Kobbero and Jorgen H. Hansen, Denmark, men's doubles; Kobbero and Kirsten Thron Dahl, Denmark, mixed doubles. In Canada, Jean Wearing of Calgary, Alta., won both the junior girls' and women's championships and Don Smythe of Toronto, Ont., retained the men's title. Paul Holm of Montreal, Que., gained the world professional crown by beating a fellow townsman, Stan Cutts, 15-3, 15-11 and 15-2, 15-3, in the best two of three matches at Montreal.

Malaya won the Thomas cup, symbol of world supremacy in the sport for the third straight time when it routed Denmark, 8-1, in the challenge round at Singapore in June. Twenty nations competed for the prize, which Malaya won in 1949 and retained in 1952. Denmark advanced to the last round by subduing India, conqueror of the United States team. (T. V. H.)

Bahama Islands. This British colony consists of 21 inhabited and 680 uninhabited islands off the Florida coast. Area: 4,404 sq.mi. Pop.: (1954 census) 84,581 (about 83% Negro). Language: English. Religion: Christian. Capital: Nassau (pop., 1952 est., 36,243), on New Providence Island. Governor in 1955, earl of Ranfurly.

History.—Princess Margaret visited the Bahamas in Feb. 1955, arriving in the royal yacht "Britannia" from Jamaica on Feb. 26 and leaving by air on March 2. Tourism was again the colony's principal source of earnings. Visitors in 1954 numbered 109,000, a new record, and revenue from the tourist traffic in 1955 was forecast at £3,300,000, very largely in dollars. The construction of new terminal buildings was begun at Windsor field, which was to replace Oakes field as the main airport. The freeing of Oakes field would permit expansion of the city of Nassau, with consequent relief of overcrowding. Measures were approved for dredging a deep-water channel and harbour, able to accommodate large freighters, and the construction of a large industrial project at Hawksbill Creek, Grand Bahama. The plan, to be undertaken by the Grand Bahama Port Authority, Ltd., called for the setting aside of 50,000 ac. of land and the development there of, among others, lime, cement and building board manufacturing industries using local raw materials. A free port area was proposed as part of the plan. (R. H. Y.)

Education.—Schools (1953): primary 176, pupils 20,994; secondary 7, pupils 1,194; technical 1, pupils 403; 1 teachers' training college, with 43 students.

Finance and Trade.—Monetary unit: pound sterling; U.S. and Canadian dollars generally accepted. Budget (1954 actual): revenue £3,095,541; expenditure £3,008,515. Foreign trade (1954): imports £9,400,000; exports £1,310,000. Main exports: pit props, lumber, crawfish, salt, okras, tomatoes (canned and fresh).

Bahrein: see ARABIA.

Baking Industry. The following statistics on the production of the wholesale segment of the U.S. baking industry compare 1954 tonnage (published in 1955) with the 1947 tonnage, the latter figures being from the most recent census of manufactures. These figures are only for the wholesale segment of the industry, which are those bakers selling their products through grocery stores, hotels, restaurants and institutions. Retail bakers, multiple-unit retailers and house-to-house bakers are excluded because they are not included in the annual survey from which the figures are taken.

Nutrition.—For years the "Bakers of America" program, under the sponsorship of the American Bakers association, had been aimed at stimulating a greater demand for bakery products. During 1954 and especially 1955, the theme shifted to a concentrated educational campaign on the nutritional value of baked foods. The "Better Breakfast" campaign in February and March was aimed at educating the public to get into the habit of starting the day with a good breakfast which would include toast

Wholesale Production of Bakery Goods in the U.S.

Item	1947	1953	1954	Per cent change, 1947 to 1954
White bread, lb.	8,340,728,000	9,697,878,000	9,726,971,000	+16.5
Other bread, lb.	1,667,613,000	1,886,838,000	1,947,216,000	+16.4
Sweet goods, lb.	402,522,000	398,138,000	402,500,000	...
Cakes, lb.	1,210,207,000	1,131,237,000	1,108,603,000	-8.5
Pies, lb.	505,269,000	477,575,000	459,666,000	-9.2
Doughnuts (doz.)	256,992,000	285,167,000	282,316,000	+9.8
U.S. population	141,270,000	158,375,000	161,000,000	+14.0

and sweet goods. The "July is Picnic Month" and the "August is Sandwich Month" promotions were successful in stimulating summer sales in bread and buns. Scheduled for the months of October through December was the "Dessert Festival," a promotion program to encourage the greater use of bakery products as desserts.

In one month, American Institute of Baking, Chicago, Ill., filled 4,225 requests for more than 400,000 pieces of literature on nutrition.

Stable Ferment Process.—This process, introduced in 1954 by the American Dry Milk institute was being used in 1955 by 34 bakers throughout the country. Six of these bakeries were operating 100% of their bread production under the ferment process.

The ferment includes water, nonfat dry milk solids, corn sugar, salt, yeast and yeast food. Water is metered into a stainless steel tank to combine with the other ingredients. This ferment is agitated slowly for five or six hours and after cooling, remains stable for several hours. It is then metered into the dough mixer to combine with flour, sugar, lard and more yeast and yeast food.

The American Dry Milk institute had received more than 700 written inquiries for detailed information on the Stable Ferment Process.

Facts and Figures.—The U.S. census bureau listed 27,000 bakeries in the nation. Those actually baking for wholesale or retail totalled 22,000, the remainder being retail outlets only. About 7,000 of these 22,000 bakeries have annual sales in excess of \$50,000.

The total number of workers in U.S. bakeries during April 1955 totalled 280,500 compared with 282,700 in April 1954. Of these, production workers numbered 169,600 compared with 174,200 a year previous. Average weekly earnings for bakery employees was \$70 compared with \$68.39 in 1954; weekly hours were 40.7 compared with 41.2; hourly earnings averaged \$1.72 as against \$1.66. In the biscuit, cracker and pretzel group, weekly earnings averaged \$60.22 and \$60.83; weekly hours, 38.6 and 39.5 and hourly earnings, \$1.56 and \$1.54. (See also WHEAT.)

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Balance of Payments: see EXCHANGE CONTROL AND EXCHANGE RATES; INTERNATIONAL TRADE.

Balearic Islands: see SPAIN.

Balkan States: see ALBANIA; BULGARIA; GREECE; ROMANIA; TURKEY; YUGOSLAVIA.

Ballet: see DANCE: Ballet.

Baltic States: see ESTONIA; LATVIA; LITHUANIA.

Baltimore.

Baltimore is the metropolis of Maryland and had an estimated population of 966,000 in June 1955. The land area of the city is 78.72 sq.mi.; the water area, 13.21 sq.mi. Mayor in 1955: Thomas D'Alesandro, Jr., Democrat.

Budget appropriations for 1955 were \$183,436,904.48; for

1954 they were \$174,508,386.47. The city tax rate for 1955 was \$3.05 per \$100 of assessed valuation, and the rate for 1954 was \$2.82. The taxable basis for 1955 was \$2,936,005,029, and for 1954 it was \$2,846,003,019. The gross funded debt as of June 30, 1955, was \$281,100,200; the sinking funds amounted to \$28,334,108, leaving a net debt on that date of \$252,766,092, not including accrued income. The percentage of net debt to the taxable basis (excluding self-supporting indebtedness) was 5.51% as of June 30, 1955.

The net enrolment on Oct. 31, 1954, in the public schools of the city was 86,624 white students and 57,064 Negro students; in addition, 24,801 students were enrolled in adult education classes. John H. Fischer was superintendent of the Baltimore city schools. The public schools of Baltimore are a separate and distinct unit and are not under the jurisdiction of the state department of education. The integration of schools for white and Negro students was carried into effect in Sept. 1954.

Ranking as the second United States port in foreign trade by tonnage, Baltimore had a combined value of exports and imports at the port during the year 1954 amounting to 19,010,100 tons, a decrease of 11.1% from the 21,397,300 tons for the previous year. The decline in foreign trade volume resulted from substantially reduced overseas shipments of coal, grain and iron and portations of metallic ores during the year. The port's foreign commerce in 1954 was valued at \$944,000,000, as against \$913,400,000 in 1953. New port records were established in 1955 when 4,829 ocean-going vessels in all categories of water-borne trade arrived at Baltimore and 4,178 deep-draught ships utilized the C. & D. canal route to and from the port.

The moderate letdown in industrial activity during 1954 was attributable to the adjustments of military orders following the Korean cease-fire agreement, to the working off of unbalanced inventories and to substantially lower operations at the shipyards. The initial half of 1955, however, saw a considerable pickup in shipbuilding and repairing as well as the establishment of a new high production record for the steel industry.

At the midpoint of 1955, the ten leading industry groups, in order of volume of employment, were primary metal industries (39,800), transportation equipment (34,200), food and kindred products (22,400), apparel (16,400), fabricated metal products (15,300), electrical equipment (11,300), chemicals (9,900), printing and publishing (9,200), nonelectrical machinery (7,300) and stone, clay and glass products (5,300).

Baltimore's marked growth in new production facilities continued in 1954 with a total announced investment of approximately \$100,000,000 for new plants and expansions. The increase in the local manufacturing capacity was greatly accelerated during the first seven months of 1955, when the announced investment for such purposes amounted to \$185,000,000, a sum that far exceeded the total for any full year in the history of the community. (C. N. E.)

Bananas: see FRUIT.

Banking.

Demands for credit and capital funds generally were extremely high in the United States during 1955. Mortgage financing, instalment credit financing and commercial and industrial loans were especially strong. The Federal Reserve pursued a monetary policy of restraint with growing severity and the treasury department offered a long-term bond. Interest rates, and particularly short-term money market yields, rose during the year.

Demands for Credit and Capital.—Home mortgage financing increased during most of 1955 at a record rate, reflecting very high levels of residential construction, particularly in the first half of the year. Mortgage debt outstanding secured

one- to four-family nonfarm houses stood at \$82,100,000,000 on June 30, 1955, an increase of \$12,200,000,000 over the figure a year before. Of the total outstanding, Federal Housing administration-insured debt amounted to \$13,500,000,000, Veterans administration-guaranteed debt accounted for \$22,000,000,000, and conventional mortgages stood at \$46,500,000,000.

Mortgage credit was tightened in many markets starting in the spring of the year. Available funds were somewhat reduced by monetary and debt-management policies. On July 30 the Veterans administration and the Federal Housing administration raised minimum down payment requirements by 2% and shortened maximum maturities to 25 years. Mortgage warehousing was frowned upon by federal reserve officials, and the federal home loan banks restricted borrowing by savings and loan associations. Late in the year there was some apparent easing of these restraints on housing loans.

Total instalment credit outstanding rose \$4,760,000,000 in the year ended Sept. 30, 1955, with \$1,370,000,000 of the increase representing holdings by commercial banks and \$2,370,000,000 taking the form of higher holdings of sales finance companies. Credit extended in the stock market rose but was restrained by higher margin requirements.

Commercial and industrial loans at weekly reporting member banks went up during the year by about \$3,000,000,000. These loans rose sharply during the first half of the year as against decreases in the first half of 1954 and even 1953. In the second half of the year a further increase continued in greater than usual seasonal proportions.

Corporate offerings of securities for new money were at a high level in 1955, but not at a record rate. Such securities offerings amounted to \$6,780,000,000 in 1954, as compared with the record level of \$8,180,000,000 in 1952 and \$7,960,000,000 in 1953. Total corporate offerings of securities for new money in the first eight months of 1955 were about 11% over those in the corresponding period of the previous year.

Significant differences appeared among groups of business enterprises in the pace of their securities offerings. New money issues by manufacturing firms in the first eight months of 1955 were up 44% over those in the same months of 1954, with much of the increase taking the form of common stock offerings. Internal financing through depreciation accruals and retained earnings, however, bulked much larger as a source of funds than securities offerings. Likewise, securities offerings by financial companies in January through August 1955 were more than four times those in the corresponding period a year before, with the increase coming primarily in debt obligations of sales finance companies.

Interest Rates.—During most of 1955, interest rates moved upward. This was particularly true of short-term money market rates which were under the continuing pressure of restrictive monetary policies. Four increases brought the discount rate at the federal reserve banks from 1½% early in April to 2½% late in November. The rate on new issues of treasury bills rose from .616% in early June 1954 to around 1% at the turn of the year and then to 2.440% late in November. This was the highest such rate since 1933, although it was just slightly above the high of 2.416% reached in June 1953. Dealers raised commercial paper rates eleven times and finance companies nine times during the year. In late November, yields on prime four-to-six month commercial paper were 2⅞% compared with only 1⅞% at the start of the year. The yield on major finance company paper rose from a minimum rate of 1⅞% when the year began to 2½% to 2⅞% in late November. During 1955 there were two increases in the prime rate on commercial loans, from 3% to 3¼% on Aug. 2 and from 3¼% to 3½% on Oct. 14. The 3½% rate was the highest in 25 years, and was above the 3¼% level

reached in 1953.

Yields on Aaa corporate bonds rose slightly from a low of 2.86% in April 1954 to 2.92% at the turn of the year, and then went up to 3.14% in September. By mid-November the Aaa yield had declined somewhat to 3.08%, however, and the high yield in the year was far short of the high of 3.44% for the year 1953. The average yield on outstanding high grade municipals rose from a 2.36% low yield earlier in the year to a high of 2.69% but stood at 2.52% by mid-November.

Yields on long-term treasury bonds generally rose and prices fell during 1955, with significant fluctuations during the year. The long-term 3½% government bonds declined from a high price of somewhat more than 110 early in 1955 to a low of 104 in August, at which price the yield was 2.99% to call. By the first of November, however, the price had risen to over 106 to yield 2.87% to call, but by later in the month had fallen again to below 105 to yield about 2.94%. In February and in July the treasury offered a 3% bond due in 1995, a 40-year maturity, not callable, the first treasury bond issue with a term of more than 30 years offered since 1911. This bond displayed unusual strength as a result of demand from pension funds and freedom from pressure of liquidation. Intermediate bonds were under rather severe pressure during the year, however, as some banks sold them to make loans and as other nonbank institutions sold them to raise funds for mortgages.

The money and capital markets as a whole in 1955 saw a marked narrowing between short-term and long-term rates. Moreover, pressures on the bond market in 1955 came not so much from a high volume of bond offerings as from the indirect consequences of restrictive federal reserve policy and tremendous demands for credit with which to buy houses and automobiles. The sharply rising stock market greatly narrowed the margin between common stock yields and bond yields.

Commercial Banks.—Total loans and investments of all commercial banks reached a new peak in the second half of 1955. These amounted to \$157,300,000,000 on Sept. 28, 1955. This increase in bank earning assets during 1955 was far less than during the previous year, however, as restrictive federal reserve policies forced commercial banks to sell government securities in an amount which almost equalled the substantial increase in loans and other securities. Total loans reached a new record peak of \$78,400,000,000 at the end of Sept. 1955, after a nine-month increase of \$7,800,000,000. Commercial bank holdings of government securities on Sept. 28, 1955, amounted to \$62,000,000,000, a decrease of \$7,000,000,000 since the beginning of the year. Other securities, chiefly holdings of state and local governments, stood at \$16,900,000,000 on Sept. 28.

On June 30, 1954, national banks, which numbered more than 4,700, held \$98,636,000,000 of total deposits. State banks, which numbered about 9,000, had total deposits of \$82,900,000,000. Total earnings of commercial banks in 1955 were well above the previous year, reflecting the expansion of loans and rising interest rates. Profits on securities sold were down sharply from 1954. Although current expenses increased, net current earnings were higher, as were dividends. Numerous bank mergers, involving some of the largest institutions, occurred during the year.

Money Supply.—The privately held money supply rose during the year to a new high. Nevertheless, federal reserve policies of credit restriction served in some degree to moderate the expansion.

The privately held money supply reached a new record peak on Sept. 30, 1955, at \$209,700,000,000, including demand deposits adjusted, \$104,900,000,000; time deposits at commercial banks, mutual savings banks, and the postal savings system, \$77,600,000,000; and currency outside banks, \$27,200,000,000. The increase over the figure of a year before was \$7,200,000,-



INPUT CONSOLE of ERMA (electronic recording machine-accounting), an automatic system for handling the bookkeeping details of 50,000 checking accounts a day, devised by the Stanford Research Institute, Menlo Park, Calif., for use by the Bank of America. Completed in 1955, the machine was composed of an electronic reading device, magnetic drum storage, magnetic recording tapes and a high-speed printer

ooo, with the rise in demand deposits somewhat exceeding that in time deposits. The usual seasonal movements influenced the behaviour of the money supply during the year. Thus, total deposits adjusted and currency outside banks rose \$7,200,000,000 during the last three months of 1954, declined \$4,400,000,000 in the first three months of 1955, and then rose \$4,400,000,000 during the next six months.

Money in circulation, that is, currency and coin outside the treasury and the federal reserve banks, showed little change during the first five months of 1955 from the previous year's figures. In May and June, however, there was a sharp upturn. Even so, money in circulation early in Nov. 1955 was barely equal to the peak amount for the same period reached late in 1953.

The volume of bank debits at commercial banks rose to new record heights, reflecting sharp recovery from slight recession and rapid further expansion in the economy. Debits to demand deposit accounts at banks in 343 leading centres in the third quarter of 1955 were 13.5% above the total reported for the corresponding period a year before. Moreover, the rise was unusually widespread, for all but 15 of these 343 individual cities had bank debits above the preceding year. The annual rate of turnover of demand deposits showed a further rise, with deposit velocity at the 343 reporting centres outside New York city being 9% above Sept. 1954. (J. K. L.)

Mutual Savings Banks.—Mutual savings banks in the United States had combined assets valued at \$30,460,827,273 at the close of business on June 30, 1955. On the same date there were funds on deposit in the amount of \$27,329,091,716 belonging to 20,872,628 depositors and surplus funds of \$2,796,733,474 equal to 10.2% of the amount due depositors.

During the year ended June 30, 1955, these combined assets increased by \$2,063,836,641 or 7.27% as compared with an

increase of \$1,995,209,245 or 7.58% for the year ended June 1954. The net increase in the combined amount due depositors was \$1,891,197,342 or 7.43% for the year ended June 30, 1955, and \$1,818,236,027 or 7.70% for the previous year; while the net increase in the number of depositors for the two 12-month periods was 349,451 or 1.70% in 1955 compared with 335,000 or 1.66% in 1954.

The number of mutual savings banks in the United States remained at 527 on Sept. 30, 1955. The incorporation of a new savings bank in Massachusetts, the Dukes County Savings Bank, was offset by the merger of two banks in Connecticut to form the People's Savings Bank-Bridgeport. The number of branches of banks in operation increased from 298 on Sept. 30, 1954 to 320 on Sept. 30, 1955.

On the average the dividend rate credited on deposits increased from 2.55% in 1954 to 2.71% in 1955. This was the highest average rate paid since 1935.

The rise in the dividend rate was supported by increased investments in real estate mortgage loans. The combined assets of mutual savings banks on June 30, 1955, were invested as follows: U.S. government securities 28.51%, other securities 13.71%, real estate mortgage loans 52.52% and miscellaneous assets 5.26%.

On June 30, 1954, the combined investments were distributed as follows: U.S. government securities 31.80%, other securities 14.39%, real estate mortgage loans 48.35% and other assets 5.46%. The existing level of mortgage investments was reached for the first time since 1933. The percentage of assets invested in U.S. government securities had not been as low as the existing figure since 1940.

During the year ended June 30, 1955, the growth of insurance in force was at the rate of 6.40% per annum in Massachusetts, 11.87% in New York and 19.37% in Connecticut. The varying rates were consistent with the length of time since life insurance had been available in the several states; viz.: in Massachusetts since 1908, in New York since 1939, in Connecticut since 1941.

The growth of balances due depositors in British Trustee Savings banks during the year ended Nov. 20, 1954, was £55,639,712, of which £48,853,126 represented the increase in balances in the special investment department. This large increase resulted from the more attractive rate of interest paid on deposits in this department and the increase in the limit of deposits allowed one individual from £500 to £1,000.

The number of active accounts in all three departments combined on Nov. 20, 1954, was 7,499,244, an increase of 450,000 for the year ended that date. There were 84 separate trust

Table I.—Savings Bank Life Insurance, June 30, 1955

Item	Massachusetts	New York	Connecticut
Insurance in force	\$531,304,809	\$310,090,783	\$28,960,000
Number of policies	485,492	172,235	21,000
Number of banks			
Issuing	37	44	
Agency	130	27	

savings banks with 1,303 offices in operation, 20 of which were opened in the year ended Nov. 20, 1954. Since 1937 the total number of trustee savings bank offices had grown from 1,283 to 1,303. (HE. BR.)

Other Countries.—A general reversal of the easier credit policies followed by most governments in the 1953-54 period

Table II.—Financial Position, British Trustee Savings Banks

	Nov. 20, 1954 £	Nov. 20, 1955 £
Cash balances due to depositors		
Ordinary department	827,061,166	824,891,000
Special investment department	192,572,999	143,711,000
Government stock and bonds held for depositors (nominal value)	114,254,443	109,600,000
Total balances	1,133,888,608	1,078,202,000
Combined surplus funds	19,581,589	19,260,000
Total funds	1,153,470,197	1,097,462,000

which was prompted by evidence of the re-emergence of inflationary pressures, was the most important development in the United Kingdom, the Commonwealth, Europe and the middle east in 1955. In nearly all countries the rising tempo of business activity was reflected in the growth of banking turnovers in the early months of the year and in a rise in the total of advances and deposits. But subsequently, following the adoption of more stringent official policies, an advance in interest rates and the tightening of quantitative restrictions on lending imposed a check on banking activity. In the later months of the year, therefore, the flow of bank money slowed down in many countries, while deposits and loans ceased to increase or turned downward.

The domestic finances of the banking systems benefited from the rising trend of money rates but they were naturally adversely affected in the later months of 1955 by the adverse impact of official stringency measures on the volume of bank business.

On balance, the current account circumstances of most banks were more favourable than in the preceding years, but many banks suffered severe capital losses because of the fall in the market value of their holdings of government and similar securities caused by the rise in the general level of money rates.

In Great Britain the authorities made the switch to dearer and tighter credit much earlier in 1955 than most other countries. In the first two months of the year the bank rate, which had been reduced from $3\frac{1}{2}\%$ to 3% in the second quarter of 1954, was raised by two stages to $4\frac{1}{2}\%$ to bring about a general rise in the level of interest rates in the United Kingdom and so discourage borrowing to finance capital development. To reinforce this effort to damp down the demand for credit, the authorities took steps to limit the ability of the banks to make new advances available. Official procedures for financing governmental borrowing and the treasury's open market operations in the London money market were reshaped so as to cut down the liquid resources at the disposal of the banking system until the banks could not expand nonliquid items like loans to private customers without infringing the traditional rule that they should maintain a ratio of liquid assets to deposits of at least 30%.

The use of orthodox controls for reversing the growth of bank loans was not, however, altogether successful. Demand for bank credit continued at a high level because of the need for additional business finance generated by the buoyancy of economic activity.

Rather than refuse customers' requests, many banks decided to provide this money by reducing other nonliquid assets, such as their holdings of government securities. This largely defeated the official attempt to curb lending by liquidity measures and in the first half of the year the loans of the London clearing banks (together responsible for about 95% of the commercial banking business of the U.K.) rose by almost £300,000,000 against a fall in security holdings of a little under this figure.

The government decided in the middle of the year to make a direct request to the banking system for a significant reduction in overdraft totals and the leading banks responded to this by indicating their intention to overhaul their agreements with customers with the object of bringing about a contraction of about a tenth in loan totals before the end of the year. Instructions were sent out to branch managers stressing that loan limits should be cut back as far as possible whenever this could be done without harming exports, the defense program, the production of import-saving goods and business activities of a normal seasonal kind and without causing unduly severe hardship. During the second half of the year, therefore, loans showed a falling trend.

Table III.—London Clearing Banks Returns
(£ million)

Item	Oct. 1953	Oct. 1954	Oct. 1955
Deposits	6,373	6,609	6,376
Net deposits	6,156	6,375	6,125
Cash	518	532	520
Call money	476	437	408
Treasury bill holdings	1,287	1,212	1,113
Commercial bills	53	83	115
Investments	2,238	2,364	2,086
Advances	1,654	1,824	1,965
Acceptances, etc.	310	375	459

At the end of October, however, the clearing banks' advances were still materially higher than a year before.

As loans to private customers declined in the second half of the year and as few banks were prepared, in view of the unsettled state of the gilt-edged market, to add to their holdings of government securities during this period, the ratio of the non-liquid assets of the banks to sight liabilities fell. The liquidity of the banks was further strengthened at this time by an increase in government borrowing on treasury bills caused by the need for the authorities to obtain bank money for covering its own budget deficit and for paying for bond issues of nationalized industries that it had to absorb because of the low level of private subscriptions.

The rise in the general level of interest rates caused the banks to step up the rate of interest paid on a substantial segment of their deposits during the year. But increased outlays on this account were materially outweighed by the rise in earnings. The change in the general monetary situation caused the banks domestic financial worry as there was a big fall in the market value of their substantial holdings of government securities.

This could not always be covered from the inner reserves set aside in earlier years to meet investment depreciation and a number of institutions reverted to the practice (first adopted in 1952) of showing investment portfolios in published balance-sheets at book values temporarily in excess of market values. (See also BUSINESS REVIEW; CONSUMER CREDIT; DEBT, NATIONAL; EXPORT-IMPORT BANK OF WASHINGTON; FARM CREDIT SYSTEM; FEDERAL DEPOSIT INSURANCE CORPORATION; FEDERAL RESERVE SYSTEM; GOLD; INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT; SAVINGS AND LOAN INDUSTRY; STOCKS AND BONDS.)
(C. H. G. T.)

Baptist Church. From 60 countries 8,500 Baptists attended the jubilee congress of the Baptist World alliance, London, July 16-22, 1955. Numbering 6,000,000 in the world when organized in 1905, the alliance now represented 21,000,000.

Jacob I. Zhidkov, chairman of the All-Soviet Union of Evangelical Christians (Baptists), reported for his country 520,000 members (all 18 years or older), 5,400 churches, 3,000 ordained and 2,400 unordained ministers. The Moscow church had 4,500 members. There was no government interference with worship, he said, though no Sunday schools were permitted but religious education was permissible in the homes. No seminary existed because of lack of finances.

He claimed an 800% increase in membership of the church under the communist regime.

Authorities forbade the building or renting of Baptist church edifices in Spain during 1955 and closed some hitherto in use. Pastors and laymen were imprisoned on religious grounds, and *Echo of Truth*, a monthly publication, was suspended.

Baptists in Finland numbered 46,000, 14 churches being above the Arctic Circle. Baptists in Sweden in 1955 numbered 35,000 and supported 70 missionaries.

Hungarian Baptists reported 20,000 members, 50,000 adherents in 500 congregations, 100 ministers, 15 seminary students, and three homes for the aged.

One hundred and three churches represented in the 45th session of the Korean Baptist convention reported 1,980 baptisms, 25 new churches, 203 Sunday schools for 1954-55. Japanese Baptists dedicated a \$250,000, four-story, 100-bed hospital in Kyoto on July 12, 1955.

Baptist work in Thailand was resumed in 1955 after a lapse of some years, with eight missionaries supported by the two Foreign Mission societies of the American Baptist convention.

The fifth annual convention of the Bolivian Baptist union, held in 1955, recorded in that country 1,218 members, 33 churches, 12 national pastors, 55 Sunday schools, 2,738 pupils and 23 Vacation Bible schools attracting 1,280 children.

The Jamaica Baptist union in 1955 numbered 23,000 members, a gain of 1,000 over 1954.

The Ontario-Quebec Baptist convention, Canada, held June 13-16, 1955, reported that missionary contributions increased from \$180,000 in 1948 to \$360,000 in 1955; Church Extension campaign receipts amounted to \$294,000.

The American Baptist association meeting in Hot Springs, Ark., June 21-23, 1955, 3,500 attending, voted \$105,173.97 for missions, with 23 interstate and foreign missionaries. Sunday school publications netted \$169,798.97 during 1954-55. *The History of the Evangelical Churches of the Piedmont*, originally published 1658, was to be republished at a cost of \$5,000. J. W. Harper, Galatin, Tex., was elected president, and Little Rock, Ark., was chosen for the 1956 meeting.

Twelve hundred delegates at the Baptist General conference (Swedish) in Denver, Colo., June 22-26, 1955, appointed seven missionary couples to Japan, Ethiopia and South America. Eighty-seven missionaries, one for every 620 members, were in service during 1955. A missionary budget of \$400,000 was supported by 54,000 members in 427 churches.

Ten thousand messengers and visitors, representing 8,000,000 members, attended the Southern Baptist convention in Miami, Fla., May 18-21, 1955. C. C. Warren, Charlotte, N.C., was chosen president, and Kansas City, Mo., was selected for the 1956 meeting.

The American Baptist convention assembled in Atlantic City, N.J., in May with 6,698 attending. Frank A. Nelson, Racine, Wis., was elected president and Seattle, Wash., was selected for the 1956 gathering. (See also CHURCH MEMBERSHIP.)

(R. E. E. H.)

Barbados.

This British colony is the most easterly of the Caribbean islands. Area: 166 sq.mi. Pop.: (1946 census) 192,800 (77.27% Negro, 17.54% mixed, 5.11% European); (1954 est.) 223,000. Language: English. Religion: Christian (about 70% Anglican). Capital and chief port: Bridgetown, pop. (1954 est.) 18,000 (metropolitan area 80,000). Governor in 1955, Sir Robert Arundell; premier, Grantley H. Adams.

History.—Princess Margaret visited Barbados in Feb. 1955 during her West Indies tour. The Australian cricket team that toured the West Indies in the first half of the year beat Barbados in May by four wickets.

With assistance from the World Health organization, a campaign to eradicate the yellow fever mosquito and a campaign with the B-C-G vaccine to combat tuberculosis were initiated. Work was started on a 1,000-ft. extension of Seawell runway, making it 7,000 ft. long. Air France started a scheduled service linking the island with the French *départements* in the Caribbean. A housing authority to provide 600 houses a year for the working classes was set up under a housing act, and a development board to foster and develop local industry and agriculture was also established. The government assisted by loans the mechanization of the fishing fleet and plans were made to construct up-to-date refrigeration plant for fish. The government

joined the Caribbean Tourist association. A start was made carrying out a revised plan for a deep water harbour estimated to cost £3,500,000. Hurricane "Janet" caused great damage to Barbados on Sept. 22.

The coinage of the eastern Caribbean group went into circulation on Nov. 15.

(D. A. Ws.)

Education.—Schools (1953): public elementary 124, pupils 32, government-aided secondary 10, pupils 3,019. Higher education at King's College (affiliated to Durham university, Durham, Eng.), students 28 and Erdiston teachers' training college, students 32.

Finance and Trade.—Budget (1953-54 actual): revenue £3,107,660; expenditure £2,676,694; (1954-55 est.) revenue £2,848,372; expenditure £2,690,089. Foreign trade (1954): imports £10,100,000, exports £420,000. Principal exports: sugar, molasses, rum. Sugar crop (1954) 171,000 metric tons. Monetary unit: British West Indian dollar: B. \$1 = £1 sterling.

Barley.

The 1955 U.S. barley crop, indicated at 386,551,000 bu. and exceeded only by the 429,000,000-bu. crop of 1942, was moderately larger than the 370,126,000 bu. of 1954 and much larger than the 266,918,000-bu. average for 1944-53. Harvested acreage was 14,099,000 ac. as compared with 12,994,000 ac. in 1954 and an average for the 1944-53 decade of only 10,329,000 ac. The indicated average yield was 27.4 bu. per acre was favourable, compared with the 25.9-bu. average of 1944-53, but lower than the 28.5 bu. of 1954. Malted barley was comparatively scarce and test weights were low, the quality having been damaged in the northern plains area by hot weather at filling time as well as by green bugs and diseases. North Dakota climbed to first place as a producer (78,039,000 bu.), followed by the usual leader, California (61,005,000 bu.) and Montana (41,160,000 bu.). U.S. stocks carried over at the beginning of the crop year, July 1, were 130,000,000 bu., large as compared with 71,000,000 bu. in 1954 and 51,000,000 bu. in 1953. Imports from Canada were anticipated of about 20,000,000 bu. (average for 1949-53 was 21,000,000 bu.), giving a total supply for 1955-56 of 537,000,000 bu. as compared with 437,000,000 bu. in the previous year and a normal supply of about 350,000,000 bu. Market prices declined from about \$1.10 a bushel early in the year to less than 90 cents per bushel at harvest time. Official support price was reduced to 94 cents a bushel (70% of parity) at the farm as compared with \$1.05 (85% of parity) for the 1954 crop.

Barley in recent years has displaced corn as the most important feed grain moving in world trade—about 5,007,000 tons (equivalent to 223,645,000 bu.) entered world trade in 1954-55 as compared with 5,800,000 tons in the previous year. Carry-over stocks in the four principal exporting countries—U.S., Canada, U.K. and Germany—were exceeded by the 262,000,000 bu. of 1954. A large world crop estimated at 2,830,000,000 bu. augmented the large carry-over.

(J. K. R.)

Barley Production of the Principal Producing Countries

Country	(In thousands of bushels)		Average 1945-49	Average 1950-54
	1955*	1954		
U.S.S.R.			272,000	429,000
United States	386,551	370,126	273,306	231,000
China			322,244	347,000
Canada	258,025	175,509	144,688	81,000
Turkey	146,980	110,230	68,675	91,000
India	130,010	135,520	106,255	90,000
France	119,820	115,960	52,500	50,000
United Kingdom	119,000	104,720	91,895	30,000
Japan	98,980	106,500	56,046	73,000
Denmark	94,060	93,920	64,345	50,000
German Federal Republic	93,880	88,170	43,740	70,000

*Preliminary estimate.

Baseball.

Brooklyn's frustrating search for a world baseball championship ended in 1955. That, in cap form, was the story of the major league season. In effect, all drama, the turbulence, the joy and the heartbreak of an entire baseball year were blended into a single game. That was

seventh and deciding struggle of the world series, and the Dodgers won it. They beat their neighbouring rivals, the New York Yankees, 2 to 0, after splitting the first six games. Further embellishing the Brooklyn triumph was the fact that the Dodgers captured the series despite the loss of the first two games. No other team in modern annals had overcome an obstacle of that magnitude. Brooklyn thus was rewarded following seven previous fruitless series appearances.

Meanwhile, baseball in 1955 found Kansas City meeting the challenge of its newly-acquired major league franchise. The transplanted Athletics attracted 1,393,054 customers at home, a figure in excess of 1,000,000 over that drawn by the last-place Athletics at Philadelphia in 1954. Kansas City finished a respectable sixth in its American league debut.

Baseball lost one of its pillars with the death of 85-year-old Clark Griffith, owner of the Washington Senators, on Oct. 27. Eight days later, Denton True (Cy) Young, baseball's winningest pitcher, died at the age of 88. Griffith's son, Calvin, was named to carry on as president of the Senators.

Major League Races.—The major league pennant races represented two exaggerated extremes. The New York Yankees waited until two days before the season terminated to emerge from one of the most exhausting American league fights in years. Conversely, Brooklyn ran away from the pack in the National league.

The Yankees brought Manager Casey Stengel his sixth pennant in seven years, but the issue was in doubt among four teams almost until the end. New York wound up three games in front of the Cleveland Indians and five ahead of the Chicago White Sox. The Boston Red Sox made an exciting bid but faltered in the stretch to settle in fourth place, 12 games back.

UMPIRE BILL SUMMERS signalling Pee Wee Reese (1) of the Dodgers safe at first base as pitcher Johnny Kucks (53) of the Yankees arrives too late to tag out Reese. Joe Collins, Yankee first baseman who fielded the ball, is shown at the left. The action occurred at Ebbets field, Brooklyn, N.Y., during the fourth game of the 1955 world series, Oct. 1

Detroit stayed within reach until midway through the season but dropped to fifth in the final standing.

Moreover, the Yanks got a superlative comeback from 35-year-old pitcher Tommy Byrne, who left his wildness in the minor leagues and came on to compile a 16 and 5 record. Whitey Ford showed 18 and 7 on the mound to parlay a potent one-two southpaw pitching punch for New York. As usual, the Yankees outstripped the rest of the league in home runs, with 175. Switch-hitting centrefielder Mickey Mantle delivered a league-leading total of 37.

In the National league, Brooklyn opened the season with a record ten straight victories and ultimately won 21 of its first 23 games. Thereafter, Manager Walter Alston's club remained in control. The Dodgers formally clinched the pennant on September 8 in their 138th game, the earliest in modern major league history. The battle for second place provided a scramble, with the Milwaukee Braves finally shaking off the 1954 world champion New York Giants. The Braves were 13½ games behind Brooklyn at the end. The Giants, in third, finished 18½ games from the top. Philadelphia was fourth, 21½ games out.

An ironic twist in Brooklyn's fortunes came on May 5 when Manager Alston suspended pitcher Don Newcombe briefly for refusal to pitch batting practice. Once reinstated, Newcombe proceeded to win a club high of 20 games against 5 losses. His bat was also a factor, with a .359 average featured by seven home runs and 23 runs batted in. The Dodgers boasted three regulars in the charmed .300 hitting circle. Catcher Roy Campanella hit .318, rightfielder Carl Furillo .314 and centrefielder Duke Snider .309. Brooklyn led the major leagues in home runs with 201, including 42 by Snider.

World Series.—Johnny Podres won the 1955 world series for Brooklyn. He didn't do it singlehandedly, for baseball subscribes to the team theory. But he was the primary difference between the Dodgers and a Yankee club which previously had plucked off 16 series championships as compared with only four



Table I.—Final Major League Standings, 1955

Standing at close of season, Sept. 25				Standing at close of season, Sept. 25			
Natl. League	Won	Lost	Pct.	Amer. League	Won	Lost	Pct.
Brooklyn	98	55	.641	New York	96	58	.623
Milwaukee	85	69	.552	Cleveland	93	61	.604
New York	80	74	.519	Chicago	91	63	.591
Philadelphia	77	77	.500	Boston	84	70	.545
Cincinnati	75	79	.487	Detroit	79	75	.513
Chicago	72	81	.471	Kansas City	63	91	.409
St. Louis	68	86	.442	Baltimore	57	97	.370
Pittsburgh	60	94	.390	Washington	53	101	.344

Source: *Sporting News*, the national baseball weekly.

reversals.

With the series tied at three games apiece, Podres, a 23-year-old-lefthander, shut out the Yankees, 2 to 0, in the climactic seventh game. He scattered eight hits to beat Tommy Byrne and he did it in Yankee stadium. Gil Hodges batted home both Dodger runs, one with a single in the fourth inning, the other with his sacrifice fly in the sixth.

Earlier, New York had threatened a possible sweep. The Yanks opened the postseason classic by beating Don Newcombe, 6 to 5, behind Whitey Ford. Two home runs by Joe Collins, good for three runs, settled the game.

New York took the second game, too, as Tommy Byrne stopped the Dodgers on five hits and singled in two decisive runs during a four-run Yankee fourth inning.

Now trailing by two games, with both losses effected at Yankee stadium, Brooklyn found a haven of refuge in its Ebbets field home and a stopper in Podres. He shackled the Yanks on a seven-hitter and Brooklyn bats responded with an 8 to 3 victory.

Given new life the Dodgers tied the series at two games all, 8 to 5. Brooklyn grabbed the lead on home runs by Roy Campanella and Hodges, and clinched matters when Duke Snider homered with two on in the fifth inning. Clem Labine, in relief of starter Carl Erskine, gained credit for the win.

Brooklyn pulled out ahead in the series by virtue of a 5 to 3 victory in the fifth game, their third in a row at Ebbets field. Snider smashed two home runs to run his lifetime series total to 9, a record for the National league. His homers benefited rookie Roger Craig, who became the winning pitcher.

Back at Yankee stadium, the Yanks squared the series. Ford came back for his second win, this time by a 5 to 1 margin on a four-hitter. New York broke it up with five runs in the first inning, three on a home run by Bill Skowron.

That forced the world series to the limit and Podres then reigned supreme.

Individually, catcher Yogi Berra of the Yankees led series regulars at bat with a .417 average. The irrepressible Snider finished with .320, including four home runs and seven runs batted in. The Yankees' Mickey Mantle saw action in only three games because of a leg injury.

Yankee shortstop Phil Rizzuto played in all seven games to run his lifetime total of appearances in series games to 52, a new record. Joe DiMaggio had held the previous standard of 51.

Total paid attendance at the series was 362,310, with net receipts therefrom totalling \$2,337,515.34 Brooklyn players received \$9,768.21 apiece for a full share, the Yankees \$5,598.58.

Table II.—Attendance at Major League Baseball Parks, 1955

Club	1955	1954	Club	1955	1954
National league			American league		
Milwaukee	2,005,836	2,131,388	New York	1,490,136	1,475,177
Brooklyn	1,033,589	1,020,531	Kansas City	1,393,054	*304,666
Philadelphia	922,886	738,991	Cleveland	1,221,770	1,335,477
Chicago	875,800	748,183	Boston	1,203,029	931,121
St. Louis	849,130	1,039,698	Detroit	1,181,846	1,079,844
New York	825,202	1,155,067	Chicago	1,175,785	1,231,621
Cincinnati	690,963	704,167	Baltimore	852,039	1,060,911
Pittsburgh	469,389	475,494	Washington	425,857	503,541

*Philadelphia figures for 1954.

Source: *Sporting News*, the national baseball weekly.

Individual Performances.—Al Kaline of Detroit, only two years removed from the high school ranks, won the 1955 American league batting championship, posting an average of .340 in final unofficial averages. The 20-year-old Kaline also led the league in hits with 200. Ted Williams of Boston, rejoining the Red Sox belatedly after reconsidering plans to retire, hit .350 but came to bat only 320 times, 80 less than the required number to qualify for the title. Boston's Jackie Jensen and Detroit's Ray Boone tied for runs-batted-in honours with 116. Mickey Vernon of the Yankees produced 37 home runs and 11 triples for leadership in both departments. Harvey Kuenn of the Tigers led in doubles with 38. The stolen base title went to Jim Rivero of the Chicago White Sox. He had 25.

In pitching, lefthander Billy Pierce of Chicago turned in the top earned-run average of 1.97. The league had no 20-game winners. Boston's Frank Sullivan, New York's Whitey Ford and Cleveland's Bob Lemon each won 18. Herb Score, the highly publicized Indians' rookie, struck out 244 to head the circuit and set a new record for a first-year man.

Harry Agganis, a first baseman with the Red Sox, died unexpectedly during the season following an illness.

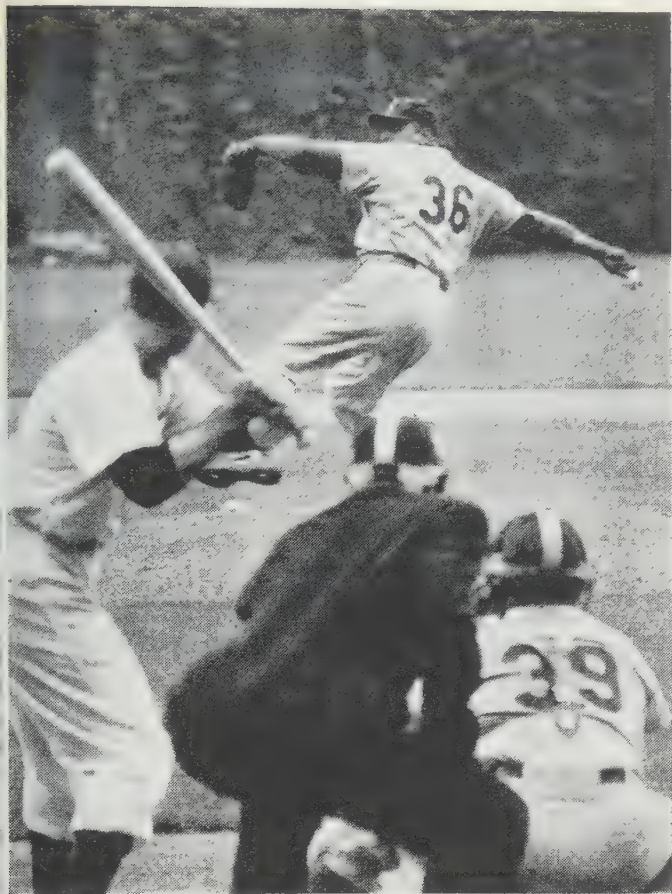
In the National league, Richie Ashburn, fleet centrefielder of the Philadelphia Phillies, captured the batting championship on the strength of a .338 average. Willie Mays of the New York Giants slammed 51 home runs to win the long-distance crown as the National league boasted six players with 40 or more home runs for the second straight year. Ernie Banks, the spectacular shortstop of the Chicago Cubs, broke two major league records. He hit 44 home runs, the most ever by a shortstop, and became the first player to get five grand-slam homers in one season. Ted Kluszewski of Cincinnati collected the most hits, 191, and Brooklyn's Duke Snider topped the runs-batted-in category.

Table III.—Final Minor League Winners, 1955

Class	League	Finished first	Parent club	Won play-offs	Position	Parent club
Open	Pacific Coast league	Seattle	Independent	No play-offs		
AAA	American association	Minneapolis	New York N.L.	Minneapolis	1	New York N.L.
	International league	Montreal	Brooklyn	Rochester	4	St. Louis
AA	Mexican league	Mex. City Tigers	Pittsburgh	No play-offs		
	Southern association	Memphis	Chicago A.L.	Mobile	4	Brooklyn
	Texas league	Dallas	New York N.L.	Shreveport	3	Independent
A	Eastern league	Reading	Cleveland	Allentown	2	St. Louis
	Sally league	Columbia	Cincinnati	Augusta	3	Detroit
	Western league	Colorado Springs	Chicago A.L.	Wichita	3	Baltimore
B	Big State league	*Corpus Christi	Milwaukee	Corpus Christi	1-1	Milwaukee
	Carolina league	H. Pt.-Thomasville	Cincinnati	Danville	2	New York N.L.
	Northwest league	†Eugene	Independent	Eugene	2-1	Independent
	Piedmont league	Newport News	Brooklyn	Lancaster	2	Kansas City
	Three-I league	Keokuk	Cleveland	Keokuk	1	Cleveland
	Tri-State league	†Spartanburg	Cleveland	Spartanburg	2-1	Cleveland
	West Texas-New Mexico league	Amarillo	Independent	Pampa	3	Independent
C	Arizona-Mexico league	Cananea	Independent	No play-offs		
	California league	†Fresno	St. Louis	Fresno	2-1	St. Louis
	Cotton States league	*Monroe	New York A.L.	Monroe	1-1	New York A.L.
	Evangeline league	†Lafayette	Chicago N.L.	Lafayette	4-1	Chicago N.L.
	Longhorn league	San Angelo	Independent	San Angelo	1	Independent
	Northern league	Eau Claire	Milwaukee	St. Cloud	2	New York N.L.
	Pioneer league	Boise	Milwaukee	Magic Valley	4	Chicago N.L.
	Provincial league	St. Jean	Pittsburgh	Quebec	2	Milwaukee
D	Alabama-Florida league	Panama City	Detroit	Panama City	1	Detroit
	Appalachian league	Salem	Independent	Final play-offs cancelled		
	Florida State league	*Orlando	Washington	No play-offs		
	Georgia-Florida league	Brunswick	Pittsburgh	Final play-offs cancelled		
	Georgia State league	Douglas	Cincinnati	Final play-offs cancelled		
	Kitty league	Paducah	St. Louis	\$Paducah (default)	1	St. Louis
	Mississippi-Ohio Valley league	Dubuque	Chicago A.L.	Dubuque	1	Chicago A.L.
	Pony league	Hamilton	St. Louis	Hamilton	1	St. Louis
	Sooner State league	Lawton	Milwaukee	Lawton	1	Milwaukee

*Won both halves of split season. †Eugene, Spartanburg and Fresno each won second-half titles and defeated Salem, Greenville and Stockton, respective first-half winners, in play-offs. ‡New Iberia won first-half, then Lafayette won second-half and four-team play-off. §Paducah awarded play-off title when three other first-division finishers declined to play post-season series.

Source: *Sporting News*, the national baseball weekly.



DON NEWCOMBE of the Brooklyn Dodgers preparing to pitch to Gene Baker of the Chicago Cubs. Newcombe won 20 games in 1955. The photographic technique makes Newcombe appear to be closer to the batter than the regulation distance

with 136. Mays and Dale Long of Pittsburgh each were credited with 13 triples, while Hank Aaron and Johnny Logan, both of Milwaukee, hit 37 doubles apiece. Bill Bruton, also of the Braves, stole 25 bases.

In pitching, Bob Friend of Pittsburgh won the earned-run leadership with 2.84 despite the Pirates' eighth-place finish. Robin Roberts of the Phillies ran up 23 wins against 14 losses for six 20-game seasons in succession, and Brooklyn's Don Newcombe had 20 and 5. Sam Jones of the Cubs registered the only no-hit, no-run game of the season on May 12 at Wrigley field in Chicago, beating Pittsburgh, 4 to 0. Jones also paced the league in strikeouts with 197.

All Star Game.—The 22nd annual All Star baseball game July 12, at Milwaukee took 12 innings before the National league beat the American league, 6 to 5. A home run by Stan Musial of the St. Louis Cardinals finally broke a 5 to 5 deadlock in the Nationals' favour. Musial's homer was delivered off Boston's Frank Sullivan, the loser, and brought Milwaukee's Gene Conley the triumph in his home park. The attendance was 45,314. It was the National league's ninth All Star victory against 13 losses. Arch Ward, sports editor of the *Chicago Tribune*, who had innovated the All Star game in 1933, died three days before the 1955 classic unfolded.

Managerial Changes.—The St. Louis Cardinals effected the only managerial change during the course of the regular season. The Cardinals released Eddie Stanky on May 29 and replaced him with Harry Walker, who had been managing their Rochester, N.Y., affiliate. The Cardinals underwent a major shake-up after the season ended. Frank Lane, who had resigned as general manager of the Chicago White Sox on Sept. 23, was signed to a similar post with the Cards. Lane then hired Freddie

Hutchinson, former Detroit manager, to succeed Walker as field manager. Leo Durocher, manager of the world champion New York Giants in 1954, resigned following the 1955 campaign and the Giants' reins were turned over to Bill Rigney, called up from a managerial post at Minneapolis. Durocher left baseball in the wake of a long and colourful career to become a television executive. The Pittsburgh Pirates released field manager Fred Haney upon the conclusion of the season and later announced a front office change as well with the retirement of the veteran Branch Rickey. Joe L. Brown, son of comedian Joe E. Brown, was named successor to Rickey as general manager, and Brown selected Bobby Bragan, manager at Hollywood, to lead the Pirates as field manager.

Player Deals.—Two of the major trades happened after the 1955 season was over. The Chicago White Sox, seeking a power-hitter, got centrefielder Larry Doby from Cleveland. Chicago, in turn, sent shortstop Chico Carrasquel and centrefielder Jim Busby to the Indians. The White Sox had secured Busby from Washington in June in return for centrefielder Johnny Groth, catcher Clint Courtney and pitcher Bob Chakales. On Nov. 9, Washington negotiated a nine-man deal with the Boston Red Sox. The Senators gave up pitchers Bob Porterfield and Johnny Schmitz, first baseman Mickey Vernon and outfielder Tommy Umphlett for pitchers Dick Brodowski, Al Curtis and Truman Cleveland and outfielders Karl Olson and Neil Chrisley.

Another key trade unfolded long before the season began. On Nov. 17, 1954, the New York Yankees and Baltimore Orioles pulled a nine-player swap. The Yanks received pitchers Bob Turley and Don Larsen, along with shortstop Billy Hunter, in exchange for pitchers Harry Byrd and Jim McDonald, outfielder Gene Woodling, shortstop Willie Miranda, first baseman-catcher Gus Triandos and catcher Hal Smith. Six men were involved in a trade between Cincinnati and the Philadelphia Phillies on April 30. Cincinnati gave up outfielders Jim Greengrass and Glen Gorbous and catcher Andy Seminick for pitcher Steve Ridzik, catcher Smoky Burgess and outfielder Stan Palys. Late in July, two prominent pitchers changed uniforms when the Yanks sold Eddie Lopat to Baltimore and the New York Giants sold Sal Maglie to Cleveland.

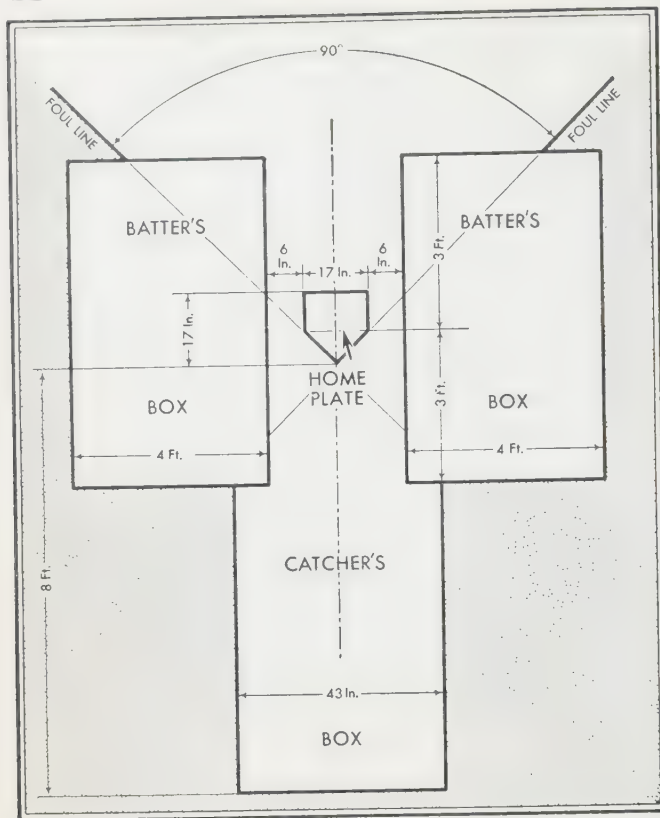
Hall of Fame.—Six famous baseball players won election to the Hall of Fame at Cooperstown, N.Y. The group included Ray (Cracker) Schalk, Chicago White Sox catcher-manager, and John Franklin (Home Run) Baker, third baseman for the Philadelphia Athletics and New York Yankees, both of whom starred more than a quarter-century ago. Players of more recent vintage honoured were Joe DiMaggio, Yankee centrefielder; Ted Lyons, White Sox pitcher; Arthur (Dazzy) Vance, Brooklyn pitcher, and Leo (Gabby) Hartnett, Chicago Cubs' catcher-manager.

Attendance.—As a result of its close pennant fight, the American league outdrew the National league in attendance. American league teams registered 8,943,516 patrons as compared with 7,672,795 for the National. The American league showed an increase of 1,021,151 over 1954, while the National league was down by 340,724. Milwaukee, however, passed the 2,000,000 mark for the second year in a row. The aggregate of 16,616,311 for the two leagues reflected an over-all increase of 680,427, or 4.27%, over the previous year.

The Minor Leagues.—Table III reveals the pennant and play-off winners in the minor baseball leagues during 1955.

(J. BE.)

Boys' Baseball.—Morrisville, Pa., gained the 1955 Little league title by halting the Delaware township (N.J.) nine, 4-3, in the final of the circuit's world series at Williamsport, Pa., on Aug. 26. A home run by Rich Cominski in the seventh decided the contest between rivals of towns located only 35 mi. apart. Auburn, Ala., defeated Winchester, Mass., 1-0, in the consol-



NARROW CATCHER'S BOX, a 1955 major league baseball rule change designed to discourage the intentional base on balls. Under the new rule the catcher was required to remain within the box until after the pitch. The possibilities for the offensive team were indicated in a game in May in which a batter swung at what was intended to be ball four and hit a single to left field

tion play-off for third place. Little league baseball was introduced in England in 1955 by U.S. airmen and caught the fancy of lads under 13 years of age who soon were beating the sons of G.I.'s at their own game.

The Babe Ruth league, with 24 new groups added to its ranks, had a banner season climaxed by its world series at Austin, Tex., in August. Terre Haute, Ind., won the crown when it conquered Birmingham, Ala., 6-4, in the finale. Stamford, Conn., winner for the previous three straight years, was eliminated in the first round when it bowed to Terre Haute, 3-2.

The title in the Pony (Protect Our Nation's Youth) league was won by Washington, Pa., which blanked Youngstown, O., 4-0, in the final of the tourney at Washington, Pa. Beatrice, Neb., won the National teeners' tourney at Hershey, Pa., when it routed Johnston, R.I., 8-1. Cincinnati defeated Washington, D.C., 10-4, to gain the American Legion junior title at St. Paul, Minn.

College Baseball.—Wake Forest set back Western Michigan, 7-6, at Omaha, Neb., on June 16 to take the National Collegiate Athletic association title. Tom Borland of the Oklahoma Aggies won honours as the tournament's outstanding pitcher.

Other major college champions of 1955 included the following:

Eastern (Ivy)—Yale	Illinois—Millikin
Southeast—Alabama	Midwest—Coe
Southern—West Virginia	Mason-Dixon—Randolph Macon
Atlantic Coast—Wake Forest	Mountain States—Wyoming
Western (Big Ten)—Ohio State	Border—Arizona
Indiana—Valparaiso	Pacific Coast—So. California
Interstate—Illinois Normal	Big Seven—Oklahoma
Mid-American—Ohio University	Southwest—Texas A. & M.
Missouri Valley—Oklahoma A. & M., St. Louis, tie	(T. V. H.)

Basketball.

The University of San Francisco Dons dethroned La Salle college (Philadelphia, Pa.) as National Collegiate Athletic association ruler by defeating the

defending champions, 77-63, at Kansas City on March 19, 1955. Paced by Bill Russell, 6 ft. 10 in. All America centre, the Californians took a 36-24 half-time lead and never were overtaken in the N.C.A.A. final. It was the Dons' 26th straight victory. Colorado, the Big Seven conference champion, scored a surprise in the consolation contest when it upset Iowa, the Western conference title winner, 75-54. Results of the regional finals were: Colorado 93, Bradley 81; Iowa 86, Marquette 81; La Salle 93, Canisius 64; San Francisco 57, Oregon State 56. The first five ranking college teams in the final Associated Press poll were in order: San Francisco, Kentucky, La Salle, North Carolina State and Iowa. The United Press poll listed San Francisco, Kentucky, La Salle, Utah and Iowa, in that order.

Georgia Tech (Atlanta) provided two of the major upsets of the 1954-55 campaign. The Engineers stopped powerful Kentucky (Lexington), 59-58, at Lexington, Ky., on Jan. 8. When Joe Helms tallied on a jump shot in the last 11 sec. he snapped a 32-game winning streak compiled by Kentucky, and it marked the first time the Wildcats had lost on their home court in 13 contests. Tech scored another amazing victory on Jan. 31 when it set back Kentucky, 65-59, at Atlanta.

The University of Duquesne (Pittsburgh, Pa.) won honour in the 18th annual national intercollegiate invitation tournament at New York's Madison Square Garden. Duquesne halted Dayton (O.), 70-58, in the final on March 19. The University of Cincinnati (O.) downed St. Francis (Loretto, Pa.), 96-91, in the consolation battle. The East Texas State (Commerce, Tex.) five carried home the top prize of the 17th annual national intercollegiate (N.A.I.A.) competition at Kansas City by beating Southeastern (Durant, Okla.), 71-54, on March 13. Moberly Missouri took national junior college laurels with a 71-64 decision over Hannibal-LaGrange of Missouri on March 13.

The East's All-Stars beat the West, 83-68, in Madison Square Garden as 18,135 spectators looked on. The contest was for the benefit of the *New York Herald-Tribune* Fresh Air fund.

In the Ivy league, Columbia, Princeton and Pennsylvania finished in a three-way tie with ten victories and four losses each. In the first play-off, at Princeton, N.J., Columbia eliminated Penn, 73-71. However, Princeton, in its meeting with Columbia at Rutgers in New Brunswick, N.J., routed the Lions, 86-60, to take the title.

Among the major college champions of 1955 were the following:

Eastern (Ivy)—Princeton (Princeton, N.J.)
Southeastern—Kentucky (Lexington, Ky.)
Southern—West Virginia (Morgantown, W.Va.)
Atlantic—North Carolina State (Raleigh, N.C.)
Western (Big Ten)—Iowa (Iowa City, Ia.)
Big Seven—Colorado (Boulder, Colo.)
Missouri Valley—St. Louis (St. Louis, Mo.) and Tulsa (Tulsa, Okla.), tied
Mid-American—Miami (Oxford, O.)
Midwestern—Cornell (Mt. Vernon, Ia.)
Interstate—Western Illinois (Macomb, Ill.)
Illinois collegiate—Millikin (Decatur, Ill.)
Indiana collegiate—Evansville (Evansville, Ind.)
Mountain States (Skyline)—Utah (Salt Lake City, U.)
Border-Texas Tech (Lubbock, Tex.) and West Texas State (Canyon, Tex.), tied
Pacific Coast—Oregon State (Corvallis, Ore.)
Southwest—Southern Methodist (Dallas, Tex.)
Rocky Mountain—Idaho State (Pocatello, Ida.)

Amateur Athletic Union Basketball.—The 48th Amateur Athletic union championship for men, held at Denver, Colo., March 21-26, attracted 25 teams. The Phillips 66 Oilers of Bartlesville, Okla., carried home the trophy by halting the Lockett-Nix quintet of Boulder, Colo., 66-64, in the final. The Olympic club gained third place by halting the Quantico (Va.) Marines, 78-69, in the consolation contest. The Peoria (Ill.) Diesel Caterpillars, who had won the top prize three straight years and the world amateur crown late in 1954, were eliminated by the Lockett-Nix team, 70-67, in a quarter-final upset. Earlier in the campaign the Phillips quintet had won National

Industrial league honours for the seventh time. The Wayland college club of Plainview, Tex., retained the title in the women's 27th national tourney at St. Joseph, Mo. The defenders defeated the Commercial Extension Comets of Omaha, Neb., 30-21, in the last round.

Professional Basketball.—The Syracuse (N.Y.) Nationals, Eastern division champions, won the National Basketball association championship by subduing the Ft. Wayne (Ind.) Pistons, in the final play-off series. Play-off results follow:

Eastern semifinals
Boston 122, New York 101
New York 102, Boston 95
Boston 116, New York 109

Eastern finals
Syracuse 110, Boston 100
Syracuse 116, Boston 110
Boston 100, Syracuse 97
Syracuse 110, Boston 94

Western semifinals
Minneapolis 82, Rochester 78
Rochester 94, Minneapolis 92
Minneapolis 119, Rochester 110

Western finals
Fort Wayne 96, Minneapolis 79
Fort Wayne 98, Minneapolis 97
Minneapolis 99, Fort Wayne 91
Fort Wayne 105, Minneapolis 96

Syracuse 86, Fort Wayne 82
Syracuse 87, Fort Wayne 84
Fort Wayne 96, Syracuse 89
Fort Wayne 109, Syracuse 102

All-Championship finals
Fort Wayne 74, Syracuse 71
Syracuse 109, Fort Wayne 104
Syracuse 92, Fort Wayne 91
Syracuse wins, 4 games to 3

Boston's Bill Sharman and Bob Cousy led the East to a 100-91 decision over the West in the annual professional All-Star game played at Madison Square Garden. The Harlem Globetrotters on their annual spring cross-country tour with the College All-Stars won the 24-game series by 14 to 10. (T. V. H.)

Basutoland: see BRITISH SOUTH AFRICAN TERRITORIES.

Bauxite: see MINERAL AND METAL PRODUCTION AND PRICES.

Bechuanaland Protectorate: see BRITISH SOUTH AFRICAN TERRITORIES.

Beef: see MEAT.

Beer: see BREWING AND BEER.

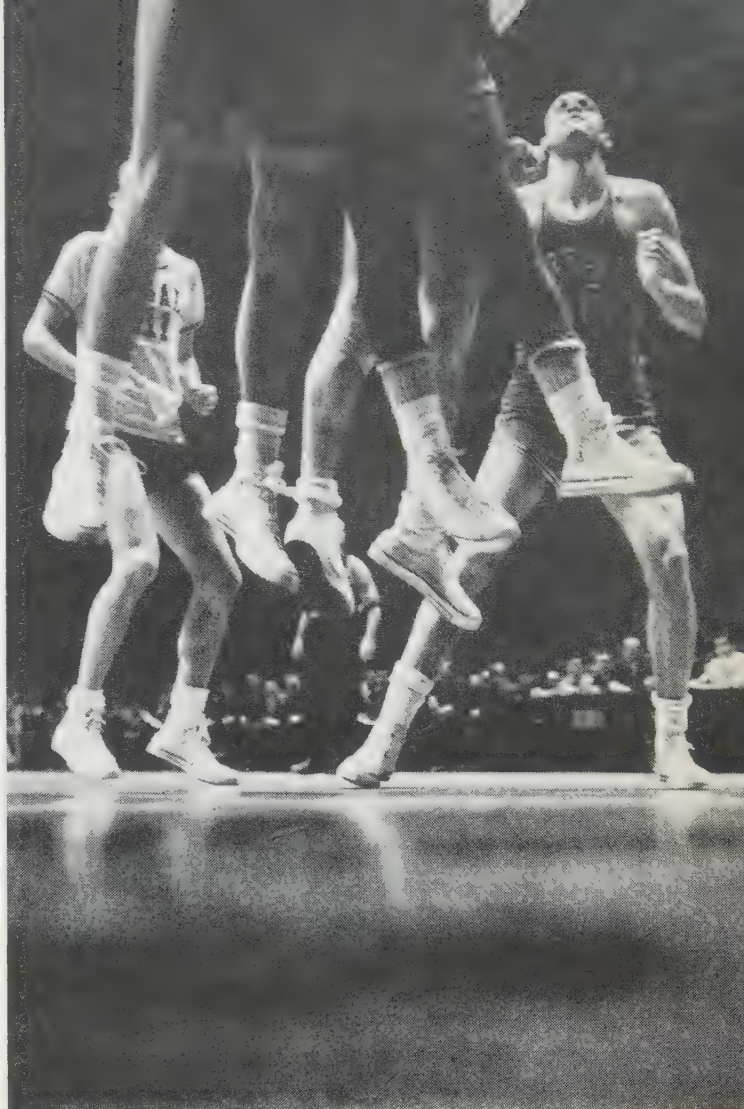
Belgian Colonial Empire. The Belgian colonial empire consists of the colony of the Belgian Congo in central Africa and the adjacent trust territories of Ruanda-Urundi administered with the Congo. Total area: 925,733 sq.mi. Total pop. (1954 est.): 16,674,860. Areas, populations, capital towns, status and governors of the separate territories are given in the table.

Belgian Colonial Empire					
Country	Area (In sq. mi.)	Population (1954 est.)	Capital	Status	Governor
Belgian Congo	904,991	Africans 12,317,300 Europeans 86,688 (incl. 67,827 Belgians)	Léopoldville	Colony	Léo Pétillon, governor general
Ruanda-Urundi	20,742	Africans 4,261,900 Europeans 5,559 (incl. 4,110 Belgians) Others 3,413	Usumbura*	{Sultanates, trust terri- tories}	Claeys-Bouvaert, governor

*Principal town of Ruanda, Kigali; principal town of Urundi, Kitega.

History.—In May-June 1955 King Baudouin paid an official visit to the Belgian Congo. He addressed at Léopoldville a crowd of about 100,000 people, most of them Africans, speaking in French and Flemish (the official languages of Belgium) and in Lingala, the local language. He emphasized the efforts made in the field of education and social welfare and announced further reforms to the benefit of the inland population. The great sympathy with Africans shown by the king and the spontaneous enthusiasm of the population strengthened the position of the Belgian crown in the Congo and improved the relations between black and white.

At Kimuenza, near Léopoldville, the first university for students of both races was opened under the name of Lovanium after its parent University of Louvain (Belgium). The Congo and the trust territories Ruanda-Urundi were the world's second largest supplier of copper and by far the largest supplier of cobalt. It exported large quantities of uranium, tin, manganese and other minerals, besides palm oil, cotton and coffee. In 1954



UP FOR THE REBOUND go LaSalle and Duquesne basketball players during the finals of a tournament at Madison Square Garden, New York city, in Jan. 1955. Duquesne did not make a single substitution in the game, as they beat LaSalle 67-65 despite Tom Gola's 30 points for the losers

26.4% of the Congo's exports went to the United States, 23.7% to Belgium, 12.2% to France, 11.1% to the German Federal Republic, and 8.4% to Great Britain. The ten-year plan for economic development went on and it was stated that by 1955 investments amounted to \$403,338,000. When completed in 1959 the plan would have cost about \$965,560,000.

In September the gauge of the Kindu-Kabalo-Albertville railway was altered from 3 ft. 3 in. to 3 ft. 6 in. All but two small lines had now the same gauge and when the new line between Kabalo and Kamina was finished all centres of economic and strategic importance would have access by railway to the Atlantic ocean and Indian ocean. (M. H. Sr.)

Finance.—Monetary unit: Congolese franc, nominally an independent currency, actually at par with the Belgian franc. *Congo*. Budget (1955): (ordinary) revenue 8,710,281,000 fr., expenditure 8,425,216,000 fr.; (extraordinary) revenue 178,610,000 fr.; expenditure 10,559,304,000 fr. *Ruanda-Urundi*. Budget (1955): (ordinary) revenue 730,683,000 fr., expenditure 759,233,000 fr.; (extraordinary) receipts and expenditure 405,403,000 fr.

Foreign Trade.—(1954) Imports 18,076,698,367 fr.; exports 20,224,664,590 fr.

Transport and Communications.—*Congo and Ruanda-Urundi*. Roads (1952): 128,253 km. Motor vehicles in use (*Congo*, 1953): cars 20,000, commercial vehicles 22,300. Railways (1954): 4,634 km. Waterways (1954): 13,047 km.

Agriculture.—Principal products (*Congo*, metric tons, 1953): palm oil (exports) 132,000; palm kernels (exports) 88,000; cottonseed (incl. *Ruanda-Urundi*) 91,000, rubber (1954) 22,550; logs (cu.m.) 755,887; sawn wood 254,141; pitwood 2,069,991; cotton, lint 50,000; coffee 30,901; peanuts 180,000; cassava (*Congo*) 6,751,000, (*Ruanda-Urundi*, 1954) 2,040,000.

Mineral Production.—*Congo and Ruanda-Urundi*. (metric tons, 1953; 1954 in parentheses): copper (smelter, *Congo*) 214,100 (226,760); tin concentrates (metal content) 15,480 (13,090); cobalt (alloys) 9,020

(six months, 5,048), (granulated) 4,387 (six months, 2,839); manganese ore (*Congo*) 108,300; tungsten ore 762; zinc (exports, *Congo*) 125,800 (71,030 smelter); coal (*Congo*) 315,000; gold 11,540 kg.; diamonds (*Congo*) 12,580,300 metric carats; silver 154 metric tons.

Belgian Congo: *see* BELGIAN COLONIAL EMPIRE.

Belgium. A kingdom of western Europe, Belgium is bounded southwest by France, north by the Netherlands and east by Germany and Luxembourg. Area: 11,779 sq.mi. Pop.: (1947 census) 8,512,195; (1954 est.) 8,840,700. Language (1954 est.): Flemish (Dutch) 50%, French 34%, Flemish and French 15%, German 1%. Religion: mainly Roman Catholic. Chief towns (pop., 1952 est.; commune only): Brussels (cap.) 180,771; Antwerp 261,405; Ghent 164,713; Liège 156,728; Schaerbeek 122,172; Ixelles 92,298; Anderlecht 88,326. Ruler, King Baudouin I; prime minister in 1955, Achille van Acker.

History.—In May 1955 King Baudouin opened at the Army museum in Brussels a collection of exhibits relating to the military career of his father, King Leopold III, and thanked Antoon Spinoy, the Socialist minister of defense, for his statement that history had recognized that the Belgian army under Leopold's command in May 1940 did its duty both to the Allies and to the nation. King Baudouin received an extremely warm welcome on his return from visiting the Belgian Congo. On the 125th anniversary of the Belgian independence the king laid the first stone of the 1958 Brussels World exhibition. Prince Albert, brother of the king, made a study trip to the United States.

On Jan. 21, the chamber of deputies ratified by 181 votes to 9 with 2 abstentions the four protocols affecting Belgium contained in the Paris agreements on western defense. In the senate the bill passed on April 6 by 142 votes to 2 with 1 abstention.

At the conference at Messina, Sicily, of the ministers of the six member countries of the European Coal and Steel Community, the foreign ministers of Benelux (Belgium, the Netherlands and Luxembourg) introduced proposals for (1) integration of transport and power, including the industrial use of atomic energy; (2) general economic integration through the creation of a common market, by gradual repeal of quotas and customs; and (3) equalization of social security systems. It was decided that experts under chairmanship of Paul-Henri Spaak, the Belgian foreign minister, should prepare a new conference on further integration. The experts of the six member countries and of Great Britain, which had accepted a form of association with the European Coal and Steel Community, worked in Brussels from July to October after which Spaak drafted a report on the proceedings and proposals.

On June 20, the text of the U.S.-Belgian agreement for co-operation on the civil uses of atomic energy was published. The agreement provided that the existing commercial contracts between the U.S.-British combined agency and the African Metals corporation acting for the Union Minière du Haut-Katanga, the company in charge of uranium mining at Shinkolobwe (Belgian Congo), should remain in force until the date of expiration. It was further agreed that Belgium would keep 90% of its uranium production at the disposal of the agency in 1956 and 1957, and 75% during the three following years. In the autumn the filling of the first Belgian 1,000-kw. reactor with ten tons of graphite and uranium began at the centre for nuclear research at Mol-Donk, in the province of Antwerp, and it was announced that a second 10,000-kw. reactor would be built in Belgium for producing electricity for the 1958 Brussels World exhibition.

By encouraging industry and allowing local authorities to enrol unemployed workers the government further reduced unemployment. The ordinary budget for 1956, introduced by Henri Liebaert, the minister of finance, was balanced and the deficit of

the extraordinary budget was less than in 1954 and 1955 when it reached 20,200,000,000 fr. and 17,259,000,000 fr., respectively.

During the year the Socialist-Liberal coalition government had to face fierce attacks from the Christian Social opposition because of the education act, which was passed by a majority. For months there were demonstrations, riots and even a school strike. The Roman Catholic bishops issued a solemn protest against the bill on secondary and vocational schools which they called morally harmful. The bill recognized the right of the state to open official secondary and technical schools when and where the need was felt. The so-called "free" schools, which were mainly Roman Catholic, would remain subsidized by the state, the provinces and municipalities but the total amount would not exceed the subsidies granted in 1953 and 1954 when the Christian Social party was in power. The teachers would have to possess the requested certificates and in that case they would be paid by the state on an equal basis as teachers of official schools.

Another controversy occurred when Léon Elie Troclet, the minister of labour and social security, decided to reform the health insurance scheme despite the protest of the Medical federation. Half of the Belgian population was subject to the law on social security. Under the previous system contribution paid by the workers and employers were handed to the National Sickness and Disability Insurance federation which distributed them among the Christian Social, Socialist, Liberal and neutral sick funds in proportion to the number of their members. The workers included in the scheme had the free choice of a doctor who was paid by the patient. The doctor filled in a form stating the kind of consultations (at the surgery, at home or at night) and their number, and the member received a fixed sum from his fund. The new system, entering into force on Jan. 1, 1956, compelled the members to buy tickets from their fund, paying 10 fr. (20 U.S. cents). They were required to hand the doctor a ticket for each visit, and were not allowed to make any other payment. The doctor was to be paid the rate applicable in his district, which might be 40 fr. (80 U.S. cents). The patient had free choice among the doctors accepting the system. If the patient consulted another doctor they had to pay him themselves. The Medical federation was of the opinion that the new system interfered with the direct relations between doctor and patient and with professional ethics because a medical council would control the doctors. The government, therefore, appointed a committee of six ministers to meet the doctor's representatives and discuss a solution.

During the second half of the year social unrest developed as a result of claims for higher wages and for the introduction of a 45-hr. five-day week in industry. The two main concerns of the Belgian iron and steel industry, the John Cockerill and Ougrée-Marihaye companies, decided to merge into the Cockerill-Ougrée company including the sheet iron company "Féblatil." (*See also* EUROPEAN UNITY.) (M. H. St.)

Education.—Schools (1952): primary 8,697, pupils 835,648; secondary 774, pupils 140,047; vocational (post-primary) 1,513, pupils 176,766; teachers' training colleges (post-primary) 159, students 19,636. Universities (1952) 4; other institutions of higher (post-secondary) education 19; students (total) 21,944.

Finance and Banking.—Monetary unit: Belgian franc, with an average exchange rate of 140 to the £ sterling and 50.14 to the U.S. dollar. Budget (1954 est.; 1955 est. in parentheses): revenue 78,700,000,000 fr. (81,730,000,000 fr.); expenditure 99,685,000,000 fr. (98,989,000,000 fr.). Internal debt (1953; 1954 in parentheses) 260,241,000,000 fr. (246,544,000,000 fr.); external debt 21,688,000,000 fr. Gold and foreign exchange holdings (U.S. dollars, 1954; Apr. 1955 in parentheses): U.S. \$1,046,000,000 (\$1,114,000,000). Currency circulation (Jan. 1955; Sept. 1954 in parentheses): 105,800,000,000 fr. (105,200,000,000 fr.). Bank deposits (Jan. 1955; Sept. 1954 in parentheses): 75,000,000,000 fr. (70,000,000,000 fr.).

Foreign Trade.—(Belgium-Luxembourg economic union, 1954). Imports 126,300,000,000 fr.; exports 114,100,000,000 fr. Main sources of imports: Germany 17,400,000,000 fr.; Netherlands 17,100,000,000 fr.; France 13,300,000,000 fr.; United States 13,100,000,000 fr.; U.K. 10,700,000,000 fr.

fr. Main destination of exports: Netherlands 24,100,000,000 fr.; France and western Germany 11,100,000,000 fr.; United States 9,200,000,000 fr.; U.K. 7,200,000,000 fr.

Transport and Communications.—Roads (1953): 62,700 km. Motor vehicles in use (1952): cars 320,000, commercial vehicles 150,000. Railways (1954) 7,923 km.; passenger-km. (S.N.C.B. only, 1953) 7,528,000,000; freight, ton-km. (S.N.C.B. only, 1954) 5,634,000,000. Shipping: merchant vessels of 100 gross tons and over (July 1954): 204; total tonnage 497,998. Navigable inland waterways (1955): 1,568 km. Air transport (1954): passenger-km. 489,309,000; cargo, ton-km. 22,788,000. Telephones (Jan. 1954): 777,340. Radio receiving sets (1953): 1,863,000.

Agriculture and Fisheries.—Main crops (metric tons, 1954): wheat 589,000; barley 218,000; oats 452,000; rye 245,000; potatoes 2,634,000; beet sugar (raw) 340,000; flax 30,300. Livestock (Sept. 1954): cattle 2,373,000; pigs 1,310,000; sheep (Jan. 1954) 110,000; horses (May 1953) 221,000; mules and asses (Jan. 1953) 2,000. Meat production (1954): 349,200 metric tons. Milk production (1953): 3,537,000 metric tons. Fisheries: total landings (1954) 61,448,556 kg.

Industry.—Fuel and power (1954): coal 29,238,000 metric tons; manufactured gas 1,950,000,000 cu.m.; electricity 10,565,000,000 kw.hr. Raw materials (metric tons, 1954): pig iron 4,619,000; crude steel 4,907,000; copper, refined 153,600; lead, refined 71,900; zinc, smelter 213,100; tin, smelter 11,600; aluminium (secondary) 1,700. Manufactured goods (metric tons, 1954): cement 4,373,000; woven cotton fabrics 77,100; cotton yarn 112,500; wool yarn 38,400; rayon filament yarn 11,100; rayon staple fibre 19,400; woven woollen fabrics (1953) 24,100.

Benefactions: see DONATIONS AND BEQUESTS.

Benelux: see BELGIUM; EUROPEAN UNITY; LUXEMBOURG; NETHERLANDS.

Benson, Ezra Taft (1899–), U.S. government official, was born on Aug. 4 in Whitney, Ida. He attended Utah State Agricultural college, Logan (1918–21); Brigham Young university, Provo, Utah; and Iowa State college, Ames. After spending several years farming in southern Idaho, he was employed as an agricultural agent by the University of Idaho extension service until 1930, when he was placed in charge of economics and marketing work for the state of Idaho. He held this position until 1937. He was executive secretary of the National Council on Farmer Cooperatives (1939–44) and was president of the Washington Stake, Church of Jesus Christ of Latter Day Saints, in Washington, D.C. (1940–44).

Benson was opposed to federal food subsidies and believed that they were a cause rather than a preventive of inflation; his view of federal aid for farmers gained him a number of political opponents in agricultural circles. Designated as secretary of agriculture by Pres. Dwight D. Eisenhower on Nov. 24, 1952, Benson took office on Jan. 21, 1953.

Benson's tenure in office was marked by his opposition to fixed 90% parity props for agricultural products and his advocacy of flexible supports ranging from 75% to 90% of parity. This policy earned him the enmity of large and influential agricultural groups, but he refused to modify his stand.

In late 1954 and early 1955 Benson was involved in a dispute over his ouster of Wolf Ladejinsky, an agricultural attaché in Tokyo, Jap., as a "security risk." On June 27, 1955, Benson admitted in effect that he had been overhasty in the judgments on which the dismissal had been based, and on July 2 he announced that the dismissal had been cancelled.

He was singled out by Democrats as a political target in 1955 on the issue of declining farm income.

Benton, William (1900–), U.S. publisher and public official, was born on April 1 in Minneapolis, Minn. He was graduated from Yale university in 1921. In 1929, in partnership with Chester Bowles, he founded the advertising agency of Benton and Bowles.

Benton retired from the agency in 1936 and in 1937 became vice-president of The University of Chicago, where he served on a part-time basis until 1945. In 1942, in collaboration with Paul G. Hoffman, he helped to found the Committee for Economic Development, and he was active in inter-American affairs.

At his instance The University of Chicago acquired Encyclopædia Britannica, Inc., in 1943. He financed the company, became publisher and chairman of its board and shared its ownership with the university. He launched the company into the classroom motion-picture field and served as chairman of Encyclopædia Britannica Films Inc.

Benton was appointed U.S. assistant secretary of state by Pres. Harry S. Truman on Aug. 31, 1945, and served until Sept. 30, 1947. He developed the country's first peacetime program of international information and educational exchange and took responsibility for U.S. participation in the United Nations Educational, Scientific and Cultural organization.

In Dec. 1949 Benton was appointed U.S. senator from Connecticut to succeed Raymond E. Baldwin, resigned. In the Connecticut election of Nov. 7, 1950, he was returned to the senate for two more years. In the Eisenhower landslide of 1952 he was defeated in his bid for a full six-year term. His three years in the senate were marked by his campaign in behalf of a "Marshall plan of ideas"; his vigorous espousal of the Hoover commission's recommendations on government reorganization; his resolution calling for expulsion of Sen. Joseph McCarthy of Wisconsin; by adoption of the "Benton amendment" to the Mutual Security act, aimed against communist domination of unions abroad and against cartelism; and by proposals to strengthen anticorruption laws, to liberalize immigration legislation and to improve the competitive position of small business.

In the autumn of 1955 Benton, his wife and their 13-year-old son John travelled in the Soviet Union and some of the eastern European countries to study the impact of communist propaganda on the Russian and satellite peoples.

Bequests, Philanthropic: see DONATIONS AND BEQUESTS.

Berlin. Capital of the German reich from 1871 to 1945, Berlin was still in 1954 the largest city of Germany. Area: 341.2 sq.mi. Pop.: (1939 census) 4,321,500; (1954 est.) 3,369,000. From June 6, 1945, Berlin was administered by an inter-Allied government authority consisting of the commandants of the four sectors of Berlin. After June 24, 1948, when the Soviet commandant proclaimed the dissolution of the authority, Berlin was in fact divided into two opposing administrations. By Dec. 31, 1955, the three western sectors (area, 185.7 sq.mi.; pop., 1950 census, 2,098,625; 1954 est., 2,194,000) were under the authority of the three following Allied commandants; Great Britain, Maj. Gen. R. C. Cottrell-Hill; United States, Maj. Gen. Charles L. Dasher; France, Brig. Gen. A. J. B. Gèze. In the Soviet sector (area, 155.5 sq.mi., pop., 1950 census, 1,209,269; 1954 est., 1,175,000) Maj. Gen. P. A. Dibrova was military commander. There were also two rival German city governments and two lord mayors. Otto Suhr was *Oberbürgermeister* of western Berlin, appointed by an elected city assembly; Friedrich Ebert was *Oberbürgermeister* of the Soviet sector, appointed by a meeting summoned by the Sozialistische (communist) Einheitspartei Deutschlands.

History.—West Berlin remained in a state of uneasy isolation during 1955, with the year beginning with a political crisis caused by difficulties in forming a city government. The elections of Dec. 5, 1954, did not deprive the Social Democrats of their over-all majority but reduced it to a single seat. After difficult negotiations the Social Democrats and Christian Democrats formed a joint administration on Jan. 4, holding between them 108 out of 127 seats in the city assembly. The Free Democrats, who had previously participated in a three-party government, went into opposition. Otto Suhr (Social Democrat) was elected lord mayor, and his party took 6 out of 11 seats in the senate. This administration worked well in 1955.



CHILDREN'S PARTY on a border of east and west Berlin, Ger., Aug. 13, 1955. Sponsored by Willie Kressmann (centre), mayor of the borough of Kreuzberg, West Berlin, the party was held in an effort to promote better understanding between the children of the divided city

On April 1 the economy of western Berlin was threatened by the sudden application of exorbitant dues by the German Democratic authorities on all motor traffic using the 105 mi. *Auto-bahn* from Berlin to Helmstedt in western Germany. Whereas private cars were to be charged between 10 and 30 marks for a single journey, the dues for medium-sized and heavy trucks were increased to 90 and a maximum of 240 marks respectively. Strong protests were made by the city government and by the three western powers. On May 20 the Allied ambassadors in Bonn met, in their capacity of high commissioners which still applied in Berlin, to discuss the dues. Their demands for instant reductions were rejected by the Soviet ambassador to the German Democratic Republic, G. M. Pushkin, on the grounds that the east German authorities alone could do this. His object was to secure western recognition of the communist German government. On June 4 that government reduced the dues by between 40% and 60%, but they were still between three and six times as high as before April 1. They were estimated to cost west Berlin more than 6,000,000 marks a year.

On April 26 a four-year plan for the reconstruction of Berlin was instituted. It entailed the expenditure of 150,000,000 marks on creating 100,000 new jobs, building 75,000 homes and investing in new industries. This money was additional to the 600,000,000 marks a year spent by the German Federal Republic on subsidizing western Berlin. Prizes were offered for the best plans for the rebuilding of the burnt-out Reichstag building. The four-year plan helped to reduce unemployment to a September figure of 115,000—the lowest since World War II.

The comparative tranquillity of Berlin was rudely disturbed on Sunday Nov. 27 when two U.S. congressmen and their escort were arrested by members of the east German people's police and held for four hours for questioning in the Soviet sector of the city. A sharp protest by the U.S. commandant, General Dasher, to the Soviet commandant, General Dibrova, produced only the reply that the Soviet authorities regarded east Berlin as the capital of the German Democratic Republic and not as an "occupied sector." This reply, which was instantly backed by an east German press campaign denouncing the presence of Allied troops in west Berlin, led to British, U.S. and French protests being sent to the Soviet ambassador, Pushkin.

Their three identical notes pointed out that Berlin was legally under four-power control and that Allied nationals had complete freedom of movement in all four sectors of the city. The notes

were delivered on Dec. 1 and on Dec. 2 the U.S. ambassador in Germany, James B. Conant, paid a visit to Berlin and drove round the Soviet sector for two hours. He said later that "nothing unusual" had occurred. Both on Dec. 1 and Dec. 2 western German political leaders reaffirmed the inviolability of west Berlin. (See GERMANY.) (T. PE.)

Bermuda. This British colony consists of 360 small islands (20 inhabited) 580 mi. east-south-east of Cape Hatteras, N.C. Area: 21 sq.mi. Pop.: (1950 census) 37,401 including 22,638 coloured and 14,724 Europeans; (1954 est. 40,407. Language: English. Religion: Christian (about 55% Anglican). Chief towns: Hamilton (cap.), pop. (1950) 2,810 (1955 est.) 3,000; St. Georges, 1,506, (1955 est.) 1,550. Governors in 1955, Lieut. Gen. Sir Alexander Hood (until April 21) and Lieut. Gen. Sir John Woodall (from July 6).

History.—Princess Margaret visited Bermuda in March 1955 on the way home from her Caribbean tour. Tourism remained the principal source of revenue. Visitors in 1954 numbered 106,800, an all-time record, more than 100,000 being from the U.S. A project was published to make compressed board from more than 1,000,000 cedar trees killed during the past ten years by an infestation, now under control. A trade development board was inaugurated in London. Passport and visa regulations for Bermudans and other British subjects resident in Bermuda and desiring to visit the U.S. were relaxed. A joint select committee of the legislature considered a bill providing that acquisition of Bermudan status should no longer be automatic after seven years' residence but dependent upon the grant of a certificate by the governor-in-council. (R. H. Y.)

See E. C. Gellhorn, *McKay's Guide to Bermuda, the Bahamas and the Caribbean* (New York, 1955).

Education.—Schools (1953): government maintained and aided, primary 21, pupils 6,287, teachers 261; secondary 6, pupils 722, teachers 6; vocational 1, pupils 177, teachers 10; independent, primary 12, pupils 1,023, teachers 34; secondary 4, pupils 300, teachers 17.

Finance and Trade.—Monetary unit: Bermuda pound, at par with sterling. Budget (1954 actual): revenue £2,976,251, expenditure £3,389,381. Foreign trade (1954): imports £12,500,000, exports £3,270,000. Main exports: cut flowers (lilies) and concentrates and essences.

Beryllium: see MINERAL AND METAL PRODUCTION AND PRICES

Best Sellers: see BOOK PUBLISHING AND BOOK SALES.

Betting and Gambling. The principal developments in gambling in the United States during 1955 were legal and political. In New York state the continued to be strong political support for a constitutional amendment that would permit bingo games and raffles (a form of lottery) for religious and charitable fund-raising purposes. Toward the end of the year, operators of bingo games began to rely on previous court rulings that a "free" bingo game, held in conjunction with some form of entertainment to which no admission fee is charged, is not illegal. Similar rulings had permitted "bank nights" at motion-picture theatres during the 1930s. Accordingly, there were frequent concerts or variety shows with free bingo games as an added attraction.

Another legal development in New York was a ruling of the state supreme court that a losing bettor could not recover money lost through legal pari-mutuel machines at a race track. In common law and often by statute one can recover gambling losses from a person who won the money in any manner not specifically permitted by law.

The volume of gambling in the United States and throughout the world was generally estimated to be about the same as in previous years following World War II. The U.S. internal revenue service collected only \$9,558,000 from the \$50 annual tax imposed on professional gamblers, a decline of about \$1,000,000 from the preceding year, but it is assumed that the majority

professional gamblers do not voluntarily pay the tax.

(A. H. MD.)

Great Britain.—There was a small reduction during 1955 in the stakes in football pools, which were £70,000,000, as compared with £74,000,000 in 1954. The reduction in stakes coincided with the introduction of postal cash betting, legalized for the first time by the Pool Betting act, 1954. Before this act came into force it was illegal for persons betting on football pools to send their stake money before the matches had been played and it was a common practice to send it with the entry for the following week's pools. The fact that competitors were now able to enclose the stake money with each entry may have been one of the causes of the reduction in the total stakes.

The number of pool promoters required to register under the act was nearly 200, including a large number of promoters running pools to raise funds for the support of sporting and other activities. The total stakes in such pools appear to have been comparatively small and from the information submitted to local authorities in accordance with the requirement of the Pool Betting act, it appeared that 80% of the total stakes was accounted for by stakes in pools promoted by the four largest companies.

The figures published in the press by large football pool companies of the amounts deducted from stakes for the promoter's commission and expenses showed that the deductions varied from about 18% to about 24%.

The total amount staked on dog-track totalizators (£57,000,000) showed a further reduction of about 1% on the figure for 1954. The amount staked in totalizator betting on horse racing (£25,000,000) and the amounts staked in the Irish Hospitals Sweepstakes (£10,000,000) showed no significant change. The total personal expenditure on all forms of gambling (*i.e.*, the total amounts staked less the amounts returned in the form of winnings) were estimated at about £70,000,000 for 1955, as compared with about £75,000,000 for 1954.

There were two important decisions in the divisional court *Pearse v. Hart* [1955] I.A.E.R. 91 and *Maynard v. Williams* [1955] I.A.E.R. 81 which established that lotteries regularly conducted for the purpose of raising funds for sporting and other objects may be illegal even if they are restricted to members of a club or society formed for these objects. A private member's bill was introduced by Sir Eric Errington, to amend the law so as to enable small lotteries to be conducted for such purposes by voluntary societies registered with a local authority, subject to conditions limiting the amount and size of the prizes and to restrictions on the publicity to be given to the lotteries. Debate on the second reading of the bill took place in the House of Commons on Feb. 18, but was not concluded.

In Queensland, Australia, the Racing and Betting act, 1954, was passed: the act included, *inter alia*, provisions for the licensing of off-the-course cash betting offices. (See also HORSE RACING.)

(A. W. PN.)

Bhutan. An Indian-protected princely state in the Himalayas, Bhutan lies between India (Assam [south and east] and West Bengal [southwest]), Tibet (north and northwest) and Sikkim (west). Area: about 19,305 sq.mi. Pop. (1954 est.): 300,000, mainly Bhutaneses, Bhotias or Duk-pa of Tibetan origin (*Bhot*=Tibet); also many Nepalese in the south. Language: a Tibetan dialect. Religion: Duk-pa Buddhism, a crude unreformed Lamaism. Capitals: Punaka (winter) and Tashi-Chödzong (summer). Maharaja, Jigme Dorji Wangchuk.

History.—At the beginning of 1955 the Indian government drew the attention of the Chinese government to the fact that on a map of China published by the Institute of Geography of the Academia Sinica, and prepared by Chen Shu-peng, the eastern half of Bhutan was included in China. The communist gov-

ernment replied that the map was originally prepared under the Nationalist government and that its reissue without correction was an oversight. In June R. K. Nehru, a senior official of the Indian ministry of external affairs, visited the protectorate. He was the first official visitor since India became independent.

Economy.—Annual subsidy from India, Rs.500,000; annual trade with India, about Rs.776,000. Chief products: rice, Indian corn, millet, timber. Livestock bred: elephants and ponies. Chief manufactures: fine swords, muzzle-loading muskets, fly-whisks (chowries), lac, wax, cloth and musk.

Bicycling: see CYCLING.

Billiards. Irving Crane of Binghamton, N.Y., in 1955 ended the reign of Willie Mosconi as the recognized world pocket-billiard champion by winning a four-man round-robin tournament at Philadelphia, Pa., in April. Mosconi had held the title since 1950.

Crane, the champion in 1942 and 1946, captured the crown in 1955 by winning six of his seven matches. He clinched the laurels by defeating Mosconi, 150 to 87, in a 32-inning play-off. Mosconi finished second with a 5-2 won-lost record. Jimmy Caras was third with a 2-4 mark and Erwin Rudolph last with 0-6.

Mosconi made one successful defense of the title in 1955, beating Joe Procita, 1,800 to 794 in a 12-block match in Philadelphia, Pa., in February.

Rodney Boyd of Ohio State university, Columbus, captured the intercollegiate pocket championship and Robert Strange of Michigan State college, East Lansing, retained the three-cushion honours. Bob Blackham of the University of Utah, Salt Lake City, took the straight-rail crown, while Judy Ferles of the University of Arizona, Tucson, won the co-ed pocket title.

In college team competition, Arizona won the men's and women's pocket championships. The University of Oregon, Eugene, finished on top in the men's three-cushion event and Michigan State took the men's straight-rail crown.

John F. Scully of the Madison Square Boys' club, New York, captured the Boys' Clubs of America senior title. Michael Doran of the Flatbush Boys club, Brooklyn, was first among the juniors, and Tompkins Square of New York replaced Princeton, Ind., as the team champion.

(P. BR.)

Biochemistry. **Nucleic Acids and Growth.**—Many new discoveries in biochemistry were disclosed at the third International Congress of Biochemistry which was held Aug. 1 to 6, 1955, in Brussels, Belg. One of the most important finds had to do with nucleic acid and growth. Although earlier investigators had presented evidence suggesting that there was a correlation between nucleic acid content of cells and their rate of growth, E. F. Gale now showed that a change in the nucleic acid content of certain bacteria, *Staphylococcus aureus*, is followed by a corresponding change in the rate at which these cells are able to synthesize protein and to grow. Gale also provided some evidence that nucleic acid may be required for protein synthesis. Using disrupted staphylococci he showed that the removal of nucleic acid results in cessation of protein synthesis while the replacement of the extracted nucleic acid enables the cell fragments to resume the synthesis of some proteins.

In his latest experiments Gale attacked the problem of the mechanism by which nucleic acids may influence organized protein synthesis. Sonically disrupted staphylococci can incorporate amino acids into their protein fraction by what appears to be an exchange reaction occurring between the added amino acid and the amino acids in protein of the cell. This incorporation is not the result of net protein synthesis but may be one of the reactions occurring during protein synthesis. Disrupted cells

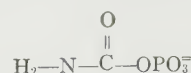
lose their ability to incorporate amino acids when their nucleic acid is removed but addition of nucleic acid to the incubation mixture restores the ability to incorporate amino acids. Gale studied the effect of nucleic acid fragments on the incorporation of various amino acids into the protein fraction of these disrupted cells.

Degradation of ribonucleic acid (RNA) obtained from these bacteria by ribonuclease did not abolish its ability to reactivate the amino acid exchange reactions in the bacteria. Although RNA preparations from yeast or liver are inactive in stimulating the exchange reaction, when these preparations are digested they also are active in promoting incorporation of a variety of amino acids into disrupted staphylococci. Gale fractionated the digested nucleic acids by using a combination of chromatographic and ionophoretic procedures. The fractions obtained were tested for their ability to replace intact RNA in the incorporation of specific amino acids. In several cases Gale obtained single fractions from the digest which promote the incorporation of amino acids. The remarkable fact demonstrated was that different active fractions promote the incorporation of specific and different amino acids. In all cases the purified fraction was at least 100 times as effective as intact staphylococcal RNA. Gale identified some of the active fragments as small polynucleotides and suggested that these active factors represent specific groupings forming loci for the combination of specific amino acids, and bringing about exchange of those amino acids with corresponding ones in protein of the preparation.

Synthesis of Polynucleotides.—During the year a clue to the mode of synthesis of nucleic acid was obtained. Considerable progress was made in understanding the reactions involved in the synthesis of the nucleotides, the constituent units of nucleic acid, and of the formation of the large polynucleotides (*i.e.*, nucleic acids) from mixtures of nucleotides. The recent progress was made possible largely by the discovery of specific enzymes which will carry out the synthetic reactions. The enzymes involved in nucleotide synthesis were not completely identified. However, an enzyme which can synthesize polynucleotides was found by S. Ochoa and his co-workers in the microorganism *Azotobacter vinelandii* and was partially purified and its activity characterized. When the purified enzyme was incubated with inosine diphosphate (a nucleotide containing two phosphates instead of one), and magnesium ion, 50%-60% of the diphosphate disappeared and there was liberated an equivalent amount of inorganic phosphate. The missing nucleotide was accounted for by a water-soluble high-molecular-weight product which was precipitated by acid and alcohol. The chemical properties of this compound indicated that it was a polymer of the nucleotide inosinic acid. The same enzyme also catalyzed the formation of polymers of the other nucleotides which are found in nucleic acids. Using mixtures of diphosphonucleotides Ochoa found that mixed polynucleotides were formed by the action of the enzyme. The enzyme was named polynucleotide phosphorylase; it was thought that it might be the major mechanism for the synthesis of polynucleotide chain.

Urea Formation and Carbon Dioxide Fixation.—More than 15 years earlier H. A. Krebs showed that urea, the main excretory product of N metabolism in man, was formed from two moles of NH_3 and one mole of CO_2 by a cyclic process involving the amino acids ornithine, citrulline and arginine. Citrulline was apparently formed from ornithine by the addition of one mole of CO_2 and one mole of NH_3 . During 1955 the detailed chemical mechanism for this reaction was revealed in experiments conducted in the laboratory of F. Lipmann. It was found that a hitherto unknown compound, carbamyl phosphate, could react with ornithine to form citrulline and release inorganic phosphate.

The first reaction of the CO_2 and NH_3 is a condensation to form carbamate. This reaction is spontaneous and apparent does not require an enzyme. The carbamate is then enzymatically phosphorylated by adenosine triphosphate (a high energy compound) to form the new high energy compound, carbamyl phosphate:



The carbamyl portion then is transferred enzymatically to ornithine to form citrulline. Subsequent reactions convert citrulline to arginine which is then hydrolyzed to urea and ornithine so that the cycle can be repeated.

In addition to its role in urea synthesis carbamyl phosphate was found to play an important role in another synthetic reaction. In the presence of the proper enzymes carbamyl phosphate reacts with the amino acid aspartic acid liberating inorganic phosphate and transferring the carbamyl group to the amino group of aspartic acid. The new compound which is formed is called ureidosuccinate. Ureidosuccinate had been previously found to be a precursor of the pyrimidine bases which are found in the nucleic acids.

Clinical Applications of Biochemistry.—There was an increasing trend in the use of biochemistry in medicine. In addition to improving diagnostic tools, there was work in many laboratories devoted to the searching out of the basic biochemical lesions in disease, often on a cellular, enzymatic or even molecular level. Anaemias in particular received a great deal of attention. A number of different hereditary anaemias are characterized by abnormal types of haemoglobin. The relation of the nature of the diet to blood lipid fractions and the occurrence of atherosclerosis also commanded much attention. The latest work suggested that a diet rich in fat leads to a high cholesterol content of blood serum and that this high cholesterol content of the serum is correlated with a high frequency of atherosclerosis.

Recent work on glycogen storage diseases showed that these diseases can be distinguished on the basis of glycogen structure. In six cases of liver glycogen disease decreased activity of the enzyme glucose-6-phosphatase which is involved in glycogen formation was detected. There was also great interest in work that had been done in the past few years on several chemical compounds which might be of some use in mental diseases. Compounds such as mescaline and D-lysergic acid diethylamide tartrate were found to produce reversible schizophrenialike symptoms in man; the lysergic acid compound is extremely active, being effective in doses of one microgram per kilogram of body weight. (See also PHYSIOLOGY.)

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Biography: see AMERICAN LITERATURE; BOOK PUBLISHING AND BOOK SALES; ENGLISH LITERATURE; OBITUARIES; and their alphabetical positions, biographies of living persons.

Biology: see ANTHROPOLOGY; BOTANY; ENDOCRINOLOGY; GENETICS; MARINE BIOLOGY; PHYSIOLOGY; ZOOLOGY.

Birth Control.

A growing awareness by government leaders and the public of the world's dangerous imbalance between overpopulation and natural resources became apparent in 1955. (A world population growth of 90,000 a day was estimated by the United Nations department of social affairs.) Attention was focused on the need for deve-

g a new, simplified and inexpensive contraceptive method—one which would be acceptable to people of diverse cultural backgrounds. Under the auspices of the Planned Parenthood Federation's Dickinson Research Memorial fund, medical research pointing toward a contraceptive pill or injection made tangible progress during the year. M. C. Chang, research biologist at the Worcester Foundation for Experimental Biology under the direction of Gregory Pincus, predicted that such a pill might be available to the general public within five years. Chang, who received a 1955 Lasker award in planned parenthood for outstanding research in animal and human fertility, announced that several compounds which worked well on laboratory animals were ready to be taken over by physicians for controlled tests on men and women.

Lasker awards in planned parenthood were given also to Howard C. Taylor of Columbia University College of Physicians and Surgeons, and to Lady Dhanyanthi Rama Rau, founder and president of the Family Planning association of India, for their work in the family planning field.

International.—The first international birth control meeting ever held in Latin America took place in San Juan, P.R., where the International Planned Parenthood federation's western hemisphere region held its pioneer conference in May 1955. An appeal was directed to the World Health organization to include child-spacing instruction in its program of preventive medicine. Resolutions were also sent to the UN Commission on Human Rights and the Inter-American Commission of Women asking that the right to space children be recognized as a basic human freedom.

Another major international family planning meeting was held in 1955 when the International Planned Parenthood federation met in Tokyo in October for its fifth world conference on planned parenthood. Delegates from 15 countries in Europe, Asia, Africa, Australia and the Americas, including some of the world's most eminent scientists in the sex physiology and population fields, presented latest findings on world population trends, natural resources, family planning methods, marriage guidance and sex education, infertility, abortion and sterilization.

A panel of experts in education, medicine, psychiatry, religion, social work and business made an intensive examination of family life patterns at a symposium held during the American Planned Parenthood federation's 35th annual meeting in May. Geared to the theme of "The Family in Pursuit of Happiness," panelists traced the growth of family life from birth through marriage and parenthood into its relationship with the community and the world.

U.S. Services.—The year 1955 also marked the start of a long-range program designed to make the services of Planned Parenthood more readily available to all families that need it. The new emphasis on reaching more people was conducted with wider use of communications mediums—literature, radio, TV and motion pictures. A graphic account of Planned Parenthood's four-point program of birth control, aid to the childless, education for marriage and marriage counselling, and research was unfolded in the Planned Parenthood federation's annual report for 1954 (published in 1955). The program was being conducted by the federation and its 110 state leagues and local committees in 29 states and the District of Columbia, and had been endorsed by numerous religious bodies and prominent clergymen.

At the Margaret Sanger Research bureau, New York city, physicians and students from medical colleges all over the country came to receive instruction in contraceptive techniques. The bureau was the only teaching centre in the U.S. offering education and instruction in all phases of the planned parenthood program.

Affiliates' activities were conducted by nearly 4,500 volun-

teers and 450 employees. U.S. birth control clinics numbered 536—378 of which were in public health clinics, hospitals and medical schools, and 178 were sponsored by Planned Parenthood committees—reaching a total of nearly 250,000 people. Medical assistance to help infertile couples was provided by Planned Parenthood in 31 infertility clinics and 65 referral centres. An additional 119 infertility clinics were located in hospitals and medical schools across the country.

(M. SR.)

Birth Statistics. The birth rate in the United States continued to rise through 1954. According to provisional data, live births in that year passed 4,000,000 for the first time in the history of the country, with an estimated 4,021,000 births registered and a rate of 25.0 live births per 1,000 total population. Including an allowance for unregistered births raised the total to 4,076,000, the birth rate becoming 25.3 per 1,000 population. This rate for 1954 was the highest for any year since the early 1920s. However, provisional data for the first eight months of 1955 showed a decrease of 1.2% in the birth rate compared with the like period of 1954, notwithstanding a small increase in the number of births. The rate decreased because the rise in population was more rapid than the rise in the number of births.

Provisional data for the first eight months of 1955, compared with the like period for the year before, showed increases in births in the New England states, the middle Atlantic states, the north central states and the mountain and Pacific states. On the other hand, decreases were reported for the south Atlantic and the south central areas. However, within each of these geographic divisions there were some states that showed increases and others with decreases. For the complete year 1954, the birth rates among the individual states ranged from a low of 21.6 per 1,000 population in New Jersey to a high of 32.9 births per 1,000 population in Utah. The birth rates per 1,000 population according to geographic division were as follows: New England, 22.8; middle Atlantic, 22.1; east north-central, 25.3; west north-central, 24.7; south Atlantic, 26.6; east south-central, 26.9; west south-central, 27.1; mountain, 28.8 and Pacific, 24.3.

Provisional data for Canada for the first eight months of 1955 indicated a rise of 4% in the number of births over the

Birth Rates per 1,000 Population in Selected Countries for 1953 and 1954

Country	1954	1953	Country	1954	1953
North America			Italy	17.6	17.5
Canada	28.7	28.2	Netherlands	21.6	21.8
Costa Rica	52.6	53.9	Norway	18.6	18.7
Dominican Republic	43.9	41.5	Portugal	22.7	23.4
Guatemala	51.6	51.3	Spain	20.0	20.6
Mexico	45.8	44.6	Sweden	14.6	15.4
Panamá	34.9	38.6	Switzerland	17.0	17.0
Puerto Rico	35.1	34.8	United Kingdom	15.6	15.8
Salvador, El	48.0	47.9	Yugoslavia	28.4	28.4
Trinidad and Tobago	41.9	37.7			
United States	24.9	24.7	Asia		
South America			Ceylon	36.2	39.4
Argentina	24.1	24.6	Hong Kong	36.6	33.6
Chile	35.5	36.1	India	28.4	26.7
Peru	30.0	35.0	Israel (Jewish pop.)	27.3	30.2
Venezuela	46.8	46.1	Japan	20.1	21.5
Europe			Africa		
Austria	14.7	14.8	Union of South Africa (Europeans)	25.5	25.7
Belgium	16.7	16.6			
Denmark	17.4	17.9	Oceania		
Finland	21.3	21.9	Australia	22.5	22.9
France	18.8	18.8	New Zealand		
Germany (Western)	15.7	15.5	Europeans	24.6	24.1
Ireland	21.1	21.1	Maoris	44.4	44.5

Source: United Nations, *Monthly Bulletin of Statistics* (Sept. 1955); Office of Population Research, Princeton University, and Population Association of America, *Population Index* (July 1955).

like period of 1954. On the basis of provisional records the total number of births for 1954 was estimated as 435,132, the birth rate being 28.7 per 1,000 total population. For England and Wales, the provisional birth data during the first half of 1955 showed a drop of 2.4% from the similar period of 1954. For the country as a whole, births totalled 672,635 in 1954,

with a birth rate of 15.2 per 1,000. There were 48,431 births in New Zealand in 1954 among the population of European origin, the rate being 24.6 per 1,000. Australia recorded 202,256 births (exclusive of full blood aborigines) during 1954, with a birth rate of 22.5 per 1,000. Both Australia and New Zealand showed an increase in birth rates for the first quarter of 1955, compared with the same period of the year before. Recent birth rates for a number of countries are shown in the table.

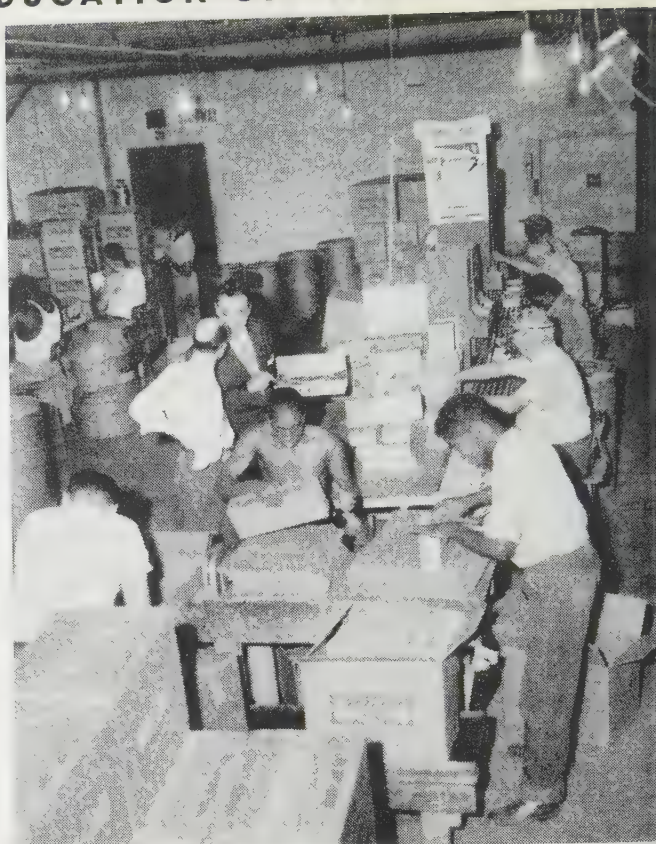
The latest year available with births classified according to age of mother was 1952. In that year, the rates for live births (adjusted for under-registration) per 1,000 female population in successive age groups were as follows: 10-14 years, 0.9; 15-19 years, 85.4; 20-24 years, 218.1; 25-29 years, 180.4; 30-34 years, 113.1; 35-39 years, 56.1; 40-44 years, 15.3 and 45-49 years, 1.2. For all ages under 35 years, these rates were greater than the corresponding figures for 1946, the first full post-World War II year. For example, the rate at ages 15-19 years in 1952 was 44% greater than in 1946. The increases amounted to 20% at ages 20-24 years, 12% at ages 25-29 years and 4% at ages 30-34 years. The decreases at the higher ages were relatively small. Notwithstanding these increases, the rate of first births to mothers had been tending downward in the postwar years; first births to women of ages 15-44 years occurred at a rate of 33.9 per 1,000 in 1952, or 12% less than in 1946. On the other hand, births of higher order to mothers up to the seventh showed increases, the rise amounting to 28%. For eighth and higher orders of births to mothers the rate had been tending downward for many years. (See also CENSUS DATA, U.S.; INFANT MORTALITY.) (M. Sp.)

Bismuth: see MINERAL AND METAL PRODUCTION AND PRICES.

Blind, Education of the. During 1955 the questions of an internationally accepted definition of blindness and economic provisions for the severely handicapped (including the blind) continued to receive attention. The resolutions on these two subjects adopted by the world assembly of the World Council for the Welfare of the Blind in August 1954, and endorsed by the conference of World Organizations Interested in the Handicapped as well as by the United Nations Technical Working Group on the Rehabilitation of the Handicapped, were considered again in May 1955 by the United Nations Social commission at its tenth session, at which time the commission authorized the secretary-general to circulate letters to all governments, drawing their attention to the recommended definition of blindness. The matter of handicap allowances was set aside for more detailed consideration by the committee concerned with the whole area of family income.

One of the important adjuncts to the adoption of an international definition of blindness is the determination of the actual extent of blindness throughout the world. Based on varying definitions of blindness, estimates range from 6,600,000 as reported by the UN World Health organization in Jan. 1953 to informal estimates of 14,000,000, the latter probably being the more nearly correct. The greatest incidence of blindness, in comparison with the general population, is found in the middle and far east and certain parts of Africa. In the United States, as of July 1, 1954, it was estimated that there were approximately 320,000 blind persons, or an average of 1.98 for each 1,000 of the general population. Of this number, approximately 10% were under 20 years of age, and 50% over 65 years. Figures for Canada, the U.K. and most other western European countries were comparable to those reported in the U.S.

Formal plans were made for the calling of a joint seminar on the vocational rehabilitation of the blind, under the sponsorship of the World Council for the Welfare of the Blind and the



BLIND WORKERS at a toy manufacturing company in Chicago, Ill. Vice president J. Heller (centre, in dark suit) first hired blind workers in 1949; 1955 90% of the employees were blind persons, and business had increased from \$300,000 to \$2,000,000 annually. According to Heller, the increase resulted from the greater efficiency and lack of absenteeism of the blind workers.

World Veterans federation, to be held in London, Eng., in the spring of 1956. One important aspect of the program would be discussions looking to the provision of adequate training for graduates of schools for the blind.

Early in 1955, the American Foundation for Overseas Blind set up a field mission in Korea, a territory where all previous services to the blind had been completely wiped out because of the war. At the request of the Philippine government, the American Foundation for the Overseas Blind was also providing services of a trained rehabilitation expert for a period of one year to supervise the introduction of vocational rehabilitation services for the blind in that country.

In the United States, the congress appropriated \$234,000 for the fiscal year beginning July 1, 1955, to the American Printing House for the Blind for the provision of schoolbooks and materials for the education of the 7,500 children enrolled in 109 schools and classes for the blind throughout the country. The 1920 Vocational Rehabilitation act, amended during 1954 by congress, provided that the federal government, through the Office of Vocational Rehabilitation of the department of health, education and welfare, would assume the necessary state administration cost and the cost of vocational counselling and placement of blind individuals, while certain other expenses, including vocational training, would be shared by the state and federal governments. An average of 3,500-4,000 blind persons are rehabilitated each year through the provisions of this law.

In Brazil, a National Council for the Blind was established composed of representatives from 26 Brazilian institutions for the blind. In Chile, following the recommendation of the American Conference on the Welfare of the Blind and Prevention of Blindness held in São Paulo, Braz., June 1954, a training program for teachers of the blind was set up at the Univer-

Chile, Santiago. The course began on April 1, 1955, with an initial group of 30 students. In Hong Kong a training program for blind women was inaugurated. The UN Demonstration Center for the Blind in Cairo, Egy., continued to expand, the second group of trainees from Arabic countries beginning their studies in Sept. 1955.

UN consultants surveyed the education of the blind in Syria, Brazil and Burma, and paid a return visit to Pakistan to supervise the implementation of recommendations which had been made following a survey of that country in 1954. Surveys of blindness and the establishment of local rehabilitation centres continued in Kenya, West Africa, Uganda, the near east, south-east Asia and the Caribbean under the auspices of the British Empire Society for the Blind. Helen Keller made an extensive tour of the orient early in 1955, her itinerary including India, Pakistan, Indonesia, Burma, the Philippines and Japan.

Braille printing plants were established during the year in Calcutta, Ind., and Montevideo, Urug. Additional Braille duplicating machines and other Braille printing equipment were installed in Brazil, Chile, Mexico, the Netherlands, Bolivia, Morocco and Nigeria.

In order to assist with the distribution of Spanish-language Braille material to all Latin America, a program was worked out whereby the American Foundation for the Overseas Blind would extend financial assistance to allow for production of materials at the Mexico City Braille printing plant for export to other Spanish-speaking countries throughout the region. (See also EYE, DISEASES OF THE.) (F. E. D.)

Blood, Diseases of the. During 1955, steady advances occurred in the understanding of various disease states and of the mechanisms concerned in their development.

The Blood Cells.—The description of changes in the red cells by Greek-derived words indicating variations in size, shape, staining characteristics, etc. (anisocytosis, poikilocytosis) had been in use for more than 50 years. During 1955, some advance was made in understanding the chemical reasons behind certain shape changes. Thus the spherically shaped red cell was found to be associated with alterations in ATP (adenosine triphosphate), a substance concerned with carbohydrate (sugar) function. Such spherical cells developed with the storage of blood in blood banks and there was some evidence that this shape change could be prevented by the use of certain sugars, thus preventing the blood from going "foul."

Previously, the development of sickled red cells, so important in sickle cell anaemia, and of numerous target-shaped red cells (target cells), was traced to alterations in haemoglobin. As of 1955, two normal types of haemoglobin were present, A or adult and F or foetal; C, D, E, G, H, I, J and S types of abnormal haemoglobins were demonstrated. Most of these were found in the "coloured" races (black, yellow, etc.), but instances of their occurrence in apparently pure whites were noted. The abnormal haemoglobin in the red cells of persons affected was always on a genetic (hereditary) basis, with transmission of the abnormality from one or the other parent. Inheritance of the abnormality from both parents resulted in severe anaemia. Discovery was made that chromium was a constant constituent of the red cell. This led to the development of radioactive chromium (chromium 51) as a tagging agent for the red cell. By use of this tag, it was possible to determine accurately the life span of the cells in the person under study. In practice, a tiny quantity of radioactive sodium chromate was mixed with a small amount of the subject's blood, thus tagging a known quantity of blood cells. These were then reinjected in the subject and the degree of radioactivity in the red cells then studied from

day to day. Such studies were of considerable value in studying the blood needs of wounded soldiers at battlefield stations, and in determining the diminished life span of red cells in certain blood-destructive (haemolytic) anaemias.

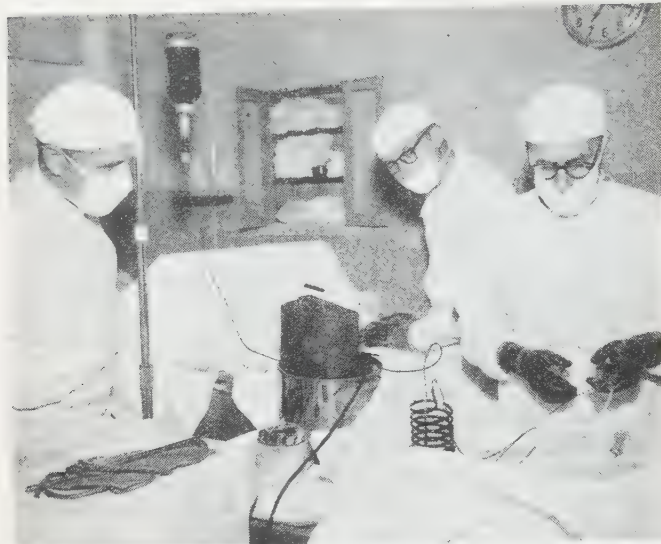
Actual studies of the chemistry of the intact white cells is difficult. However, methods were developed in recent years to study chemical and enzymatic constituents of white cells (histochemistry) without tearing them apart for analysis. Such studies demonstrated the profound chemical differences existing between one type of white blood cell (the granulocyte) and another (the lymphocyte). Other studies indicated that the granulocyte lost a certain enzymatic constituent (phosphatase) prior to the development of a certain leukemic state.

The Erythropoietic Hormone.—Scientists had postulated that some regulatory influence was required to make red blood cells grow in the bone marrow and to cause their increased production when blood was lost or destroyed. In experiments with rabbits, Erslev demonstrated that the blood plasma of rabbits that had been bled had the capacity when injected of stimulating blood production in normal rabbits. A definite rise in new red cells occurred in the blood and was paralleled by indications in the bone marrow of increased production. In other experiments, Contoupolis and his group in California demonstrated in rats that the pituitary gland was essential for normal red cell production. By carefully controlled work, stimulation of red cell production was demonstrated to reside in a fraction of the pituitary gland and was distinct from ACTH. Administration of specially prepared extracts of the pituitary gland resulted in stimulation of red cell production in normal rats and improved the anaemia of rats whose pituitary gland had been removed. These and other investigations indicated strongly that a hormone or at least a "humoural" factor was essential for normal blood production and became increased during haemorrhage. Although this work was in its first stages, its possible importance in the treatment of hypoplastic (poor marrow production) anaemias was obvious.

Radioactive Vitamin B₁₂.—Exceedingly small, even trace amounts, of vitamin B₁₂ are essential for the normal production and maturation of the red blood cells. This vitamin is normally present in the diet in amounts far exceeding nominal requirements, but it cannot be absorbed from the gastrointestinal tract without the aid of a substance present in the lining of the stomach known as intrinsic factor. The absence of intrinsic factor results in low body levels of vitamin B₁₂ and consequently in faulty red blood cell development. This condition is called pernicious anaemia and may be treated by injections of B₁₂. It was found recently that B₁₂ was effective by mouth when it was combined with the lining or intrinsic factor of the stomach, obtained from hog or cattle stomach. Such combination therapy reduced the necessity of frequent injections.

The potency of present preparations of intrinsic factor varied greatly. The introduction of vitamin B₁₂ labelled with radioactive cobalt proved to be helpful in measuring the effectiveness of various intrinsic factor preparations. If a given intrinsic factor preparation was ineffective, the radioactive-labelled vitamin would not be absorbed but would pass through the gastrointestinal tract to be excreted in the faeces. There it could be detected by radioactivity counting devices similar to Geiger counters. However, an effective intrinsic factor preparation would result in good absorption of the concomitantly administered oral vitamin B₁₂. Absorption would result in detectable radioactivity in the liver (storage site of the vitamin), and also, following excretion, in the urine; only small amounts would be detectable in the faeces.

Use of radioactive-labelled vitamin B₁₂ also proved of value in establishing the diagnosis of pernicious anaemia. Establishing



BLOOD-WARMING DEVICE which maintains body temperature as blood passes from donor to patient, shown in a 1955 demonstration. The equipment was designed by Volney C. Wilson (left) for use in transfusions to new-born infants whose blood is contaminated with Rh antibodies

the correct diagnosis in a person with a history of past anaemia is important since in pernicious anaemia continuous therapy is essential while other anaemias do not require prolonged maintenance therapy after normal blood values are restored. A patient with pernicious anaemia, even if his blood values have been corrected by therapy, always lacks intrinsic factor. Hence, by the test described, he would be unable to absorb orally administered radioactive-labelled vitamin B₁₂, and consequently hepatic and urinary radioactivity would not be detectable following administration of the vitamin.

Haemorrhagic Disorders.—No radical improvement in the treatment of haemophilia took place within the year, and reliance had to be placed, as before, on transfusions of fresh whole blood or plasma.

The thrombocytopenias; *i.e.*, the disorders in which reduction in blood platelets was present, were often benefited (1) by platelet transfusions using plastic bag blood and (2) by the use of such steroids as prednisone. This was the case whether the reduced platelet number was the result of destruction of the bone marrow or diminished production of platelets because of some temporary immunologic process. Removal of the spleen was reserved for some of the latter cases, especially of the chronic variety. It was becoming apparent in 1955 that removal of the spleen for cases of idiopathic thrombocytopenic purpura was often unsuccessful. Therapy with the steroids, particularly meticorten, even for long periods, was often of value, either with the spleen intact or following splenectomy if a poor response took place after this operation.

Drug thrombocytopenic purpura, particularly that resulting from quinidine (a heart medication), was becoming an important condition for both recognition and treatment. Some of the drug purpuras were violent requiring frequent transfusions of fresh blood in plastic bags. With recovery of the patient, complete withdrawal of the offending drug was a necessity. A special type of haemorrhagic disorder, often of great severity, was that associated with destruction (lysis) of the blood clot. Fibrinolysis was encountered with increasing frequency in cases of cancer of the prostate gland, in lung surgery and during pregnancy and at the time of delivery. It became apparent that in these conditions a delicately balanced mechanism (fibrinolysis vs. anti-fibrinolysis) became disturbed with the result that the forces of clot destruction took over, leading to haemorrhage. During pregnancy and delivery this was helped in some instances by the

use of large amounts of fibrinogen injected into the veins, blood in large amounts and by steroids.

Basic research into the various coagulating and clot-producing substances continued. Methods to dissolve clots besides the use of heparin and dicumarol were being studied.

Leukemia.—Leukemia represents an unbridled growth of one of the white cell forming tissues, a growth without apparent reason, and which ultimately leads to the death of the person in whom it develops. During 1955 basic research into the incidence of the causes, the mechanisms of white cell growth and the means of controlling the growth urge of this malignant process continued. Although the causes for leukemia were not known, one of them—in chicken leukemia—had been traced to a virus infection many years previously. The virus theory for leukemia was revived chiefly through the publications of Gross, who maintained that leukemia in mice was transmitted from parent mouse to their offspring through reservoirs of virus which might remain inactive for years until a "trigger" mechanism (X-ray, chemical, etc.) would activate it. Whether this concept, which was bolstered by injections of cell-free leukemic material, was applicable in humans was not yet clear. Studies of the inner (histo) chemistry of the leukemic cell indicated that some differences could at times be detected. Control of the growth of the leukemic cell by altering its inner machinery became more and more possible with the development of chemicals, which while seeming to be good for the tumour cell and thus taken up by it, actually were bad for it and destroyed it. Myleran, a new "sulfone," was synthesized by Haddow's group and had specific effects against one type of leukemia (chronic granulocytic), whereas lympheran (CB-1348) a new nitrogen mustardlike material seemed to have a specific effect against malignant lymphoid tissue. These were optimistic bits in the otherwise over-black picture of leukemia and lymphosarcoma.

The treatment of leukemia and its related conditions such as lymphosarcoma and Hodgkin's disease was by no means the hopeless, futile thing of less than 10 years back. Now with a battery of chemicals of various types, some of them highly specific, with transfusions, antibiotics, X-rays and radioactive isotopes, the specialist in this field had at least some tools for the struggle to improve the life span of the person afflicted. Ultimate control (not necessarily cure) of the leukemic process seemed to be within the foreseeable future. (See also PHYSIOLOGY.)

(W. Dk.)

Blue Cross: see INSURANCE.

Bobsledding. The team of Bud Washbond of Keene Valley, N.Y., and Pat Martin of Massena, N.Y., won the two-man bobsledding championship of the Amateur Athletic Union of the United States at Lake Placid, N.Y., on Feb. 5, 1955. Their time for the four heats down the Monroevan Van Hovenberg run was 5 min. 4.06 sec. Monroe Flagg of Saranac Lake, N.Y., piloted his sled to victory in the national A.A.U. four-man races with the elapsed time of 4 min. 46.67 sec. Teamed with Flagg were Bud Miller, Chuck Randolph and Jack Lamy. An accident that resulted in the death of Franklin Beatty of Ausable Forks, N.Y., marred the championship. Riding with Beatty when his sled shot off the course at "zigzag" curve was Jack Young, Schuyler Carron and Joe Meconi, all of Ausable Forks, who were injured less seriously. The North American amateur meet was cancelled because of the lack of snow.

World Championships.—Stanley Benham of Lake Placid was barred from international competition for three years by the executive committee of F.I.B.T. (Federation Internationale de Bobsleigh et Tobogganing), meeting at St. Moritz, Switzerland, Jan. 29. The group based its decision on Benham's withdrawal

on the four-man races of the 1954 world championships and so from letters addressed to the press and president of the world body. Benham had withdrawn from the competition because he could not find a suitable sled. John Helmer, John Wells and Pat Martin, who with Benham had been chosen to represent the United States in the four-man test at the 1956 Olympics, resigned from the Olympic squad following the banning of Benham. Swiss stars swept the two-man and four-man titles in the 1955 world meet at St. Moritz. Fritz Feierabend annexed his third world two-man crown when he and a countryman, Harry Varbourton, flashed down the 1,600-m. course four times in the total time of 5 min. 33.28 sec. The No. 1 U.S. sled, driven by Pick Severino of Saratoga Springs with Bill Williams of Rockingham, N.C., as brake, placed sixth. Franz Kapus piloted a Swiss team to victory in the four-man event, being clocked at 10 min. 10.52 sec. Severino's U.S. four placed sixth. (T. V. H.)

Bolivia. Bolivia is a landlocked republic in south central South America. Area: 424,162 sq.mi.; pop. (1950 census) 3,019,031; (1954 official est.) 3,162,000. The legal capital is Sucre, pop. (1950 census) 38,400; the actual seat of government is La Paz, pop. 266,763. Other major cities (with pop., 1950 census) include Cochabamba 74,949, Oruro 58,706, Potosí 33,579, Santa Cruz 34,005 and Tarija 16,474. Racial distribution is estimated to be 52.34% Indian, 27.5% mestizo, 13.08% white, 0.22% Negro and 6.85% unspecified. Religion is predominantly Roman Catholic. President in 1955: Victor Paz Estenssoro.

History.—The Bolivian government under Pres. Victor Paz Estenssoro continued to promote development of the petroleum industry and diversification of agriculture as basic aspects of its program to expand and lend resiliency to the national economy. Railroad, highway and pipeline construction was pushed forward, and light industrialization was encouraged on a selective basis. United States financial and technical assistance made possible many advancements, including the opening of new oil wells in the Bermejo sector, the construction of a six-inch pipeline from the Camiri oil fields to the Argentine frontier, and the establishment of a factory in Cochabamba to manufacture oil drums and other containers.

The president divided a large coffee-growing area near Santa Cruz among individual farmers in February, implementing the land reform program of the National Revolutionary Movement (Movimiento Nacional Revolucionaria) which he headed. A special United Nations technical assistance program was initiated in September to help farmers improve their coffee and tobacco crops. The cultivation of rice and wheat was also encouraged.

A 423-mi. railroad between Santa Cruz, Bol., and Corumbá, Braz., was inaugurated in January, closing the final gap in the transcontinental system of railways and highways which joins Brazil, Chile, with Santos, Braz. Bolivia and Peru jointly initiated surveys for a railroad along the southern shore of Lake Titicaca between Guaqui, Bol., and Puno, Peru. Bolivia and the United States formed the Inter-American Co-operative Highway Service in October to build and improve Bolivian roads. Projects included paving part of the Cochabamba-Santa Cruz highway, constructed as a joint venture in 1954.

Pres. Paz Estenssoro and Pres. Carlos Ibáñez del Campo of Chile agreed in February to revise customs duties and trade regulations to facilitate exchange of Bolivian petroleum for Chilean iron and steel. In July Paz Estenssoro discussed utilization of the water resources of Lake Titicaca with Pres. Manuel Odría of Peru.

In April the government suppressed a conspiracy attributed to the clerical, conservative Falange. Although opponents charged his regime with permitting communist influence in high

places, Paz Estenssoro repeatedly denounced communism—as well as fascism—as inimical to the interests of the nation. Spokesmen of the powerful Central Labor organization urged the president and Vice President Siles Suazo to disregard the constitutional prohibition against two successive terms and to run for re-election in the May 1956 contest. (R. HN.)

Education.—Bolivia in 1950 had 1,500 rural schools with 110,000 pupils and 1,595 elementary schools with 147,060 pupils. There were 104 secondary schools (national and private) with 18,029 pupils and also 38 technical schools and 16 training schools for teachers with total enrolment of 7,955. There were universities with more than one faculty at Cochabamba, La Paz, Oruro, Potosí and Sucre; enrolment in institutions of higher learning was 4,642. Education was scheduled to receive 14% of governmental expenditure in 1955.

Finance.—The monetary unit is the boliviano, valued during 1955 at 0.52 cents U.S. currency, official rate, and on Aug. 26, 1955, at 0.03 cents, legal free rate. The 1955 budget, as issued on May 1, 1955, estimated revenue at Bs. 29,322,000,000 and expenditure at Bs. 30,282,000,000. The public debt on Dec. 31, 1953, was placed at Bs. 37,487,400,000, including the foreign debt amounting, with accrued interest, to the equivalent of Bs. 30,487,400,000. Currency in circulation on Dec. 31, 1954, totalled Bs. 19,870,000,000; demand deposits Bs. 10,100,000,000; gold reserves of the Central bank (May 31, 1955) \$1,800,000. The cost-of-living index at La Paz stood at 1,780 in June 1955 (1948=100).

Trade and Communications.—Exports in 1954 (excluding gold) were about \$94,300,000 (1953: \$124,500,000); imports, \$60,100,000 (1953: \$83,400,000). Leading exports in 1954 were tin (64%), tungsten (15%), lead (6%), silver (6%) and zinc (5%). Leading customers in 1953 were the U.S. (55%) and the U.K. (41%); leading suppliers, the U.S. (32%), Argentina (14%), Peru (14%), Canada (9%) and the U.K. (7%).

Railway lines in operation (1955) totalled 1,690 mi. Four new lines were in various stages of construction. The highway system (1949) comprised an estimated 15,420 mi., of which 4,008 mi. were improved. Motor vehicles on Jan. 1, 1954, included 6,128 automobiles, 14,962 trucks and 791 buses.

Agriculture.—Important crops included wheat, maize, barley, rice, potatoes and cotton. The 1950 census showed 3,849,000 cattle; in 1951 there were an estimated 4,000,000 sheep, 700,000 goats, 400,000 pigs and 1,800,000 llamas and alpacas. The principal exploited forest products were rubber and cinchona bark.

Manufactures.—The aggregate capital of Bolivian industry in 1950 was Bs. 2,404,068,000. In 1948 there were 2,305 factories with 25,000 employees. Most important, in terms of value of production, were electricity, textiles and clothing, beverages, foodstuffs and glassware and ceramics.

Minerals.—Mineral exports and values in 1954 included tin 29,287 metric tons (\$60,071,000); wolfram (tungsten) 2,667 tons (\$14,156,000); lead 18,227 tons (\$5,603,000); zinc 20,397 tons (\$4,735,000); silver 5,043,563 fine oz. (\$4,259,000); copper 3,662 tons (\$2,325,000); antimony 5,218 tons (\$1,608,000). Production of crude petroleum was 269,482,000 l. (1,660,000 bbl.), more than 90% of which was produced at the Camiri field. Crude oil refined totalled 1,528,500 bbl. (J. W. Mw.)

Bonaire: see NETHERLANDS ANTILLES.

Bonds: see BANKING; STOCKS AND BONDS.

Book Collecting. During 1955 the improving economic situation continued to encourage in the book markets, as in other enterprises, a further increase in trade already at a level, and occasionally at a price, beyond that ever before attained. At the Sylvain S. Brunschwig sale in Geneva many books acquired within the last ten years more than doubled their earlier valuation. And at several sales in London and New York books from the vast André de Coppet collection sold at five times the price realized 20 years before. Even if these spectacular advances were discounted, the upward trend was readily apparent in total sales, which seemed to be running more than 20% above the record for the previous year.

In the United States the book attracting the greatest interest (and, at \$25,000, the highest price) was the Phillippus copy of *The Journal of Major George Washington*, printed in 1754 at Williamsburg, Va., when the author was 21. One of eight known copies, and perhaps the last to appear for public sale, it was recovered with funds provided by Mrs. John D. Rockefeller, Jr., for presentation to Colonial Williamsburg Incorporated. With its return the authorities decided to reconstruct the printing office of William Parks, the place where it was first issued.

While the *Journal* illustrates the marked demand for historical Americana, a demand which was being stimulated by numerous publications devoted to the period of the Revolution and the Civil War, there was much less interest in American literary

classics. At the Swann galleries in New York a complete collection of the books Merle Johnson designated as "high spots" evoked only a moderate response.

Among other works there were three, of German, British and American origin, which excited international discussion. Though final word was still awaited from officials at the Pierpont Morgan library, who in 1954 reasserted the Constance missal as the earliest book printed by Gutenberg, several demurrers appeared from other sources, notably one by Vincent Scholderer in the *Book Collector*. The bicentenary of Samuel Johnson's *Dictionary* was celebrated not only by exhibits in England and the United States but by the issue of a book on this book. The centenary of Walt Whitman's *Leaves of Grass* was also observed by many libraries, including the British Museum. An elaborate display at the Detroit Public library, however, was closed when a thief made away with one of Whitman's memorandum books.

Aside from these several events, all essentially of a private nature, there were other and most welcome signs of governmental intercession in behalf of concerns dear to bookmen. To further the cause of international good will, the governments of both the United States and the U.S.S.R. announced that they had returned to the countries of their origin various historic and artistic objects displaced in World War II. Russian diplomatic officials in London also arranged the publication, in the *Book Collector*, of an article describing the little-known but greatly significant resources of the Saltykov-Shchedrin State Public library in Leningrad. Western material deposited there includes 8th-century manuscripts of Bede and the Anglo-Saxon Gospels, a 15th-century manuscript of Guido delle Colonne, the whole of Voltaire's library (acquired by Catherine the Great) and an almost complete collection of books from the press of Aldus Manutius and the Elzevirs.

The year 1955 also witnessed the end of several long-awaited projects and the beginning of new programs. In England, almost five centuries after his great contribution to the making of books, a memorial tablet to William Caxton was finally unveiled at Westminster abbey; at the Bodleian library the recommendation of its founder in 1611 had eventually brought about the replacement of the "ruinous little rooms" with more suitable accommodations; and at Cambridge an idea conceived in 1870 had now become reality in a sumptuous catalogue of the 15th-century books at the University library. The first volume was published of Jacob Blanck's *Bibliography of American Literature*, a comprehensive survey which, when completed, would encompass the work of 287 authors.

(W. B. TD.)

Book Publishing and Book Sales.

The number of new books and new editions published in the United States between Oct. 1954 and Oct. 1955 totalled 12,088, continuing the upward trend of recent years. The total for the calendar year 1954 was 11,901, as compared with the high in U.S. book production in 1953 of 12,050. The figures for the first ten months of 1955 indicated a rise over same period of the previous year, 10,287 titles against 10,100. Fiction titles for January through October totalled 1,778 in 1955 compared with 1,861 in 1954. Juveniles were higher than the previous year, 1,276 compared with 1,161. Technical books showed a drop in 1955 for the first ten months to 368, compared with 381, while business books rose to 251 against 212. Religious titles, which had gained the previous year, dropped slightly to 669, compared with 713.

Best Sellers.—The best-seller list as of September is seldom the same as the year-end list because of the heavy bookstore sales in the last three months of the year. For example, in 1954 *Not as a Stranger* by Morton Thompson, which headed the final best-seller list of the year, was third on the list in September,

while Daphne du Maurier's *Mary Anne*, which led in September, was runner-up by the end of the year.

In Sept. 1955 *Marjorie Morningstar* by Herman Wouk, the author of the popular *Caine Mutiny*, was first on the list although it had only been published that month. This record was based on reports from 56 booksellers located in various parts of the United States. *Auntie Mame* by Patrick Dennis was in second place. Third on the list was *The Man in the Gray Flannel Suit* by Sloan Wilson, followed by *Something of Value* by Robert Ruark, *Bonjour Tristesse* by Françoise Sagan, *Band of Angels* by Robert Penn Warren, *Not as a Stranger* by Morton Thompson (the 1954 best seller still on the list), *The Sixth of June* by Lionel Shapiro, *The Flower Girls* by Clemence Dane and *No Time for Sergeants* by Mac Hyman, in that order.

In nonfiction, Anne Morrow Lindbergh's *Gift From the Sea* first published in March 1955, headed the list, followed by *The Power of Positive Thinking* by Norman Vincent Peale, which had been on the best-seller lists for 35 months and in second place for the years 1953 and 1954. Other nonfiction best sellers in Sept. 1955 were *A Man Called Peter* by Catherine Marshall, *How to Live 365 Days a Year* by John A. Schindler, *The Family of Man* by Edward Steichen, *Why Johnny Can't Read* by Rudolf Flesch, *Onions in the Stew* by Betty MacDonald, *Grandfather Stories* by Samuel Hopkins Adams, *Hiroshima Diary* by Michihiko Hachiya and *Never Plead Guilty* by John W. Noble and Bernard Averbuch.

Book Sales.—The *Publishers' Weekly* stated in its annual 1955 fall announcement number that out of 65 publishers reporting on their sales, 53 reported that their business was ahead of 1954, with average gains between 9% and 15%. Six reported their business on a par with 1954, and the six whose business was off gave 3% to 5% drops.

The latest printed statistics on book sales in the fall of 1955 were those prepared by Robert W. Frase of the American Book Publishers council for house subcommittee hearings in the spring of 1954 on the Universal Copyright convention. This estimate gave the total book sales in the United States for 1954 at \$602,500,000 and the number of books printed at 766,400,000. Of this total, trade books (adult and juvenile including hardbound reprints) numbered 144,400,000 and the publishers' receipts amounted to \$100,700,000. Trade books thus represented 18.8% of the 1952 book sales in copies and 16.7% of the book sales in dollars. In 1953 the American Book Publishers council estimated the publishers' receipts for trade books as totalling \$103,200,000.

Retail book sales on a national average showed an increase of 6% or 7% in August compared with Aug. 1954, according to the reports issued by government agencies. For the first seven months of the year bookstores showed a 1% decrease in dollar volume of sales, although the books and magazines in book departments in department stores showed a 5% rise for the same period.

Book Prices.—According to a report in the *Publishers' Weekly* for Dec. 11, 1954, the average retail price of novels rose in 1954 to \$3.50 (based on 187 volumes from 42 publishers) from \$3.29 in 1953 (based on 212 volumes from 42 publishers). The average retail price of biographies dropped in 1954 to \$4.40 (based on 145 volumes from 53 publishers) from \$4.67 a year before (105 volumes from 39 publishers) and history too was down to \$5.56 (75 volumes from 38 publishers) from \$6.04 in 1953 (75

Average retail prices	1954	1953	1952	1951	1950	1949	1948	1947
Novels	\$3.50	\$3.29	\$3.26	\$3.03	\$3.02	\$2.86	\$2.97	\$2.86
Biography	4.40	4.67	4.66	4.03	4.47	3.98	—	3.98
History	5.56	6.04	5.45	5.68	5.21	5.06	—	5.06

(Not counted among novels tabulated were mysteries, westerns, science fiction and anthologies. An informal listing of prices of mysteries showed that the average price was \$2.65 in the fall of 1953.)

volumes from 39 publishers).

Paper-Bound Books.—The estimate made for the number of paper-bound books distributed in 1955 reached a total of 300,000,000 copies of 1,000 different titles, compared with estimates of 240,000,000 for 1953 and 230,000,000 in 1952. A catalogue of *Paperbound Books in Print*, first issued in the summer of 1955, listed about 4,500 titles available from about 40 publishers. These ranged in price from 25 cents to approximately \$2.50. (See also AMERICAN LITERATURE; ENGLISH LITERATURE; etc.)

(A. J. RR.)

Books: see BOOK PUBLISHING AND BOOK SALES; CHILDREN'S BOOKS; LITERARY PRIZES; see also under AMERICAN LITERATURE; ENGLISH LITERATURE; FRENCH LITERATURE; JEWISH LITERATURE; etc.

Borneo: see BRITISH BORNEO; INDONESIA.

Boston. Boston, the capital city of the Commonwealth of Massachusetts, was founded in the year 1630 and incorporated by act of the legislature of Massachusetts on Feb. 3, 1822. The municipal government of Boston is administered by a mayor, a city council of nine members and a school committee of five members. The mayor is elected for a four-year term and city council and school committee members are elected at large for terms of two years.

The population of Boston according to the 1950 federal census was 801,444 and the land area of the city is 47.81 sq.mi. The city is located in Suffolk county on the Atlantic coast and has an excellent harbour and shipping facilities.

The 1955 tax rate was \$69.80 per \$1,000 of assessed valuation and was levied on real estate and personal property evaluated at \$1,541,500,000. The total tax levy for 1955 was \$107,596,700. The number of municipal employees as of Feb. 1, 1955, was 2,684.

The gross funded debt of the city was \$122,029,500 as of Sept. 30, 1955. Sinking funds provisions had been made to meet these obligations in the amount of \$62,545,147.53, leaving a net funded debt of \$59,484,352.47.

The most outstanding and significant municipal development of 1955 was the commencement of an urban redevelopment program. The first of a series of projects, under the supervision and direction of the Boston Housing authority, for the reclamation of decadent slum areas that were to be cleared in various sections of Boston to redevelop the city, affected an area of approximately 15 ac. in the southern section of city bordered by Albany, Dover, Washington, Motte and Way streets.

This area was characterized by over-age buildings crowded on the land and by narrow streets crisscrossed by major traffic thoroughfares.

The Boston Housing authority acquired the land by eminent domain. All families residing in the area were relocated in housing projects if they desired. When the demolition of the buildings was completed, the authority would install the site improvements, rough grade the land and then sell or lease the land to private redevelopers at fair value for development for light industrial or commercial uses. These sites would provide plant locations in the central business area which were protected from traffic congestion, blight and declining property values with all of the advantages of a suburban location for a minimum 40-yr. period. Each firm locating in the area would be protected by controls, which would be incorporated into each deed of sale or long-term lease and would be binding until 1994.

These controls were designed to produce the best redevelopment and generally provide for (1) use of the land, (2) building features, (3) off-street truck loading and (4) off-street parking.

The total estimated project cost was \$4,800,000. The esti-



AT THE FINISH LINE, Hideo Hamamura of Japan breaks the tape at the end of the 1955 marathon race as Mayor John B. Hynes of Boston chases him carrying the victory garland

mated re-use value of the project land was \$660,000 and the net project cost would be shared by the city of Boston and the federal government, one-third or \$1,380,000 to be paid by the city and the remaining two-thirds or \$2,760,000 to be paid by the federal government. As the result of surveys conducted by the housing authority, it was estimated that the taxable assessed valuation of the completed development would be twice the value before the commencement of the project. The increase in taxes to the city on this increased valuation would offset the cost to the city within ten years.

(J. P. LY.)

Botany. Continued investigations of the path of carbon in photosynthesis emanating from the laboratory of M. Calvin at the University of California culminated in 1955 in what appeared to be a fairly complete description of carbon fixation through energy from activated chlorophyll. Carbon dioxide attaches first to ribulose diphosphate, apparently forming a beta keto acid which splits to yield two molecules of phosphoglyceric acid. These are reduced to phosphotriose which may be condensed to yield hexose or by a series of transketolations involving four, five, six and seven carbon sugars may yield ribulose diphosphate which can accept another molecule of carbon dioxide. Energy, ultimately from photoactivated chlorophyll, enters the cycle at the reduction of glyceric acid and at the phosphorylation of ribulose. The mode of transfer of energy from activated chlorophyll to the carbon fixation was still unknown. L. N. M. Duysens, however, had demonstrated spectrophotometrically that a cytochrome becomes oxidized and diphosphopyridine nucleotide becomes reduced in the light. These serve as electron carriers in respiration and their participation in photosynthesis had been indicated previously. Evidence that cytochrome oxidase participates in photosynthesis was supplied

by A. R. Krall and R. H. Burris.

Five trace elements have generally been held necessary for plant growth, and during the year vanadium was added to this list as a requirement by algae. Others were shown to stimulate growth or to be essential for some animals. Cobalt was placed in the latter category. Osmound Holm-Hansen, G. C. Gerloff and F. Skoog showed that cobalt is essential for the proper growth of four blue-green algae. Cobalt is a constituent of the B₁₂ molecule, and the need for cobalt may be replaced by the addition of small amounts of this vitamin. The authors suggested that the physiological activity of cobalt is higher when incorporated in the vitamin B₁₂ molecules than when supplied as a free ion. Although two of the species investigated can fix nitrogen, the requirement for cobalt is independent of the nitrogen source. While examining the possible need of cobalt by higher plants, T. C. Broyer and co-workers discovered that chlorine was required. Hence in two years the number of micro-nutrient elements known to be required by algae, and probably by higher plants, was increased from five to eight.

By the use of the isotopic nitrogen technique, G. Bond and G. D. Scott demonstrated the fixation of nitrogen in two species of lichens and in one liverwort. In all three of these plants the blue-green alga *Nostoc*, which previously was known to fix nitrogen, is a symbiont and the nitrogen fixation can probably be attributed to this organism. Experiments on the mycorrhizal roots of *Calluna vulgaris* and *Pinus silvestris*, which had been held by some workers to be nitrogen-fixing, yielded negative results.

At the University of Wisconsin, Madison, physiologists Miller, Skoog, Von Saltza, Strong and Okumura found that autoclaved preparations of desoxyribose nucleic acid promoted cell divisions when added with auxin to tobacco pith cultures. The active substance was identified as 6-furfurylaminopurine (kinetin). With this additional regulator, undifferentiated tobacco pith cells can be caused to enlarge (auxin), produce root and shoot initials (adenine), or divide without differentiation or cell enlargement (auxin plus kinetin). While kinetin may not be a natural product, a regulator with similar properties had long been sought in plant tissues.

Sporelings of the fern *Marsilea*, grown aseptically in various concentrations of sugars, principally glucose, were investigated morphologically and anatomically by A. Allsopp. Both the external morphology and the anatomy of the plants grown in low sugar concentrations (1%–2% glucose) had many characteristics of water forms of amphibious plants, whereas those grown at higher concentrations (4%–5%) had characteristics of typical land forms. The water forms are not merely reduced forms arising by inhibition, for the direction and duration of cell division are different in the rhizome apices of the two types of sporelings. The author concluded that the differences between land and water forms are not the result of change in carbohydrate nutrition as previously thought but that changes in sugar concentration, when other conditions remain constant, exert their effects through the alteration of the osmotic pressures of the medium. It was considered that the increased osmotic pressures of the higher sugar concentrations are analogous in their effects on the plant to growth under normal land conditions.

In 1914 E. W. Sinnott recognized three main types of foliar nodal anatomy in dicotyledons and concluded that a trilacunar condition was primitive among the angiosperms. Margery P. F. Marsden and I. W. Bailey in a recent paper showed that a fourth type of nodal anatomy, a unilacunar double-trace condition, occurs in *Clerodendron trichotomum*. Since this type is commonly found among the ferns and gymnosperms, Marsden and Bailey suggested that it may prove to be primitive for the angiosperms.

In a report on 56 microfossils (spores and sporelike material) from the Devonian of Canada, N. W. Radforth and D. C. McGregor concluded that the flora of this period may have been more complex than the macrofossil record has so far indicated. Since rocks of Devonian age are associated with the occurrence of gas or oil, the microfossils were expected to be of considerable use in establishing the age and stratigraphy of the potentially oil-bearing strata.

One of the outstanding works to appear in the field of taxonomy was the monograph of the genus *Clarkia* (Onagraceae) by Harlan and M. E. Lewis. The monograph was particularly timely since considerable genetic and cytological work had been done with various species of the genus.

New Books.—*Colchicine—in Agriculture, Medicine, Biology and Chemistry*, by O. J. Eigsti and Pierre Dustin, Jr.; *The Genus Nicotiana*, by T. Harper Goodspeed; *An Introduction to Plant Taxonomy*, by George H. M. Lawrence; *Auxins and Plant Growth*, by A. Carl Leopold; *Origin and Distribution of British Flora*, by J. R. Matthews; *Cryptogamic Botany*, 2 vol., 2nd ed. by Gilbert M. Smith; *Plant Regulators in Agriculture*, by H. B. Tukey; and *An Introduction to the Study of Fossil Plants*, by John Walton. (See also PALAEONTOLOGY.)

(C. W. HN.; C. B. HR.)

Arboretums and Botanical Gardens.—*United States.*—The final assessment of damage done by the 1954 hurricanes to arboretums along the eastern seaboard showed that the planting in the Swarthmore, Tyler, Barnes and Morris arboretums in the Philadelphia area and the Arnold arboretum (Boston) suffered greatly, while little damage was done in the Brooklyn and New York Botanical gardens. Even as far north as the Reef Point gardens, Bar Harbor, Me., the effect of at least one of these storms was felt. Serious wind damage also occurred in the Hoy Arboretum (Oregon) where winds of hurricane proportions also uprooted many trees in February 1955.

Changes at the Morton arboretum at Lisle, Ill., included the building of a new wing on the administration building for research laboratories, new offices and a new lecture hall. Two new propagating greenhouses and one experimental greenhouse were also part of the building project, and about 600 ac. of land were added to the holdings for arboretum plantings.

A new botanical garden in Nassau county (New York) entered the planting stage, where 21 of the 900 ac. in Nassau county park at Salisbury were set aside for this purpose. Planting was also started on the 300-ac. tract about the Topeka State hospital (Kansas), where plans for an arboretum had been dormant for a long time.

Changes in arboretum personnel included the appointment of Russel J. Seibert (formerly director of the Los Angeles and County arboretum, Calif.) as the new director of Longwood gardens, Pennsylvania, and the nomination of W. S. Stewart (formerly professor of horticulture at the University of California, Riverside Experiment station) as director of the Los Angeles State and County arboretum, in California. (D. WN.)

Great Britain.—At the Royal Botanic gardens, Kew, England, there was considerable activity during 1955 in the reconstruction of several hothouses. In the Jodrell laboratory, work continued on the anatomy of the monocotyledons and of the Gramineae in particular. At the Herbarium, the final part of volume I of the revised edition of the *Flora of West Tropical Africa* by R. V. J. Keay went to the press following the publication in 1954 of 72 families in the first part. The National Dianthus collection was maintained in the Herbarium experimental ground. Preparation of a *Flora of Cyprus* was begun and work continued on the *Flora of Tropical East Africa*, while two botanists left Kew on an expedition to Tanganyika financed by the colonial office.

In the Royal Botanic garden, Edinburgh, H. R. Fletcher, w

left the garden in 1951 to take up the post of director of the Royal Horticultural society's garden at Wisley, returned to Edinburgh in 1955 as assistant regius keeper. Several members of the staff were engaged in taxonomic work on the flora of the eastern Mediterranean region. B. L. Burt continued his taxonomic research on the family Gesneriaceae, P. Green on the family Oleaceae, H. H. Davidian on the genus *Rhododendron* and D. M. Henderson on the cryptogams.

At the University Botanic garden, Cambridge, the main work during the year apart from the normal routine was a continuation of the extension and development of the garden made possible by the Reginald Cory fund. A further clearing was carried out of the 20 ac. of allotments that were to be incorporated into the garden. (See also HORTICULTURE.) (F. N. HR.)

Bowles, Chester

(1901—), U.S. author and lecturer, was born on April 5 in Springfield, Mass. He attended Choate school and Yale university, graduating in 1924, worked for a year on the *Springfield Republican* and four years in a New York advertising firm. In June 1929, in partnership with William Benton (*q.v.*), he started the advertising firm of Benton and Bowles, Inc., and in 1936 he became chairman of its board of directors.

In June 1942 he was appointed district director of the Office of Price Administration for the state of Connecticut. In the following year Pres. Franklin D. Roosevelt named him national OPA administrator. In early 1946 Pres. Harry S. Truman made him director of economic stabilization with responsibility for anti-inflation wage, price and production controls.

In Nov. 1946 Bowles was appointed a U.S. delegate to the first conference of the United Nations Educational, Scientific and Cultural organization in Paris, Fr., and in the early spring of 1947 he became international chairman of the United Nations Appeal for Children.

In Nov. 1948 Bowles was elected governor of Connecticut. During the two years of his administration he introduced legislation providing for expansion of public education, housing, welfare and child care programs, labour legislation and reorganization of the state government. He was defeated for re-election in 1950 by a narrow margin.

President Truman appointed Bowles U.S. ambassador to India and Nepal in Sept. 1951.

After the election of Pres. Dwight D. Eisenhower, Bowles resigned as ambassador and returned to the United States in early 1953 with bipartisan recognition of his contribution to improved U.S.-Indian relations.

Author of *Tomorrow Without Fear* (1946) and the best seller *Ambassador's Report* (1954), he has lectured and written widely in America and travelled extensively in Africa and India. He is one of the best informed people in the United States on the current situation in Asia and has had considerable influence on American opinion in this field. (R. R. R. B.)

Bowling

The Pfeiffer's Beer five of Detroit, Mich., won the American Bowling congress open team title in 1955 for the third time, scoring 3,136 in the 52nd annual tournament that ran from March 26 through June 5 at Fort Wayne, Ind. Pfeiffer's had won in 1953 and in 1952, as the E. & B. Beer team. The winning quintet, composed of Thern Gibson, Bill Willard, George Young, Lou Sielaff and Fred Bujack, set a new record with team prize winnings of \$6,046.42. Eddie Gerzine of Milwaukee, Wis., who rolled a series of 225, 235, 278 for 738 on March 28, saw his score stand up through the long competition to gain first in the singles division. Harry Zoeller and George Pacropis of Wilkes-Barre, Pa., triumphed in the doubles with a total of 1,365. Bujack captured the all-events crown with

1,993 and set an individual mark in earnings by winning \$2,068.33. Bowling continued its tremendous gains in popularity in 1955 and the A.B.C. certified a record number of 7,062 establishments with 60,648 alley beds during the year.

Junie McMahon of Fairlawn, N.J., was the only man elected to the American Bowling congress Hall of Fame in 1955. Steve Nagy of Cleveland, O., was first in the year's All-Star tournament with a ten-day total of 307.17, figured on the Petersen scoring system (1 point for every 50 pins and 1 point for each game won). Nagy averaged 207 for 100 games, including 36 in the qualifying rounds. He also was named "Bowler of the Year" for the second time. The 1955 Masters' competition, at Fort Wayne, attracted a star-studded field, with the top prize being captured by Buzz Fazio of Detroit.

Ernie Bence of Fairleigh Dickinson college, Rutherford, N.J., won the Eastern Intercollegiate congress match-game championship. Minnesota retained the team title of the Western (Big Ten) conference.

Nellie Vella of Rockford, Ill., took singles honours in the 37th Woman's International Bowling congress tournament at Omaha, Neb. Marion Ladewig of Grand Rapids, Mich., won the all-events crown with 1,890, and paired with Wyllis Ryskamp to win the doubles with an all-time record total of 1,264. The year saw membership in the W.I.B.C. reach a total of 706,192 members, who rolled in 22,482 supervised leagues. Sylvia Wene of Philadelphia, Pa., was selected as "Woman Bowler of the Year." Miss Wene, who won the Women's Masters' competition in January, led the W.I.B.C. bowlers in averages for two successive years (1953-54) with 206.

Duckpins.—Dave Volk of Baltimore, Md., won the 25th annual classic sponsored by the National Duckpin Bowling con-

National Duckpin Champions

Men's singles—Walter Surowiecki, Meriden, Conn.	445
Men's doubles—Tom Fitzgerald and George Velos, Fall River, Mass.	861
Men's all-events—Tom Fitzgerald	1,248
Men's team—Guida's Dairy-Blue Ribbons, New Britain, Conn.	1,988
Women's singles—Edith Christensen, Washington, D.C.	420
Women's doubles—Julie Dubiel and Ann Plude, Avon, Conn.	766
Women's all-events—Elizabeth Barger, Baltimore, Md.	1,152
Women's team—Brunswick Red Crowns, Pimlico, Baltimore	1,800
Mixed doubles—Frances Kupec, Windsor, Conn., and George Pelletier, Danielson, Conn.	792

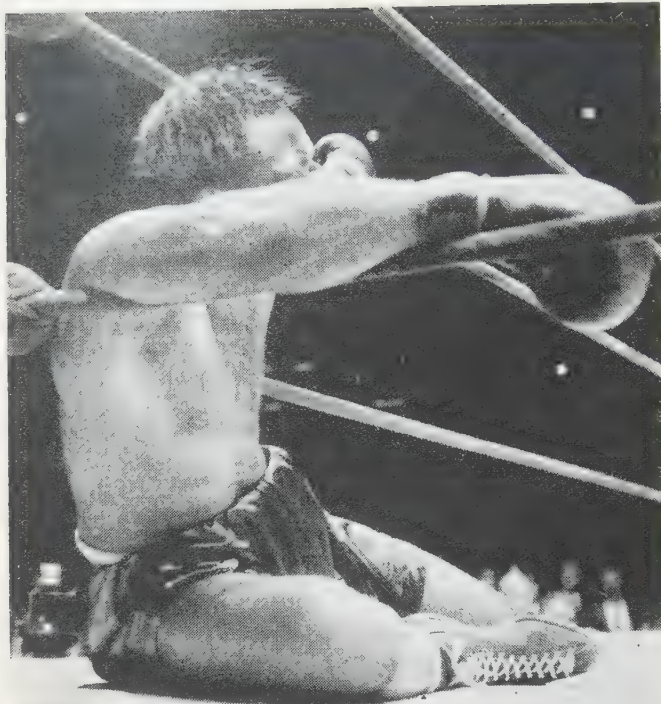
gress. Volk defeated 121 rivals in the tourney at Washington, D.C. (T. V. H.)

Bowls: see LAWN BOWLING.

Boxing

Boxing in the United States continued its slight upward rise during 1955, following the trend set the previous year, with the reopening of a number of clubs on a weekly basis, notably in California and Texas, the return of the sport to a number of sectors that had been inactive for many years, the lesser number of bouts televised, locally and nationally, and the interest created in the Rocky Marciano-Archie Moore fight for the world heavyweight title.

World Championship Matches.—Rocky Marciano, undefeated world heavyweight champion, ran his unbeaten string to 49 professional bouts, by twice successfully defending his title during 1955. On May 16, at Kezar stadium, San Francisco, Calif., he knocked out Don Cockell, of Great Britain, in the ninth round, before a crowd of 15,235. On Sept. 21, Marciano turned back the bid of Archie Moore, world light heavyweight champion, by scoring a knockout in the ninth round, after being dropped for the second time in his career in the second round. The fight, held at Yankee stadium, New York, drew a paid attendance of 61,574. Both heavyweight title bouts were screened exclusively for theatre-television. The Marciano-Moore fight was viewed in 133 theatres and drive-ins in 92 cities by 350,000 persons.



SLUMPED TO THE CANVAS, challenger Archie Moore lies against the ropes after being knocked out in the 9th round of his world heavyweight championship fight with Rocky Marciano, Sept. 21, 1955

Archie Moore, world light heavyweight champion, defended his title once during 1955, scoring a three-round knockout over Carl (Bobo) Olson, world middleweight champion, at the Polo Grounds, New York, on June 22.

Ray Robinson regained the middleweight title on Dec. 9 by knocking out Carl (Bobo) Olson in the second round at Chicago stadium.

World welterweight champion Johnny Saxton lost his title by a technical knockout in 14 rounds by Tony DeMarco, on April 1 at the Garden, Boston, Mass. DeMarco, 70 days later, on June 10, after one of the shortest reigns on record, was knocked out by Carmen Basilio in the 12th round, to lose the title. The fight took place at Syracuse's War Memorial stadium, N.Y. Basilio again stopped DeMarco in a return bout on Nov. 30 at Boston.

Jimmy Carter, world lightweight champion, who had won the title three times, lost it for the third time on June 29, when Wallace (Bud) Smith won a 15-round decision over him at the Garden, Boston. On Oct. 19 in a return bout Smith pounded out a 15-round decision over Carter at Cincinnati, O., to clinch his hold on the title.

For the first time in almost three and a half years the world featherweight title was defended when Champion Sandy Saddler (in the U.S. army 1952-1953) met the challenge of Teddy (Red Top) Davis on Feb. 25, at Madison Square Garden, New York. Saddler retained the title with a 15-round decision.

Robert Cohen, world bantamweight champion, severely injured in an automobile accident early in the year, recovered and defended his title against Willie Toweel at Johannesburg, U. of S.Af., on Sept. 3. Cohen retained the title when the bout was declared a draw after 15 rounds.

Earlier in the year, on March 9, Raul (Raton) Macias, North American bantamweight champion, engaged Chamrern Songkitrat, of Thailand, in a bout in San Francisco billed by the National Boxing association as a world title bout. The National Boxing association, having withdrawn support from Cohen, sanctioned this contest. Macias scored a technical knockout over

Songkitrat in 11 rounds.

Pascual Perez, world flyweight champion, defended his title against Yoshio Shirai in Tokyo, Jap., on May 31, scoring a five-round knockout. He had won the title from Shirai the previous November.

Boxing Hall of Fame.—Nine new members were elected to the Boxing Hall of Fame in 1955, which was inaugurated the previous year by *The Ring* magazine and is housed in The Ring museum in Madison Square Garden. The board of directors voted in two ancients, pioneers of the game, William Richmond and William Thompson (Bendigo). The Old Timers' committee voted in four fighters—Terry McGovern, Abe Attell, Sam Langford and Joe Walcott, while the modern group also elected four—Mickey Walker, Harry Greb, Benny Leonard and Gene Tunney.

The following is a complete list of those who had been elected to the Hall of Fame:

Pioneer Group:—John L. Sullivan, heavyweight; James Figg, heavyweight; Jack Broughton, heavyweight; Daniel Mendoza, heavyweight; Tom Cribb, heavyweight; John Jackson, heavyweight; Tom Hyer, heavyweight; Jack Dempsey, heavyweight; John Morrissey, heavyweight; Tom Sayers, heavyweight; John C. Hennessey, heavyweight; Jem Mace, heavyweight; Arthur Chambers, lightweight; Jack McAuliffe, lightweight; Young Griffo, featherweight; William Richmond, heavyweight; William Thompson (Bendigo), heavyweight.

Old Timers' Group: Stanley Ketchel, middleweight; Bob Fitzsimmons, heavyweight; Jack Johnson, heavyweight; Joe Gans, lightweight; James J. Jeffries, heavyweight; James J. Corbett, heavyweight; Terry McGovern, featherweight; Abe Attell, featherweight; Sam Langford, middleweight; Joe Walcott, welterweight.

Modern Group: Jack Dempsey, heavyweight; Joe Louis, heavyweight; Henry Armstrong, welter, light and featherweight champion; Mickey Walker, welter and middleweight champion; Harry Greb, middleweight; Benny Leonard, lightweight; Gene Tunney, heavyweight.

Amateur Boxing.—In the eastern amateur Golden Gloves championships, held in Madison Square Garden in March, individual champions were: heavyweight, Roy Bullock, New York; 175-lb., John Horne, Washington, D.C.; 160-lb., Rudolph Corney, New York; 147-lb., James Archer, New York; 135-lb., Thomas Schafer, Pittsburgh, Pa.; 126-lb., Walter Taylor, Washington; 118-lb., Robert St. John, New York; 112-lb., Joe Regores, Miami, Fla.

In the western finals, held in the Chicago Stadium, individual champions were: heavyweight, Eddie Catoe, Kansas City, Mo.; 175-lb., Eddie Jenkins, Detroit, Mich.; 160-lb., Jesse Bowdoin, St. Louis, Mo.; 147-lb., Richard Wall, Tulsa, Okla.; 135-lb., Willie Morton, Kansas City; 126-lb., Harry Smith, Cedar Rapids, Ia.; 118-lb., Donald Eddington, St. Louis; 112-lb., Tom Reynolds, St. Louis.

In the inter-city finals, held in the Chicago Stadium, March 31, before 13,439, the eighth tie since the series was inaugurated in 1928 was recorded. Individual champions were: heavyweight, Eddie Catoe, Chicago; 175-lb., John Horne, New York; 160-lb., Rudolph Corney, New York; 147-lb., James Archer, New York; 135-lb., Manny Davis, Chicago; 126-lb., Walter Taylor, New York; 118-lb., Donald Eddington, Chicago; 112-lb., Tom Reynolds, Chicago.

In May, the U.S. Golden Gloves team invaded the United Kingdom and was defeated by a British Amateur Boxing association team, 5 bouts to 4, the U.S. losing an additional bout by default because of injury.

(N. FL.)

Great Britain.—The Welsh flyweight Dai Dower, who won the Empire title in 1954, added to his list the British European titles by beating Eric Marsden in February and Italian Nazzareno Giannelli the following month. In October, however, he was surprisingly beaten in a contest for the European title by Young Martin, of Spain, and his hopes of a world title fight were thus extinguished.

After losing his British featherweight title to the Irish

illy Kelly in January, Sammy McCarthy showed a welcome return to form, and was later rematched with Kelly for the British and European titles.

No suitable opponent being available, bantamweight champion Peter Keenan was not called upon to defend his British title; but he scored a sensational win in the 14th round over Jake Tuli, of South Africa, when they met for the Empire championship in October.

The lightweight title was recaptured by Frank Johnson, of Manchester, when he outpointed the holder, Joe Lucy of London, in April; while in the welterweight division the holder, Wally Thom, was still waiting for a suitable challenger to emerge from the eliminating contests arranged by the British Boxing Board of Control.

The Birkenhead boxer Pat McAteer won the middleweight title in June when the holder, Johnny Sullivan, was disqualified in the 9th round.

After Randolph Turpin beat Alex Buxton in two rounds in April, to add the Empire cruiserweight title to his British crown, it was hoped to match him against Archie Moore for the world championship. In October, however, Turpin was stopped in four rounds by an almost unknown Canadian, Gordon Wallace. Later Turpin relinquished his titles.

(W. B. Dy.)

British Amateur Boxing association, champions, 1955:

Lightweight: Gunner Derek Lloyd (Army B.A.)
Bantamweight: Pvt. George Dormer (Army B.A.)
Featherweight: Tommy Nicholls (Sankeys, Wellington)
Lightweight: Stephen Coffey (Manchester County Police)
Light Welterweight: Francis McQuillan (Dundee).
Welterweight: Pvt. Nicky Gargano (Army B.A.).
Light Middleweight: Bernard Foster (Mitchells and Butlers)
Middleweight: Frank Hope (St. Teresa).
Light Heavyweight: David Rent (Maple Leaf, Bootle).
Heavyweight: Dennis Rowe (Glamorgan Police).

Boy Scouts: see SOCIETIES AND ASSOCIATIONS, U.S.

Brando, Marlon (1924–), U.S. actor, was born at Omaha, Neb., April 3, 1924, and was educated at Shattuck military academy, Faribault, Minn. After study at the Dramatic Workshop in New York city, he played with a stock company, then made his Broadway debut in Oct. 1944 in *I Remember Mama*. His first big stage success was as Gowalski in Tennessee Williams' *A Streetcar Named Desire* in 1947, although he had received good notices for his part in George Bernard Shaw's *Candida* the preceding year. His first motion-picture role was as a paraplegic war veteran in *The Men* (1950), which received wide critical acclaim, as did his subsequent performances—in the motion-picture version of *A Streetcar Named Desire* (1951) and in *Viva Zapata!* (1952), *Julius Caesar* (1953), *The Wild One* (1953), *On the Waterfront* (1954) and *Désirée* (1954). On March 30, 1955, Brando was awarded the Academy of Motion Picture Arts and Sciences "Oscar" as the best motion-picture actor of 1954, for his part as a gang member in *On the Waterfront*.

Brazil. A federal republic in eastern and central South America, with an area of 3,287,195 sq.mi., Brazil is second in size only to Canada in the western hemisphere. Language: Portuguese. Religion: predominantly Roman Catholic (39,177,80 according to the 1950 census), with about 1,500,000 Protestants of all denominations and 500,000 Spiritualists. Chief cities: Rio de Janeiro, the federal capital (1955 est. pop.), 2,725,274; São Paulo (1953 est. pop.), 2,500,000; Recife, 560,000; Salvador, 460,000; Porto Alegre, 440,000; Belo Horizonte, 430,000; Fortaleza, 300,000; Belém, 275,000.

The president in 1955 was João Café Filho.

The population, estimated (1955) at 58,456,000, was, accord-

ing to the 1950 census, 51,976,357, mostly concentrated along a narrow coastal strip.

History.—It was estimated, at the beginning of 1955, that Brazil would have to face, until the end of the year, obligations totalling U.S. \$850,000,000 and the equivalent of U.S. \$300,000,000 in other currencies, besides foreign currencies needed to pay for ordinary imports. At the same time, Brazil's gold reserves were said to be slightly more than U.S. \$320,000,000, of which U.S. \$160,000,000 were held as security for loans by the federal reserve bank and about U.S. \$40,000,000 by the National City Bank of New York. The country's economic situation was aggravated by the decline of prices and by the smaller sale of the main export commodities (coffee, cotton and cacao).

The finance minister, Eugenio Gudin, tried hard (although not entirely successfully) to avoid further note issues. It was estimated that these issues would total, until the end of the year, about Cr\$ 3,000,000,000, a fourth of the previous year's total. The national budget deficit for 1955 was alarmingly estimated at Cr\$ 14,000,000,000.

On April 5 Gudin resigned as finance minister. He was replaced by José Maria Whitaker. The reasons for the change were mostly political rather than economic or financial. The new minister of finance adopted a policy of gradual return to freedom of exchange and commerce. At the end of the year new foreign exchange regulations were announced which were expected to promote these aims.

The political life of the nation was dominated in 1955 by approaching presidential elections, which were held on Oct. 3.

Early in the year the national convention of the Social Democratic party, the majority party, held in Rio de Janeiro, selected Juscelino Kubitschek de Oliveira, governor of the state of Minas Gerais, as its candidate for the presidency. Meanwhile, top-ranking military chiefs, including leaders of the opposition party, the National Democratic union, had sent President Café Filho a memorandum calling for a solution of the presidential election problem on the basis of an agreement among the leading parties with a view to the presentation of a single "national union" candidate. It appears that the opposition of the military to Kubitschek resulted mainly from the suspicion that he would continue Vargas' policies if elected.

President Café Filho tried to get Kubitschek to withdraw his name in favour of a coalition candidate, but without success.

Area and Population of States and Territories of Brazil

(Estimates published by the Instituto Brasileiro de Geografia e Estatística, in its Boletim Estatístico, No. 49, Jan.-March 1955)

State or territory	Area (sq. mi.)	Pop. (Jan. 1, 1955)	Capital
North			
Acre (terr.)	57,153	135,535	Rio Branco
Amazonas	595,474	561,787	Manaus
Rio Branco (terr.)	97,438	21,766	Boa Vista
Pará	470,752	1,228,839	Belém
Amapá (terr.)	55,489	48,269	Macapá
Guaporé (terr.)	96,986	47,566	Porto Velho
Northeast			
Maranhão	133,674	1,773,746	São Luiz
Piauí	94,819	1,170,323	Teresina
Ceará	57,371	3,027,559	Fortaleza
Rio Grande do Norte	20,236	1,076,011	Natal
Paraíba	21,591	1,865,591	João Pessoa
Pernambuco	38,315	3,778,710	Recife
Alagoas	11,031	1,164,919	Maceió
Fernando de Noronha (terr.)	7	581	...
East			
Sergipe	8,321	697,254	Aracaju
Bahia	204,393	5,322,689	Salvador
Minas Gerais	228,469	8,229,389	Belo Horizonte
(Serra dos Aimorés)* . . . . .	...	162,062	...
Espírito Santo	17,688	917,950	Vitória
Rio de Janeiro (state)	16,372	2,537,796	Niterói
Distrito Federal	451	2,725,274	Rio de Janeiro
South			
São Paulo	95,459	10,204,374	São Paulo
Paraná	82,741	2,730,866	Curitiba
Santa Catarina	31,118	1,774,565	Florianópolis
Rio Grande do Sul	110,150	4,619,685	Porto Alegre
Central-West			
Goiás	225,266	1,449,213	Goiânia
Mato Grosso	485,405	576,154	Cuiabá

*Area in dispute between the states of Minas Gerais and Espírito Santo.

The opposition to Kubitschek included members of the National Democratic union, the Liberal party, the Democratic Christian party and some dissidents from the Social Democratic party.

By April the political situation, already tense, was aggravated by the publication in the press of details of an alleged secret agreement between President Café Filho and Gov. Jânio Quadros of São Paulo. Under this agreement, Quadros was to withdraw his intended candidacy in favour of that of Gen. Juarez Távora, the president's chief military adviser. Governor Quadros would receive, in return, the right to designate three members of the president's cabinet and a new president of the Bank of Brazil, besides certain federal loans to the state of São Paulo.

When this agreement became publicly known, it led to the resignation of two cabinet members, the finance minister, Eugenio Gudin, and the transport and public works minister, Col. Rodrigo Otavio Jordão Ramos, as well as of the president of the Bank of Brazil, Clemente Mariani Bittencourt.

The news of this agreement had unfavourable repercussions throughout the country. General Távora was advised to withdraw his name, which he did, in favour of Etelvino Lins, former governor of the state of Pernambuco and leader of the dissident faction of the Social Democratic party.

In the latter part of April the convention of the Brazilian Labour party gathered in Rio de Janeiro to nominate its candidates for the coming elections. The president of the party, João Goulart, was a favourite with most members of the party. He had served President Vargas as minister of labour and was considered responsible by many of the military for the minimum wage increases adopted by Vargas. At once, the minister of war, Gen. Henrique Teixeira Lott, issued a warning that Goulart's nomination for president or vice-president would probably lead to the army's intervention in the elections. Despite this warning, the Brazilian labour party convention unanimously endorsed Kubitschek for president and nominated Goulart for vice-president. (Kubitschek had resigned the governorship of the state of Minas Gerais on April 1.) Meanwhile, General Távora again decided to become a candidate for the presidency, in opposition to Kubitschek. Resigning his position as chief military adviser to President Café Filho, General Távora accepted the nomination by the Democratic Christian party, with Milton Campos for vice-president. Later, Etelvino Lins withdrew his name and many of his followers pledged their support to General Távora.

Other candidates were Adhemar de Barros, former governor of the state of São Paulo, the leader of the Social Progressive party, together with Danton Coelho for vice-president, and Plínio Salgado, former Integralist leader and now the president of the Popular Representation party, without a vice-presidential candidate. The elections of Oct. 3 were held in good order throughout the whole country, and long before all the votes had been counted it was clear that Juscelino Kubitschek de Oliveira had been elected the next president of Brazil with João Goulart as vice-president. They were to take office on Jan. 31, 1956. (See also FOREIGN INVESTMENTS.) (R. D'E.)

Not so clear was the trend of ensuing events. In early November Pres. João Café Filho was granted an indefinite leave of absence by the congress after he suffered a heart attack, and the speaker of the lower house, Carlos Luz, was sworn in to take over for the remainder of the term. After two days, however, he was forced out by the army to forestall a coup by other elements which, it was said, might try to set aside the vote that named Kubitschek president and Goulart vice-president. Nereu Ramos, speaker of the senate, was installed as acting president. Further to complicate the situation, Café Filho attempted to end his sick leave and regain the presidency, but

both houses of congress rejected his demand.

Education.—In 1952 there were 84,254 elementary school units with 5,651,564 pupils; (1954) 2,485 secondary schools with 535,775 pupils; 795 commercial schools with 97,531 pupils; 598 superior schools with 64,645 pupils; and 796 normal schools with 59,521 pupils. There were 11 universities, of which 3 were private (Catholic), 7 state and 1 federal (University of Brazil at Rio de Janeiro).

Finance.—The monetary unit is the cruzeiro (Cr\$), valued at 5 cents U.S. currency, official rate, during 1955, and at 1.48 cents, legal free rate, on Sept. 9, 1955. After Oct. 16, 1953, the official rate was used only for government imports and imports of a few essentials. An auction system was used for the sale of foreign exchange for most private imports. Under this system exchange was allotted to five auction categories according to the essentiality of the goods to be imported, and the rate paid at the auctions had to be added to the official selling rate, and applicable taxes, to secure the effective selling rates. The fluctuating market rate was used for most capital and nontrade transactions.

The 1955 budget as approved by congress called for revenue of Cr\$ 5,482,000,000 and expenditure of Cr\$ 56,497,000,000. The 1956 draft budget called for revenue of Cr\$ 62,674,000,000 and expenditure of Cr\$ 64,528,000,000. Actual government revenue in 1954 was Cr\$ 4,539,000,000; expenditure, Cr\$ 53,661,000,000. The consolidated federal debt on Dec. 31, 1954, was £15,738,540, U.S. \$64,132,595, 32,976,100 French paper francs and 20,372,500 gold francs; consolidated internal debt, Cr\$ 10,451,537,000. Currency in circulation (April 30, 1955) was Cr\$ 50,300,000,000; demand deposits, Cr\$ 106,400,000,000. The cost-of-living index (São Paulo) stood at 228 in July 1955 (1948=100).

Trade and Communications.—Exports in 1954 totalled Cr\$ 42,960,000,000 (including bonuses); imports, Cr\$ 55,239,000,000 (including premiums). Leading exports were coffee (34%), raw cotton (15%), cacao (10%), pine wood (3%) and iron ore (1%). Leading customers were the U.S. (37%), Germany (12%), Argentina (6%), France (6%) and the U.K. (5%); leading suppliers, the U.S. (36%), Germany (10%), the Netherlands Antilles (6%), France (5%), Argentina (5%) and Norway (5%).

Railway mileage (Dec. 31, 1953) was 22,996; in 1953, 328,316,000 passengers and 35,479,000 metric tons of freight were carried. Highway (1951) totalled 38,000 mi.; common roads, 124,000 mi. On Jan. 1, 1954, there were 367,568 automobiles, 324,971 trucks and 27,246 buses. In 1954 Brazilian air lines flew an estimated 68,638,000 mi. and carried an estimated 3,119,500 passengers. According to *Lloyd's Register of Shipping*, the merchant marine had 411 vessels (100 tons and more) aggregating 898,989 gross tons on June 30, 1954. Telephones (Jan. 1, 1955) numbered 679,540.

Agriculture.—Coffee production in the 1954-55 season (preliminary figures) totalled 17,600,000 bags of 132 lb. each; exports in 1954 were 10,918,000 bags, of which 5,672,000 bags went to the U.S. and 771,000 bags to Germany. Preliminary official estimates for other crops in 1954 (in metric tons) included cotton (ginned) 447,295; cacao 151,618; wheat 823,845; maize 7,071,160; rice (rough) 3,448,048; cassava 14,210,390; potatoes 938,594; bananas 201,362,000 (stems); sugar 2,118,378; sisal 82,138; leaf tobacco 134,273; peanuts 159,633; cottonseed 834,575.

Livestock estimates (Dec. 31, 1953) showed 57,626,000 cattle, 1,059,000 horses, 32,721,000 pigs, 16,800,000 sheep and 8,915,000 goats. Forest exports in 1954 included pine wood 485,000 metric tons and cachauba wax 9,000 tons. Rubber production was about 22,300 tons.

Manufactures.—The 1950 census of industry listed 89,086 industrial establishments with 1,256,807 workers and production (1949) valued at Cr\$ 116,747,264,000, of which the food-processing industry accounted for 29%, textile 17%, chemical and drug 8% and metallurgical 7%. Preliminary production figures for 1954 included cement 2,405,625 metric tons; pig iron 1,089,889 tons; raw steel 1,171,893 tons; iron and steel sheets 972,446 tons.

Minerals.—Production in 1954 included coal 2,019,000 metric tons; gold 120,000 fine ounces; crude petroleum 121,600 tons. Production of other minerals (1953) included iron ore 3,617,484 tons (exports 19,1678,000 tons) and manganese ore 231,385 tons (exports 1954: 94,000 tons). Imports in 1954 included coal 468,000 tons; gasoline 2,618,300 tons; fuel and diesel oil 4,262,021 tons. (J. W. Mw.)

Bread and Bakery Products: see BAKING INDUSTRY.

Brewing and Beer. **Sale and Consumption.**—Beer sales in the United States for the fiscal year ending June 30, 1955, totalled 84,456,627 bbl. (31 U.S. gal. each), the fifth highest fiscal year on record. The largest sales total for a fiscal year was 86,992,795 bbl. in 1919.

As a result of the trend toward increased home consumption, packaged beer (in bottles and cans) accounted for 76.7% of all beer sales—a new high. Of packaged beer sales during the 1954 calendar year, 63.2% was in returnable bottles, 5.3% in nonreturnables (no deposit) and 31.5% in cans.

The United States, with 15.9 gal. per capita in 1954, stood eighth in consumption among reporting nations, on the basis of compilations by the Brewers' society, London. Belgium, with 37 gal. per capita, retained its customarily wide lead. The next six nations, in order, were Luxembourg, Australia, New Zealand, the United Kingdom, Denmark and the German Federal Republic.

Taxes.—For the second consecutive year, beer was a \$1.00

00,000-a-year producer of public revenues, through payment of \$744,304,000 in federal taxes at \$9 per barrel, \$198,977,000 in state taxes and an undetermined total in local taxes. This contrasted with the total of \$1,628,933 collected in fiscal 1863, when excise taxes first were applied on beer.

The rate of state taxes was believed by market analysts to have influenced beer consumption in many areas. Wisconsin, Nevada and Michigan, each with a comparatively low state tax, led the states in per capita consumption, in that order. On the other hand, North Carolina, Mississippi and Alabama, each with a relatively high state tax, had the lowest per capita consumption.

Wages.—The census of manufactures report showed for the brewing industry a payroll of \$425,492,000 for 1953, but this figure was believed exceeded in 1954 as a result of wage increases. The 1955 edition of the *Brewers Almanac*, published by the United States Brewers foundation, disclosed that the weekly average earnings for brewery production workers was \$92.80, a new high, as compared with \$71.86 for all manufacturing. The brewery wage represented a five-year rise of \$20.14 per week as compared with \$12.53 for all manufacturing.

Research.—Continuous scientific research on the role of beer in the human diet, possible ways of improving the quality of brewing ingredients and other kindred subjects was carried out at various colleges under the aegis of the Brewing Industries Research institute. A major 1954 development was the conclusion of a Marquette university, Milwaukee, Wis., study that beer may be a useful adjunct to the low-salt diet and may be used advantageously in treating certain cardiac patients.

Safety.—The industry-wide safety campaign, given impetus through the United States Brewers foundation-sponsored contest open to all U.S. breweries, was regarded an important factor in reducing the industry's accident frequency to a new low of 7.9 per 1,000,000 man-hours. This figure, reported by the U.S. department of labour, compared with 35 per 1,000,000 man-hours in 1948, when the safety campaign was inaugurated. (See also LIQUORS, ALCOHOLIC.)

(E. V. L.H.)

Bridge, Contract: see CONTRACT BRIDGE.

Bridges. The world's longest spans of the various types built up to 1955 are listed in the table. There was no change in the table during 1954 and 1955.

World's Longest Spans by Type of Bridge

Type	Bridge	Location	Year Completed	Span
able Suspension	Golden Gate	San Francisco	1937	4,200 ft.
ansporter Bridge	†Sky Ride	Chicago	1933	1,850
antilever	*Quebec	Canada	1917	1,800
eel Arch	Kill van Kull	New York	1931	1,652
rebar Suspension	*Florianópolis	Brazil	1926	1,114
oncrete Arch	Sando	Sweden	1943	866
ontinuous Truss	Dubuque	Mississippi river	1943	845
mple Truss	*Metropolis	Ohio river	1917	720
ontinuous Girder	Düsseldorf-Neuss	Rhine river	1951	676
artificial Lift	*Cape Cod Canal	Massachusetts	1935	544
ichert Truss	Homestead	Pittsburgh	1937	533½
ving Span	*Fort Madison	Mississippi river	1927	525
ibular Girder	*Britannia	Menai straits	1850	460
mber Span	*McKenzie River	Coburg, Ore.	1926	380
restressed Concrete				
Girder	Worms	Germany	1953	375
asculc	*Sault Ste. Marie	Michigan	1914	336
mple Girder	Harlem river	New York	1951	330
asonry Arch	Plauen	Saxony	1903	295
ngle Leaf Bascule	*16th Street	Chicago	1919	260
oncrete Girder	Villeneuve	Seine river	1939	256

*Railroad bridge.

†Not standing.

United States.—Three huge bridge projects were planned for the near future for New York city at a total cost of \$379,000,000. The first project was a \$204,000,000 suspension bridge across the narrows from Brooklyn to Staten Island with a record-breaking span of 4,400 ft. The second was a lower deck for the George Washington bridge to increase its capacity by 5%. The cost, including work on the approaches, was estimated

at \$82,000,000. The third was a \$93,000,000 suspension bridge between the Bronx and Long Island, paralleling the existing Triborough and Whitestone bridges.

The main span of a highway overpass completed in Jacksonville, Fla., is a 385-ft. steel arch with three ribs. The ribs are slender members and are stiffened by deep tie girders in the floor system.

Sunshine skyway, a 15-mi. chain of causeways and bridges, spanning lower Tampa bay, Fla., was opened to traffic late in 1954. Roadways and hydraulic fill are 10.2 mi. in length. There are 3.8 mi. of prestressed and conventional concrete trestle. The remainder of the bridge consists of a twin-leaf bascule span and 5,621 ft. of steel spans, including a cantilever bridge with a main span of 860 ft. and anchor arms of 360 ft.

California authorized the expenditure of \$1,500,000 to complete engineering work for a new \$30,000,000 bridge to cross San Francisco bay from San Francisco to Bay Farm Island in Alameda.

Substructure for the Tappan Zee bridge, which would carry the New York state thruway over the Hudson river near Tarrytown, N.Y., was completed in 1955. The main piers are novel in the use of buoyant concrete boxes to reduce the load on the pile foundations. The steel spans were scheduled for completion in 1956.

A new \$50,000,000 bridge of cantilever type was planned to cross the Delaware river between northeast Philadelphia and New Jersey. This bridge would be the third major crossing at Philadelphia.

Construction was started in 1955 on the longest highway bridge in the world, a 24-mi. structure across Lake Pontchartrain in Louisiana. The bridge is a low-level structure with bascule spans at the third points of its length. At the centre of each third of the length, the bridge humps to give a 25-ft. vertical clearance. Otherwise the bridge has a 16-ft. vertical clearance. The bridge carries a 28-ft. roadway on two-pile bents 56 ft. apart with precast pile caps. To minimize work at the site, the bridge was being made up of precast full-width, full-length prestressed concrete units 56 ft. long.

The city council of Kansas City, Mo., appropriated \$1,600,000 in late 1954 to start construction of a \$13,000,000 bridge over the Missouri river to the municipal air terminal.

A cantilever highway bridge, 3,655 ft. long, was completed in 1955 over the Illinois river at Beardstown, Ill. It carries a 26-ft. roadway.

Construction was started on a bridge from Galveston to Pelican Island, Tex., 8,400 ft. long, to carry a two-lane highway and a single-track railway. The bridge includes 2,100 ft. of reinforced concrete trestle, 2,100 ft. of prestressed concrete trestle, 3,100 ft. of embankment, 900 ft. of steel-girder trestle and a 200-ft. single-leaf bascule.

A contract was let for the construction of an \$8,000,000 two-leaf bascule bridge over the Willamette river in Portland, Ore. It carries six lanes of traffic and provides an opening of 220 ft.

A highway bridge was completed in 1955 over the Red river at Miller's Bluff, La. It has a total length of more than half a mile and consists of 17 I-beam spans, each 75 ft. long, and five through truss spans, each 360 ft. long.

The longest pipeline suspension bridge in the world was completed in 1955 over the Mississippi river near Grand Tower, Ill. It is 3,690 ft. between anchors and has a main span of 2,150 ft. The pipes were to be 75 ft. above the highest recorded level of the river. The towers are 296 ft. high. One pier is founded 140 ft. below ground surface.

Construction was started late in 1954 on a \$6,800,000 bridge across the Mississippi river at Clinton, Ia. The bridge is 9,557 ft. long with a main span of suspension type, 644 ft. long,



200 FT. ABOVE THE WATER, a bridgeman ascends the cables of the world's longest pipeline suspension bridge—2,150 ft. long—completed across the Mississippi river in 1955

and carries a 26-ft. roadway and two 3-ft. sidewalks.

Construction was started in 1955 on a \$57,000,000 bridge across the Mississippi river at New Orleans, La. The bridge is 2.3 mi. long and includes a cantilever span of 1,575 ft., which is the longest span of its type in the United States and the third longest in the world.

Plans were started in 1955 for a new bridge across the Mississippi river near Helena, Ark.

Two new bridges were authorized in the San Francisco bay area. One was a \$47,000,000 bridge to be built 200 ft. from the existing cantilever bridge at Carquinez straits. It would have two 1,100-ft. cantilever spans. Each bridge would carry one-way

traffic when the project was completed. The other new bridge would be a \$26,000,000 span between Martinez and Benicia.

A \$116,000,000 bridge project was proposed across Puget sound west of Seattle, Wash. The project included a 14,250-ft. concrete floating bridge and a high-level suspension bridge.

Construction was started late in 1954 on a bridge across the Rappahannock river between Middlesex and Lancaster counties, Va., 9,985 ft. long. The bridge includes beam, girder and truss spans. The main channel crossing is a cantilever truss span of 648 ft.

Construction was started late in 1954 on a bridge-tunnel project across Hampton Roads at Norfolk, Va. The bridge portion of the project includes a 3,250-ft. trestle, a 1,450-ft. bridge and a 713-ft. bridge in the north approach. The south approach includes a 6,110-ft. trestle.

A \$4,600,000 bridge, 6,800 ft. long, was approved to cross the Spokane river at Spokane, Wash.

Canada.—The \$10,000,000 Angus L. Macdonald bridge was completed in 1955 across Halifax harbour, linking Halifax and Dartmouth. This was the second largest suspension bridge in Canada, with a main span of 1,447 ft. and a total length of 5,290 ft. The bridge carries a 27-ft. roadway and a 5-ft. sidewalk.

An \$8,000,000 project was started across the Frazer river to connect the mainland with the island on which Vancouver airport is located. A 6,600-ft. bridge across the main channel has the longest plate girders in Canada—three continuous spans of 200 ft., 300 ft. and 200 ft.

Cuba.—A prestressed concrete bridge of 299-ft. span was completed in 1955. Cantilevers 43 ft. at each end, anchored by post tensioned piers, provide relieving stresses that permitted a depth of only 6 ft. 4 in. at midspan. The cross section is box-shaped with three ribs. The bridge carries a 20-ft. roadway and two 4-ft. sidewalks.

India.—A contract was let in 1955 for the construction of the world's longest submersible bridge to cross the Chambal river near Agra. It is 2,434 ft. long with spans up to 143 ft. and is submerged under 27 ft. of water during monsoon floods. The bridge was designed to withstand the shocks of floating debris when the water reaches the decking.

France.—A series of eight prestressed concrete highway bridges was completed over the Nimy-Blaton canal in France. Shallow depth was achieved by cantilevering the ends of the spans past compression struts on piers and pulling down the ends with prestressed cables. The span between compression struts is 190 ft. and the cantilevers are each 15 ft. Six ribs were used, 4 ft. 11 in. deep at the centre.

Japan.—A single-span, spandrel-braced steel-arch bridge linking Nagasaki with Sasebo, Kyushu Island, was completed in 1955 at a cost of about \$1,500,000. The span is 1,042 ft., making the bridge the fourth longest of its type in the world.

Puerto Rico.—The \$2,300,000 Constitution bridge was completed in 1955 over Martin Pena channel at San Juan. It is 1,700 ft. long and carries two 26-ft. roadways and two 6-ft. sidewalks. The bridge consists of a series of three-span continuous units, the largest of which is 72 ft., 120 ft. and 72 ft., several simple spans and one two-span continuous unit. Rolled steel beams were used except for the largest unit which is of plate girder construction.

Venezuela.—A 2,600-ft. bridge over the Rio Chama was opened in 1955 to complete Venezuela's 622-mi. section of Pan American highway. The bridge consists of a series of slend steel arches of deck construction, stiffened by Warren truss between the arch ribs and the deck.

Wales.—A 310-ft. steel-arch span was proposed to replace the world famous suspension bridge over the Conway river, but

1826 by Thomas Telford. The existing bridge is one of the first suspension bridges to be built of wrought iron. The new bridge would have a 31-ft. roadway; the present bridge has a 7.5-ft. roadway. (See also ROADS AND HIGHWAYS.) (D. B. S.)

British Borneo. Under this heading are grouped the colonies of North Borneo (including Labuan Island) and Sarawak and the protected sultanate of Brunei. Languages: various indigenous, Chinese, Malay (lingua franca). Religions: Moslem, various pagan, many Chinese Christians.

North Borneo.—Area: 29,388 sq.mi. (including Labuan, 35 sq.mi.). Pop.: (1951 census) 334,141, including 243,009 Borneans, 74,374 Chinese; (1954 est.) 365,000. Chief towns (pop., 1951): Jesselton (cap.) 11,704; Sandakan (port) 14,499. Governor in 1955, R. E. Turnbull.

Sarawak.—Area: 47,069 sq.mi. Pop.: (1947 census) 546,385; (1954 est.) 605,000, including 213,200 Sea Dayaks (Ibans), 7,500 Land Dayaks, 32,300 other indigenous tribespeople, 167,000 Chinese, 137,700 Malays and Melanau. Chief towns (pop., 1954 est.): Kuching (cap.) 45,500; Sibuan (river port) 12,000; Miri (oil fields) 10,600. Governor (and high commissioner for Brunei) in 1955, Sir Anthony Abell.

Brunei.—Area: 2,226 sq.mi. Pop.: (1947 census) 40,670; (1954 est.) 55,000 (Malay 41%, Melanau 5%, Sea Dayak 2%, other indigenous 25%, Chinese 24%, other Asian 2%, European 1%). Chief towns (pop., 1953 est.): Brunei Town (cap.) 15,700; Seria (oil fields) 12,000. Sultan, Omar Ali Saifuddin; British resident in 1955, J. O. Gilbert.

History.—A. T. Lennox-Boyd, United Kingdom secretary of state for the colonies, visited North Borneo, Sarawak and Brunei in Aug. 1955. During the year an agreement providing for the recruitment of labour for North Borneo from the Philippines was signed between the two countries, and in both North Borneo and Sarawak an extensive rubber replanting program was undertaken, a rise in rubber prices stimulating production. North Borneo expected to exceed the previous year's exports of 17,114 tons. A promising new oil strike was made in Brunei near the existing Seria oil field.

In June the fifth meeting of the Sarawak-North Borneo-Brunei international conference was held at Jesselton under the chairmanship of Malcolm MacDonald, then U.K. commissioner general in southeast Asia. Piracy appeared to be decreasing throughout the area. (J. J. Ty.)

Education.—(1953) *North Borneo*: primary schools 228; secondary 3 and 13 schools with secondary forms; 1 vocational and 1 teachers' training school; pupils (all schools) 24,105. *Brunei*: primary Malay vernacular 34, pupils 2,679; primary Chinese 7, pupils 1,727; primary English 6 (2 with secondary forms), pupils 1,511; 1 vocational school, pupils 5. *Sarawak*: All schools 512, pupils 49,072 (of which, in 1952, 226 schools with 28,668 pupils were run by Chinese management committees).

Finance and Trade.—Monetary unit: Malayan dollar, valued in 1955 at 2.66 U.S. cents.

	North Borneo	Brunei	Sarawak
Revenue (1953 actual)	M\$ 28,507,471	M\$ 99,367,000	M\$ 39,220,000
Expenditure (1953 actual)	M\$ 33,103,833	M\$ 23,845,000	M\$ 35,629,000
Imports (1954)	£ 8,700,000	£ 13,000,000	£ 46,700,000
Exports (1954)	£ 9,080,000	£ 31,900,000	£ 49,700,000

Principal exports (1954): *North Borneo*: rubber 11,800 tons, copra oil equivalent, including re-exports 8,400 metric tons, timber 9,836,000 cu.ft. *Sarawak*: crude oil 2,915,000 tons, refined oil 1,771,000 tons, pepper (1953) 8,997 tons, rubber 6,750 tons; timber 3,727,000 cu.ft. *Brunei*: crude oil (production) 4,712,000 tons (of which 4,707,000 tons exported to Sarawak for refining), natural gas 2,059,000,000 cu.ft.

British Columbia. British Columbia, Canada's Pacific coast province, has an area of 366,255 sq.mi., of which 6,976 sq.mi. are water. It is the third largest of Canada's ten provinces and is bounded on the west by the Pacific ocean and the Alaskan panhandle; on the east by the province of Alberta; on the south by the 49th parallel; and on the north by the 60th parallel.

The population on June 1, 1955, was estimated to be 1,305,000

(1951 census 1,165,210). The 1951 census indicated there were 793,471 urban dwellers and 371,739 rural dwellers. This census indicated that 66% of the population was of British extraction. The chief centres and their 1954 estimated populations were: Vancouver, 396,000; Victoria, the capital, 51,331; New Westminster, 35,000. The metropolitan population of Vancouver and Victoria were estimated to be 624,000 and 121,000, respectively.

History.—In the third session of the 24th parliament of British Columbia, Jan. 25 to March 15, 1955, the following measures were among those passed: an act to provide for the establishment and maintenance of provincial child guidance clinics; an act setting up a separate department of highways; an act to provide for the establishment and maintenance of provincial mental health centres; an act respecting the regulation of oil and gas pipelines; an act respecting the public services medical plan; an act providing for a separate department of public works; an act amending the public schools act; an act amending the Assessment Equalization act of 1953; an act amending the University Endowment Lands Administration act; and an act to facilitate the construction of extensions of the Pacific Great Eastern Railway company.

In January, the Social Credit government announced the following as its program: a new department of highways with a new portfolio added to the cabinet; completion of the northern extension of the Pacific Great Eastern railway; more money for bridges under the toll authority; a new girls' industrial school; a \$10,000,000 ten-year building program for the University of British Columbia; a new education finance plan; a medical plan for civil servants; a new municipal aid plan; laws governing co-operatives to be overhauled; an experimental program to treat narcotic addicts.

In April, Premier W. A. C. Bennett, attending a dominion-provincial conference, called upon the federal government to become a full partner in a vast works program. In May it was announced that the government was awaiting detailed plans of the \$270,000,000 Frobisher development in northern British Columbia. In July, Premier Bennett announced an \$11,381,000 reduction on the province's net debt. In September it was announced that F. McKenzie Ross, Vancouver industrialist and businessman, would succeed Clarence Wallace as lieutenant governor on the expiry of his term in October.

Members of the provincial executive council or cabinet and their portfolios at Oct. 1, 1955, were: W. A. C. Bennett, premier, finance, and president of the council; W. D. Black, provincial secretary and municipal affairs; R. W. Bonner, attorney general; R. E. Sommers, lands and forests, and mines; W. K. Kiernan, agriculture; P.A. Gaglardi, highways; W. R. T. Chetwynd, railways, trade and industry, and fisheries; L. Wicks, labour; E. C. F. Martin, health and welfare; R. G. Williston, education; W. N. Chant, public works.

Education.—During the school year ending June 30, 1954, 210,174 students were enrolled, in the elementary, elementary-senior-junior-high (147,392), superior (2,148), junior, junior-senior and senior high (60,634) schools of the province. Teaching staffs comprised 7,574 teachers as follows: in the elementary, elementary-senior-junior high, 4,856; superior 89; junior, junior-senior and senior high 2,629.

Higher education is provided by the University of British Columbia, Vancouver, a provincially endowed institution, two teacher training schools located at Vancouver and Victoria, a vocational institute at Vancouver and a junior college at Victoria.

The total net cost for the enrolment of 210,174 in 1953-54 was \$70,791,844. The deputy minister and superintendent of education was H. L. Campbell.

Communications.—The total highway mileage as of March 31, 1954, excluding the Alaska highway, was 22,797 mi., of which 11,693 mi. were surfaced, 9,469 mi. were improved earth and 1,635 mi. unimproved earth.

Railway mileage as of Dec. 31, 1954, was 4,448 mi. of main-line track and 1,238 mi. of sidings. During 1954 approximately 8,810,720 tons of cargo were loaded at British Columbia ports on vessels destined to foreign countries, while 2,115,586 tons of cargo received from foreign countries were unloaded at local ports. In 1953, the total number of telephones was 347,750, including 154,373 on automatic switchboards.

During 1954, there were 283,641 passenger cars and 93,836 commercial vehicles registered within the province.

Table I.—Economic Activity in British Columbia

	Unit	1954	1953	1955 Preliminary Estimates
Agriculture				
Total value of production	\$	142,000,000	137,388,728	145,000,000
Livestock	\$		15,380,000	
Poultry products	\$		23,789,000	
Dairy products	\$		28,377,000	
Fruits and vegetables	\$		32,695,970	
Field crops	\$		29,582,000	
Miscellaneous	\$		7,555,758	
Fisheries				
Total value of products .	\$	69,400,000	66,260,000	65,000,000
Pack of canned salmon	cases	1,750,000	1,821,269	
Forestry				
Total value of production	\$	528,022,783	512,289,000	560,000,000
Timber scaled	M.B.M.	5,567,423	5,291,587	
Paper production	ton	647,117	597,936	
Mining				
Total value of production	\$	153,377,315	152,731,181	155,000,000
Lead	\$	45,500,000	39,338,655	
Zinc	\$	35,000,000	40,388,346	
Coal	\$	9,000,000	9,630,777	
Gold	\$	9,000,000	9,130,524	
Internal Trade				
Sales of life insurance	\$000	195,000	176,899	220,000
Total value of retail sales	\$000	1,230,000	1,225,000	1,247,000
Value of retail department store sales	\$000	175,000	163,000	195,000
Railway freight loaded	ton	12,359,945	11,845,515	14,500,000
Consumption of electric power	000 kw.hr.	5,209,683	4,897,335	5,900,000
Construction building permits	\$000	164,749	144,049	210,000
Bank debits	\$000	11,956,325	11,786,823	12,350,000
Index of employment 1949=100		103.0	108.4	106.0
Personal income	\$000	1,836,000	1,778,000	1,920,000

Table II.—Principal Manufacturing Industries of British Columbia

Industry	Selling value of factory shipments	
	1953	1952
Sawmills	\$ 323,474,522	\$ 316,723,587
Pulp and paper	138,883,093	125,290,032
Fish processing	65,726,800	57,590,974
Veneers and plywoods	56,503,885	42,176,834
Slaughtering and meat packing	53,415,699	54,182,549
Sash, door and planing mills	47,658,772	46,289,457
Petroleum products	40,562,462	37,818,297
Miscellaneous food preparations	40,172,603	35,600,308
Fertilizers	35,156,537	32,475,077
Shipbuilding	32,548,906	30,643,942
Total, all manufacturing industries	\$1,366,823,690	\$1,332,481,862

Finance.—On Feb. 4, 1955, W. A. C. Bennett, minister of finance, reported that revenue collected for the fiscal year ended March 31, 1954, was \$169,034,000; expenditures were \$165,624,000; the net debt at Dec. 31, 1954, was \$139,370,142, a decrease of \$16,785,532 from the preceding year. Anticipated revenues including surpluses were \$194,522,469 and expenditures \$212,059,000, including expenditures for hospital insurance and capital out of income for the fiscal year ending March 31, 1956.

Agriculture, Fisheries, Mining, Forestry.—Preliminary provincial department estimates indicated that the primary industries, with the exception of forestry which showed a moderate increase, remained at about the same levels as in the previous year. The trade situation with the easing of world tensions and the increase in the economic health of most European countries was improved as far as British Columbia products were concerned. Perhaps the highlight of the development related to basic industries was the huge developments in the pulp and paper industry in British Columbia. Prices remained stable, but wages and employment increased so that real income was higher than in the previous year.

Manufacturing.—One of the highlights of British Columbia's economy during 1954 and 1955 was the development of its secondary industries.

Preliminary statistics relating to the manufacturing industries of the province indicated that the 1954 net value of production would reach an all-time high, and that the 1955 figures would reach the highest in British Columbia's history. Considerable exploratory work was done in the Peace river area for gas and oil possibilities. The aluminum company located at Kitimat which poured its first ingots in 1954 was expanding its facilities to take care of increased production. It would appear that 1955 was British Columbia's greatest year as far as economic and business activity was concerned. (G. T. H.)

British Commonwealth: see COMMONWEALTH OF NATIONS.

British East Africa. This term is used to include Kenya, colony and protectorate; Somaliland Protectorate; Tanganyika, trust territory; Uganda, protectorate; and Zanzibar, protected island sultanate.

The East Africa high commission, comprising the governors of Kenya, Tanganyika and Uganda, administers taxation, development and research, transport and other central services in these territories, and has power to legislate, with the advice and consent of the East African central legislative assembly. Governors (Dec. 31, 1955): Kenya, Sir Evelyn Baring; Somaliland,

T. O. Pike; Tanganyika, Sir Edward Twining; Uganda, Sir Andrew Cohen. Buganda (protected African kingdom within Uganda): kabaka (king), Edward Mutesa II; katikiro (chief minister), Mikaeri Kintu; British resident, C. A. L. Richards. Zanzibar: sultan, Khalifa bin Harub; British resident, H. S. Potter. East Africa high commission: chairman, Sir Evelyn Baring; administrator, A. M. Bruce Hutt.

Territory	Area (sq.mi.)	Pop. (1954 est.)	Chief towns (with pop., latest est.)
Kenya . . .	223,478	5,947,000	Nairobi (cap., 118,976*) Mombasa (port, 84,746*) Hargeisa (cap., c. 20,000 hot season—40,000 cold season) Berbera (port, 9,080†) Dar es Salaam (cap., 99,140†) Tanga (22,136†)
Somaliland . .	67,997	640,000	Entebbe (cap., 7,942*) Kampala (Buganda cap., 22,094) Zanzibar (cap., 45,275*)
Tanganyika .	362,688	8,196,000	
Uganda . . .	93,981	5,425,000	
Zanzibar . .	1,020	276,000	
*1948 census.		†1951 est.	‡1952 census.

History.—The 19th and 20th meetings of the East Africa high commission were held in March and Sept. 1955 in Nairobi, and the central legislative assembly met in the same months. At its September meeting the assembly authorized a further loan of £5,000,000 for East African railways and harbours. At its earlier meeting the estimates for the nonself-contained services for the year 1955–56 were presented and approved. The finance member put the total estimated expenditure at £4,834,406, an increase of £326,423 over the previous year.

The commissioner for transport negotiated a loan of £8,500,000 from the International Bank for Reconstruction and Development. The loan, repayable over 20 years, was to be used in connection with the East African railways and harbours administration's £60,000,000 postwar development program.

Kenya.—Militarily, 1955 brought the Mau Mau near to collapse. The improved circumstances were brought about by a changed attitude on the part of the African population, who saw with greater clarity that Mau Mau was doomed, as well as by the unremitting attacks of the security forces. An indication of the former was the part played by 8,000 women in operations against gangs in south Nyeri, where terrorism had previously been kept alive with female assistance. But optimism that a violence was over was shaken by the murders of Geoffrey Danby and Christopher Twohey, two British schoolboys killed by a gang near Nairobi on April 21. Several terrorists were later executed for the crime.

In January new surrender terms were offered by the government, safeguarding from prosecutions for past offenses Mau Mau who gave themselves up. This move was bitterly opposed by certain sections of the European settler population. The terms were withdrawn in July, by which time there had been a considerable number of surrenders, though not on the scale hoped. Meanwhile, however, attention again had been focused on the possibility of a mass surrender through new negotiations, but the Mau Mau failed to respond, probably because of the intransigence of their few remaining leaders, above all of the elusive Dedan Kimathi. On the failure of the mass surrender plan, Maj. Gen. G. W. Lathbury, who took over as commander-in-chief from Gen. Sir George Erskine in May, at once intensified military operations.

Finance also remained an important problem and, despite additional taxation, the fourth budget in three years showed an estimated deficit for 1955–56 of more than £13,000,000. Development throughout the country was not allowed to suffer, however; a new plan was published, reviewing the territory's requirements under existing conditions for the period ending 1960 and providing for a total expenditure of about £24,000,000. In August the governor opened the Tana river hydroelectric scheme, designed to supply Nairobi with power.

Politically the colony had a quieter year than in 1954. T

committee set up that year by the European electors during a political truce issued a report in Feb. 1955 containing constitutional recommendations which included a "cross bench" consisting of the nominated government members, entitled to vote freely except on a vote of confidence in the government; the abolition of the executive council; and some measure of federation of East African territories in consultation with the Federation of Rhodesia and Nyasaland. A new European organization appeared called the "Kenya guild," which admitted no Asians but declared its aim as co-operation between Africans and Europeans. In April the Kenya Indian congress, in a policy statement, called for equal opportunity on the land for all races, and in June the European elected members of the legislature proposed increased African representation, more specifically for tribes loyally supporting the government during the emergency. The African members called for another African minister. In June the ban on African political organizations was lifted.

Somaliland.—An Anglo-Ethiopian agreement, signed Nov. 29, 1954, took effect Feb. 28, 1955. Under it, British military administration was withdrawn from parts of Ethiopia bordering Somaliland Protectorate and known as the Haud and Reserved Areas. The protectorate government was to receive considerable administrative powers and facilities when Somali tribes were exercising existing grazing rights in these areas. But a deputation of Somalis went to London to protest, and in May a petition was sent to the United Nations for an examination of the matter by the International Court of Justice. In April an order in council allowed for the setting up of a legislative council in the protectorate.

Tanganyika.—The newly enlarged legislative council, approved the year before, met in April and Sept. 1955. There were 12 members on the government side and 30 unofficial members (10 each from European, Asian and African residents); for the first time women occupied some of the unofficial seats. In local government Mafia Island followed the lead of Newala district and established a multiracial local district council, while in the Southern Highlands province the first meeting of a provisional county council took place. Widespread criticism was levelled at the publication in the U.S. of the report of the United Nations visiting mission of 1954, before publication in Tanganyika had enabled the government to prepare replies. Particularly in the public mind was the section calling for a timetable based on the alleged ability of Tanganyika Africans to be self-governing in less than 20 years. The chairman of the mission, however, disagreed with much of the report and subsequently the drafting committee of the trusteeship council published its own report which in effect vindicated British policy in the territory.

The country remained free from Mau Mau activities, but one armed gang from Kenya entered the Northern province and slaughtered Masai cattle before recrossing the border.

The Tanganyika Agricultural corporation, set up in 1954, came into formal existence and a Dutch firm began experiments with cocoa growing, hitherto untried in the country. A new 20-kw. radio transmitter for up-country broadcasting gave good results.

The governor's term of office was extended until June 1958.

Uganda.—Political preoccupations did not check the country's economic progress and the 1955 coffee crop was about 50% higher than before. But the main focus for attention was the return of the kabaka of Buganda from England two years after he had been sent there on his deposition, and on the steps leading up to it. The constitutional proposals put forward by a Buganda committee and by Sir Keith Hancock, the University of London colonial expert, in 1954, to regulate the kabaka's position and to resolve the separatist tendencies of his area,



MUTESA II, the kabaka of Buganda, British East Africa, shown on his throne after returning in 1955 from two years of exile in England

had been agreed by the governor of Uganda and by the United Kingdom government; but the Buganda lukiko (parliament) had decided late in 1954 to appoint its own committee for further consideration of the proposals.

In April this committee recommended acceptance of the proposals and on May 9 the lukiko accepted them with certain modifications, sending a delegation to London to discuss the early return of the kabaka. A principal task of this delegation and of the U.K. government was to devise a method whereby the kabaka could sign the solemn agreement upon which his return depended, and in July A. T. Lennox-Boyd, the U.K. secretary of state for the colonies, informed the house of commons that a means had been found whereby it would be possible for the kabaka to return to Buganda within six weeks of the appointment of Buganda ministers and representatives to the protectorate legislature. Meanwhile the governor was authorized to bring into effect the central legislature's reforms approved in Nov. 1954, and in August the ministerial system was introduced, with six official ministers and five drawn from the public. Some African opposition was voiced to Asian representation in the new system.

Buganda did not delay in playing its part. While revising its own constitutional system, it elected representatives to the central legislature and by the time the kabaka returned to his country, Buganda for the first time had advanced from the attitude which previously had kept it largely isolated from the rest of the territory. A point of significance was that although the somewhat extreme Uganda National congress made no showing in elections for Buganda's local ministerial system, four of the

five representatives elected from Buganda to the central legislature were members of the congress.

The kabaka, together with many guests from Great Britain, arrived in Uganda in mid-October, his return being greeted with enthusiasm and being clearly regarded in some quarters as a great victory for African sentiment.

The Bunyoro and Busoga areas also came into the news, the former with the signing of a new agreement, regulating the position of the omukama (African ruler), to replace that of 1933; and the latter with some instability in its local government and warnings from the administration that it was slipping behind the rest of the country.

Zanzibar.—The 1955 estimates budgeted for a surplus of £31,000, the clove crop being only average at an estimated 8,545 tons. A revised £1,250,000 development plan for 1955-56 was approved. An all-communities effort towards a King George VI memorial raised £20,000 for a new boys' secondary school in Zanzibar town. The local fishing industry went ahead, and a loan fund was established to help fishermen purchase powered craft.

In October the British resident announced proposals, for debate in the legislative council, to give unofficial opinion more effect in forming government policy and to develop the position of the sultan as a constitutional monarch presiding over a privy council: the aim was that Zanzibar should achieve self-government within the commonwealth by appropriate stages.

(J. J. Ty.)

Finance and Trade.—Monetary unit: East African shilling, divided into 100 cents, valued at parity with the shilling sterling and at 14 cents U.S.

Territory	Revenue (1954-55 est.)	Expenditure (1954-55 est.)	Imports (1954)	Exports (1954)
Kenya	£21,770,554	£29,755,078	£60,100,000	£22,800,000
Somaliland*	995,998	1,053,720	2,360,000	1,210,000
Tanganyika	18,753,340	18,722,450	31,962	37,795
Uganda	18,961,765	18,903,780	25,200,000	41,000,000
Zanzibar†	2,783,235	1,789,025	5,380,000	5,940,000

*1953-54 actual; revenue includes grant-in-aid. †1953 actual.

Principal exports: *Kenya*, coffee, sisal, hides and skins, wattle bark extract, sodium carbonate, pyrethrum; *Somaliland*, hides, skins, gums, livestock, fish; *Tanganyika*, sisal (1954) £10,902,100, coffee (1954) 19,600 metric tons, cotton, diamonds, hides; *Uganda*, coffee (1954) 35,200 tons, sisal, cotton, hides and skins, tea (1954) 500 tons; *Zanzibar*, cloves and clove oils, coconut oil.

British Guiana.

A British colony in northeast South America, British Guiana lies between Venezuela, Brazil and Surinam. Area: 82,997 sq.mi. Pop.: (1946 census) 375,701; (1953 est.) 465,420, including about 207,000 East Indians, 162,700 Negroes, 49,100 mixed, 17,700 Amerindians, 12,700 Europeans (two-thirds, Portuguese). Language: English; various East Indian. Religion: Christian 60%; Hindu 30%; Moslem 8%. Principal towns (pop., 1952 est.): Georgetown (cap.) 86,412; New Amsterdam 12,826. Governors in 1955, Sir Alfred Savage and (from July 23) Sir Patrick Renison.

History.—Sir Alfred Savage resigned the governorship of British Guiana in 1955 because of ill-health. The nominated legislature continued in office throughout the year. A private member's motion approving the principle of federation and advocating further study by the government was passed by 21 votes to 6 in the legislature after every member had spoken. Guianese delegates appeared before the prefederal commissions in order that the way might be kept open for the eventual participation of British Guiana, and the government information services took vigorous steps to acquaint the populace with the issues involved. A. H. Marshall, city treasurer of Coventry, inquired into the system of local government and in his report made far-reaching recommendations for reform.

Expenditure in the development budget was estimated at B.W.I. \$19,000,000. The Credit corporation, at the end of the

first year of its operations, had advanced about B.W.I. \$4,500,000 in loans, of which B.W.I. \$2,500,000 were for housing. U.S. technical aid was increased and at mid-1955, 16 officials of the Foreign Operations administration were in the colony.

Andrew Dalgleish paid a visit to the colony on behalf of the British Trades Union congress, which made a grant of £3,000 to the trade unions of British Guiana. In August a conference of sugar and plantation workers met in Georgetown under the auspices of the International Confederation of Free Trade Unions. A split occurred in the People's Progressive party, which was in power when the constitution was suspended in 1953: one faction was headed by Cheddi Jagan and the other by L. F. S. Burnham.

The 1955 sugar crop was forecast at 258,000 tons, a record. In 1955 an initial shipment of jute was made from the trial cultivation. Columbite prospecting was suspended, but deposits of monazite were found in the Rupununi. As a result of an outbreak of foot-and-mouth disease in Brazil, cattle in the Rupununi had to be evacuated from the border area and a protective fence was erected. The government acquired the business of British Guiana Airways. New studios erected for Radio Demerara were opened by the governor.

(R. H. Y.)

Education.—(1953) Government and aided schools: primary 287, pupils 84,091, teachers 1,973; secondary 4, pupils 1,511 (excluding private schools with about 6,000 pupils); vocational 3, pupils 993; teachers training college, students about 40.

Finance and Trade.—Monetary unit: British West Indian dollar, value at 58.33 U.S. cents. Budget (1954 est. in British West Indian dollars) revenue \$31,809,105; expenditure \$31,779,617. Foreign trade (1954) imports £16,700,000; exports £17,800,000. Principal exports: sugar, bauxite, rice, rum, diamonds, timber, molasses. Production (metric tons 1954): sugar 261,000; bauxite 2,311,000.

British Honduras.

A British colony in Central America, British Honduras is bounded by Mexico (north and northwest) and Guatemala (west and south). Area: 8,867 sq.mi. Pop.: (1946 census) 59,220, including 22,693 Negroes, 18,360 mixed, 10,030 Amerindians (Maya); (1953 est.) 78,000. Languages: English; Spanish; Indian dialects. Religion: mainly Roman Catholic. Chief towns: Belize (cap. (1953 est., 27,500); Stann Creek (1950 est., 3,500); Corozal (1950 est., 2,500). Governors in 1955: Sir Patrick Renison and (from Aug. 16) Colin Thornley.

History.—The quasi-ministerial system of government in British Honduras came into effect on Jan. 1, 1955, with the appointment by the governor of three elected members of the executive council as members for natural resources, social services and public utilities, respectively. This gave them limited responsibilities for certain departments. In August, following the request of the majority party (the People's United party) for more authority to ensure adequate development and to solve unemployment problems, the then acting governor added the responsibility for industrial relations, labour and local government to those of the member for social services; and that for development concessions to those of the member for natural resources. In May the elective principle for municipal elections was extended to the remaining four of the six districts in the country. This replaced the old system of voting based on income and property qualifications. The municipal councils became partly elected for the first time, with a majority of elected members.

Part iii of the development plan (1955-60), which provided for agricultural, forestry and educational development, came into operation during the year with funds provided by the United Kingdom government under the Colonial Development and Welfare act. Experts in housing and community development from the U.S. International Cooperation administration visited the country for several months and helped the government to establish the country's first aided-self-help housing project.

Hurricane "Janet" virtually destroyed Corozaal at the end of September.

(A. L. A.)

Education.—Schools (1953): grant-aided primary 95 (including 60 controlled by Jesuit missions), pupils 12,690; independent primary 27, pupils 1,041; secondary 5, pupils 964; technical high school, pupils 65. **Finance and Trade.**—Monetary unit: British Honduras dollar, valued in 1954 at 70 cents U.S. Budget (1955 est.): revenue (including grants) £4,842,600; expenditure \$BH4,826,100. Foreign trade (1954): imports \$850,000; exports £1,810,000. Principal exports: timber, chicle, citrus fruits and juice and copra.

British Malaya: see MALAYA, FEDERATION OF; SINGAPORE.

British Somaliland: see BRITISH EAST AFRICA.

British South African Territories. Basutoland (colony), an enclave within southeastern South Africa; Bechuanaland protectorate, north of the Union; and Swaziland (protectorate), between Transvaal and Mozambique, are generally referred to as the High Commission Territories in South Africa.

	Area (sq.mi.)	Population (1946 census) (1954 est.)	Capital (with est. pop.)
Basutoland	11,716	563,854	588,000
Bechuanaland Prot. approx.	275,000	296,310	295,000
Swaziland	6,705	185,215	212,000

Administrative headquarters are at Mafeking, Cape Province, Union of South Africa.

Population is mainly African; the most important tribe is the Basutuan Bamangwato (pop. 100,987) with its capital at Maseru (15,935). Europeans (1946): Basutoland 1,689; Bechuanaland 2,379; Swaziland 3,201. Religion: Christian (Basutoland [1946] 345,986); various indigenous. High commissioner since 1955, Sir John Le Rougetel. Resident commissioners: (Basutoland) E. P. Arrowsmith; (Bechuanaland) W. F. Mackenzie; (Swaziland) D. L. Morgan.

History.—During 1955 an appeal court for the High Commission Territories was constituted.

Basutoland.—The report on native administration by Sir Harry Moore evoked considerable opposition. The tribal chiefs and the people declined to accept any diminution in the status and powers of chiefs. As a result an uneasy situation prevailed throughout 1955.

Bechuanaland.—The Conservative government returned to power in the United Kingdom in May 1955 renewed the permanent exile of Seretse Khama, chief-apparent of the Bamangwato. See Colonial Reports, *Bechuanaland 1953; High Commission Territories: Economic Development and Social Services*, Cmd. 9580 (both H.M.S.O., London, 1955).

Education.—Schools, with enrolment in parentheses (1954):

Territory	Primary	Secondary	Vocational	Teacher training
Basutoland				
African and coloured . . .	930 (101,889)	7 (999)	2 (105)	6 (289)
European . . .				
Bechuanaland				
African and coloured . . .	147 (19,992)	4 (188)	...	1 (54)
European . . .				
	10 (approx. 290)			
Swaziland				
African and coloured . . .	228 (18,201)		...	...
European . . .	8 (815)			

Finance and Trade.—Monetary unit: South African pound; £ (S.A.) £1 sterling = U.S. \$2.80.

	Budget (1953-54 actual)		Foreign trade, 1954	
Territory	Revenue	Expenditure	Imports	Exports
Basutoland	£1,285,991*	£1,317,857*	£2,612,007	£1,954,105
Bechuanaland	£1,016,759†	£1,015,005†	£2,053,423	£2,423,683
Swaziland	£1,150,872†	£990,651†	£2,386,332	£3,134,462

1954-55 revised estimates. †Including development and welfare grants.

Principal exports: *Basutoland*: wool, mohair, sorghum, hides and skins, livestock; *Bechuanaland*: livestock, dairy produce, hides and skins, gold (1953, 34 kg.); *Swaziland*: asbestos (1953, 27,300 metric tons), livestock, tobacco, cottonseed, rice, tin, wattle bark extract.

British West Africa. This term covers the following British territories in West Africa: Gambia, colony and protectorate; Gold Coast, colonies and protec-

torate, with which Togoland, under United Kingdom trusteeship, is administered; the Federation of Nigeria (technically a colony and a protectorate, together with Cameroons under United Kingdom trusteeship; but administered as four units with federal capital area); Sierra Leone, colony and protectorate. Areas, populations and chief towns are given in the accompanying table.

	Area (sq.mi.)	Population (latest est.)	Chief towns with populations
Gambia	4,003	290,000*	Bathurst (cap., 19,602†)
Gold Coast	79,802	4,619,000†	Accra (cap., 135,926§), Kumasi (59,420§), Sekondi-Takoradi (44,557§), Cape Coast (23,346)
Togoland	13,041		Lagos (fed. cap., 272,000); regional caps.—Ibadan (459,196), Kaduna (51,635), Enugu (63,000), Buea (c. 15,000); other cities—Ogbomoso (140,000), Kano (130,000), Oshogbo (123,000), Ife (111,000), Iwo (100,000)*
Fed. of Nigeria (incl. Cameroons trust)	373,250	31,700,000||	Freetown (cap., 64,576§)
Sierra Leone	27,926	2,040,000||	

*1953 est. †1951 census. ‡1955 est. §1948 census. ||1954 est. ¶1952-53 census.

Governors (Dec. 31, 1955): Gambia, Sir Percy Wyn Harris; Gold Coast, Sir Charles Arden-Clarke; Sierra Leone, Sir Robert Hall. Governor-general, Federation of Nigeria, Sir James Robertson. Prime minister, Gold Coast, Kwame Nkrumah. Chief minister, Sierra Leone, M. A. S. Margai. Asantehene (king) of Ashanti (Gold Coast), Otumfuo Osei Agyeman Prempeh II.

History.—*Gambia.*—At the end of 1954, as a result of increased food production, particularly of rice, there was for the first time for a number of years no seasonal shortage of food in the protectorate. The price of peanuts, of which 60,000 tons were cropped, was fixed at £32 a ton, but as world prices fell below this the Oilseeds Marketing board sustained a heavy loss from the stabilization fund.

Gold Coast.—Political interest during 1955 centred in the conflict between the Convention People's party (C.P.P.) and the National Liberation movement (N.L.M.), which, supported by the Asanteman council of Ashanti, advocated a federal constitution for the Gold Coast when independent. In Dec. 1954 the government expressed the belief that the federal form of government was unsuitable, but offered to provide opponents of it with an opportunity for studying proposals for regional councils. This was refused. Riots occurred in January in Ashanti and the carrying of offensive weapons was proscribed. In March 1955 the Northern People's party supported the Ashanti demand for a review of the constitution before independence. In April the assembly adopted a government motion to appoint a select committee on the federal constitution and on a second chamber. The motion went through in the absence of opposition, who had walked out.

After further rioting in May a curfew was imposed for a time in Kumasi. In July a select committee reported that full federation was impracticable, but recommended regional bodies and declared against a second chamber. In the same month an N.L.M.-supported candidate won a by-election in Ashanti, in a constituency previously held by the C.P.P.; and the asantehene held court to receive the congratulations of the chiefs. In August the assembly adopted the select committee's report, requested the government to consider the establishment of regional councils and to define their functions, and approved the invitation of an expert to advise. In September some opposition parties in the south (Colony) united to join N.L.M.

At the assembly budget session in February the finance minister, K. A. Gbedemah, announced a budget of £63,000,000, including £24,000,000 for Tema harbour and other development projects. As of the end of July control of the civil service passed to the local public service commission, and all overseas officers had to choose between joining the local service and retiring with compensation. Out of 771 officers entitled to leave, only 18%, representing 5% of senior officers, elected to go.

In August a UN mission visited Togoland to study methods of ascertaining the inhabitants' wishes on the future status of their territory.

Nigeria.—In the elections to the federal house of representatives in Nov.-Dec. 1954 the Northern People's congress (which won a majority in the Northern region) and the National Council of Nigeria and the Cameroons (which won majorities in the Eastern and Western regions) were returned as the two strongest parties.

The composition of the federal council of ministers was announced in Jan. 1955. The portfolios were now: transport, works, communications and aviation, land, mines and power, research and information, social services, trade and industry, labour and welfare; and there were two ministers without portfolio.

Soon after his arrival in June the new governor-general, Sir James Robertson, toured the regions. In the same month a report on the public services by L. H. Gorsuch was published. It recommended, *inter alia*, a reorganization of the public services and greater inducements to overseas officers to serve in Nigeria. The need of the services of such officers had been acknowledged by all Nigerian governments and by the colonial secretary. The Gorsuch recommendations were later accepted, with certain exceptions.

During the year the federal government and all regional governments established Nigerians in London as their commissioners.

Sierra Leone.—The reports of the Fulton and Keith-Lucas commissions on education and electoral reform were published toward the end of 1954. The former recommended that secondary technical education be developed, that certain steps be taken to overcome the shortage of trained teachers, that Fourah Bay college (now dependent for degrees on Durham university, Eng.) should eventually become a full university college, and that the educational program should be slowed down rather than reduced if funds proved insufficient in five years' time. These recommendations were accepted in principle. The electoral reform commission, whose recommendations were accepted with modifications, proposed that universal adult suffrage be reached by 1961 in two stages, that paramount chiefs should continue to sit on district councils *ex officio*, and that they should not vote or be candidates but be represented in the legislative council in some manner to be decided.

In Feb. 1955 labour relations, which were normally good, suffered a setback when a strike for more pay led by the Artisan and Allied Workers' union and the Road Transport Workers' union resulted in riots in Freetown and 18 deaths. An inquiry commission under Sir John Shaw strongly condemned Marcus Grant, general secretary of the former union, and found that the force used by the military and the police was justified. The government declared its intention of making the police force more effective and announced changes in the wage negotiating machinery. A general increase in wages was awarded in June with effect from Feb. 1.

In June a government delegation led by the chief minister met the United Kingdom colonial secretary to discuss the diamond industry. The growth of illicit diamond digging and trading was causing a loss of government revenue and was a serious threat to law and order. Negotiations with the Sierra Leone Selection Trust, Ltd., led in September to an agreement on the revision of the Selection trust's monopoly rights in exchange for £1,500,000 compensation, and the government stated its intention of introducing a system of licensing African digging. The legislative council approved the agreement in principle at the end of September.

The chief minister in July invited the expression of views on

the constitutional changes that might be appropriate when the five-year term of the legislative council expired in Nov. 1955 (W. H. Is.)

BIBLIOGRAPHY.—P. T. Bauer, *West African Trade* (Cambridge, 1954; New York, 1955); F. J. Pedler, *Economic Geography of West Africa* (New York, London, 1955); Colonial Reports, *Gambia 1952 and 1953* (H.M.S.O., London, 1955); C. T. Quinn-Young and T. Herdman, *Geography of Nigeria*, 4th ed. (London, 1954); International Bank, *Economic Development of Nigeria* (Baltimore, London, 1955); Colonial Reports, *Sierra Leone 1953* (H.M.S.O., London, 1955).

Finance and Trade.—Monetary unit: West African pound (£WA1 = 4 sterling = U.S. \$2.80).

	Revenue (1953-54 est.)	Expenditure (1953-54 est.)	Imports (1954)	Exports (1954)
Gambia	£ 1,517,830*	£ 1,588,297*	£ 2,590,000	£ 3,050,000
Gold Coast	49,942,397	44,243,304	71,600,000	115,000,000
Nigeria†	59,256,000	55,003,000	114,000,000	149,000,000
Sierra Leone	5,418,153	5,269,095	13,380,000	11,400,000

*1955. †Including Cameroons.

Main exports: *Gambia*, peanuts (36,900 tons, 1954); *Gold Coast*, cocoa (214,000 tons, 1954), gold, diamonds, manganese, bauxite; *Nigeria*, peanuts (428,000 tons, 1954), cocoa (98,000 tons, 1954), hides (89,400 tons, 1954), palm oil and kernels, cotton, timber, bananas; *Sierra Leone*, palm kernels, iron ore, diamonds, ginger.

British West Indies.

Under this heading are treated matters of common concern to Jamaica, the Leeward Islands, the four Windward Island colonies (Grenada, St. Vincent, St. Lucia and Dominica), Trinidad and Tobago, and Barbados, and the mainland colonies of British Guiana and British Honduras. Total area: about 100,000 sq.m. Population (1953): about 3,393,000. Pending the establishment of a British West Indies federation the following regional bodies existed in 1955: (i) Development and Welfare organization of the West Indies; headquarters, St. Michael, Barbados; comptroller, the United Kingdom co-chairman of the International Caribbean commission, *ex officio* (in 1955 Sir Stephen Luke); (ii) Regional Economic committee; permanent deputy chairman, the economic adviser to the Development and Welfare organization comptroller *ex officio* (in 1955 C. G. Beasley); (iii) British Caribbean Air Transport advisory council. (See also articles on the individual colonies.)

History.—Travelling mostly in the royal yacht "Britannia" Princess Margaret visited Trinidad and Tobago, Grenada, St. Vincent, Barbados, Antigua, St. Kitts, Jamaica and the Bahamas in the spring of 1955.

Agreement reached at a conference held in Trinidad in March to discuss freedom of movement between the colonies cleared the way for the last stages in the creation of a British West Indian federation. Provision was made for eventual participation by British Guiana and British Honduras.

A new Eastern Caribbean coinage was issued in November. A total of £13,560,000 (including £770,000 for regional projects) was allocated to the British West Indies, including British Guiana and British Honduras, under the Colonial Development and Welfare act of 1955. An education conference was held in March and a conference on training in industry in April, both at the University College of the West Indies at St. Andrew, Jamaica.

The purchase price of sugar under the Commonwealth Sugar agreement was £40 15s. a ton, or 5s. a ton less than in 1954. Following publication of the report of the citrus mission that visited the West Indies from the United Kingdom in 1954, the British Caribbean Citrus association was formed. A delegation to Washington obtained preliminary agreement to plans affording citrus producers some protection against U.S. competition.

A severe hurricane struck Barbados, Grenada and northern British Honduras in September.

West Indians, especially Jamaicans, continued their recent intensified migration to the United Kingdom at a rate of considerably more than 10,000 a year. (R. H. Y.)

See D. Chandos, *Tradewind Islands* (New York, Toronto, 1955).

roadcasting: see RADIO AND TELEVISION.

ookings Institution: see SOCIETIES AND ASSOCIATIONS,

S.

ownell, Herbert, Jr. (1904–), U.S. government official, was born on Feb. 20 at ru, Neb. He received his bachelor's degree at the University Nebraska, Lincoln, in 1924 and his law degree at Yale university in 1927. He practised law in New York city and in 1932 s elected as a Republican to the New York state assembly, ere he served two terms. In 1942 he was campaign manager y Thomas E. Dewey in the latter's successful bid for the vernorship of New York. Brownell also managed Dewey's mpaigns for the Republican presidential nomination in 1944 d 1948 and was chairman of the Republican national com- tee from 1944 to 1946. He was an early supporter of Dwight Eisenhower and chief strategist in the latter's campaign for e presidential election in 1952. Eisenhower on Nov. 21, 1952, med Brownell attorney general in his cabinet, and he took ce on Jan. 21, 1953.

Brownell announced on April 28, 1955, that the department justice was preparing antitrust proceedings against the Amer- n Association of Advertising Agencies, the American News- per Publishers association and four other groups for alleged empts to control U.S. newspaper and magazine advertising; e suit was filed on May 12 in New York city.

oz, Josip (Tito): see TITO (JOSIP BROZ).

ucker, Wilber Marion (1894–), U.S. secretary of the army, was born on June at Saginaw, Mich., and received his law degree from the iversity of Michigan, Ann Arbor, in 1916. He served with U.S. national guard in the Mexican expedition of 1916 and s an infantry officer with the American expeditionary forces World War I, receiving the silver star. After World War I he was admitted to the Michigan state bar (1919) and practised in his native city of Saginaw. From 1923 1927 he was prosecuting attorney for Saginaw county and m 1927 to 1928 assistant attorney general of Michigan; in 28 he became attorney general of the state, serving until 30. A Republican, he was elected governor of Michigan in 30 for the term 1931–33 but was defeated for re-election 1932.

On April 6, 1954, Brucker was nominated general counsel of federal department of defense, and his appointment was rmed April 19. When Robert T. Stevens resigned as secre- y of the army, Pres. Dwight D. Eisenhower on June 22, 1955, nominated Brucker to succeed him in that office.

unei: see BRITISH BORNEO.

ddhism: see RELIGION.

udget, National. United States.—In a report dated Aug. 25, 1955, the bureau of the budget iewed the budget of the United States for the fiscal year end- June 30, 1956. The report presented revisions of the original al 1956 estimates contained in the Jan. 1955 budget docu- nt, together with actual expenditures and receipts data (in- ad of estimates) for the fiscal year 1955. The revised budget imates for 1956 were based on the revenue and appropriation s enacted by the congress in the session which adjourned g. 2, 1955.

Budget expenditures for fiscal year 1956 were estimated at \$18,800,000,000, as compared with \$64,500,000,000 in the previ- y year. Budget receipts were estimated at \$62,100,000,000 for

fiscal 1956—an increase of \$1,800,000,000 over 1955 “as a re- sult of the higher levels of income and profits.”

The budget deficit for fiscal year 1956 was placed at \$1,700,- 000,000. This was the lowest deficit in five fiscal years and compared with \$9,400,000,000 in 1953, \$3,100,000,000 in 1954 and \$4,200,000,000 in 1955. “Barring basic change in the inter- national situation,” the budget review noted, “the anticipated combination of reduced government expenditures and of rising revenues resulting from widely shared increasing prosperity should bring a balanced budget into sight within the year.”

The budget deficit of \$1,700,000,000 for fiscal 1956 was \$700,- 000,000 less than the estimate for 1956 which had been pre- sented in the January budget document. The reduction from the January forecast was attributed to the net effect of upward re- visions of \$2,100,000,000 in receipts (primarily because of “in- creasing levels of personal income and corporate profits”) and \$1,400,000,000 in expenditures (mostly for farm price supports, an unusually difficult item to estimate).

The budget report classified expenditures in three broad cate- gories. Outlays for the four major national security programs— military functions of the department of defense, foreign mili- tary assistance, Atomic Energy commission and stockpiling of strategic and military materials—accounted for \$38,700,000,000, or 61% of estimated total budget expenditures in 1956. Ex- penditures for these programs had risen from \$13,000,000,000, or 32% of the total budget, in fiscal year 1950, the last full year before the outbreak of aggression in Korea, to a peak of \$50,- 300,000,000, or 68% of the total, in 1953. Outlays in 1955 were \$40,400,000,000.

Expenditures for major programs termed “relatively uncon- trollable through the budget process” were estimated for fiscal

Table I.—Summary of Budget Receipts and Expenditures, United States
Fiscal Years 1954, 1955 and 1956

Description	1954 actual	1955 actual	1956 estimate
Budget receipts:			
Individual income taxes . . .	\$32,383,000,000	\$31,649,000,000	\$32,800,000,000
Corporation income and ex- cess profits taxes	21,523,000,000	18,265,000,000	19,200,000,000
Excise taxes	10,014,000,000	9,194,000,000	9,340,000,000
Employment taxes	5,425,000,000	6,220,000,000	7,185,000,000
Estate and gift taxes	945,000,000	936,000,000	975,000,000
Customs	562,000,000	606,000,000	640,000,000
Miscellaneous receipts	2,320,000,000	2,498,000,000	2,360,000,000
Subtotal	73,173,000,000	69,368,000,000	72,500,000,000
Deduct:			
Transfer to federal old-age and survivors insurance trust fund	4,537,000,000	5,040,000,000	6,275,000,000
Transfer to railroad retire- ment trust fund	603,000,000	600,000,000	625,000,000
Refunds of receipts	3,377,000,000	3,426,000,000	3,500,000,000
Total budget receipts . . .	\$64,655,000,000	\$60,303,000,000	\$62,100,000,000
Budget expenditures (net):			
Major national security . . .	\$46,510,000,000	\$40,415,000,000	\$38,750,000,000
International affairs and finance	1,732,000,000	2,184,000,000	2,121,000,000
Veterans' services and benefits	4,256,000,000	4,456,000,000	4,839,000,000
Welfare, health and education	2,248,000,000	2,273,000,000	2,425,000,000
Agriculture and agricultural resources	2,557,000,000	4,375,000,000	3,380,000,000
Natural resources	1,213,000,000	1,075,000,000	1,023,000,000
Commerce and manpower . .	1,577,000,000	2,095,000,000	2,760,000,000
General government	1,209,000,000	1,164,000,000	1,667,000,000
Interest	6,470,000,000	6,457,000,000	6,765,000,000
Reserve for contingencies . .	—	—	100,000,000
Total budget expenditures .	\$67,772,000,000	\$64,494,000,000	\$63,832,000,000
Budget deficit	\$3,117,000,000	\$4,192,000,000	\$1,732,000,000

1956 at \$16,600,000,000, or 26% of the total—up from 20% in 1953. These expenditures were \$200,000,000 more than the amount spent for such programs in fiscal year 1955. Increases totalling \$1,300,000,000 were anticipated for veterans' benefits; interest on the public debt; grants to the states for public assist- ance, unemployment compensation administration and high- ways; the government's contribution to the civil service retire- ment fund; and a few other items. But net expenditures re-

quired for farm price supports were estimated to decline by \$1,100,000,000 from their abnormally high 1955 level.

The remainder of the 1956 budget amounted to \$8,500,000,000, or 13%. The 1956 total for this category was estimated at \$800,000,000 more than in 1955 but \$600,000,000 less than in 1953. The 1955-56 increase reflected mainly the fact that net expenditures in 1955 had been reduced by the sale of government-owned synthetic rubber plants. The increase also stemmed from an expected rise in net expenditures for public housing programs, a larger postal deficit, and the pay raise for federal employees enacted in June 1955.

Major National Security.—Of the \$38,750,000,000 total of national security expenditures estimated for fiscal year 1956, \$34,000,000,000, or 88%, was allocated for military functions of the department of defense. This was \$1,500,000,000 less than in 1955 and \$6,300,000,000 less than in 1954. It was reported in the budget review that, despite these substantial reductions in dollar outlays, the nation's military forces would be stronger and more effective in 1956 than ever before in peacetime history. This was attributed to improved planning, better balance of forces and introduction of new weapons and techniques.

Expenditures for military functions of the Mutual Security program were scheduled at \$2,150,000,000 for fiscal 1956, or \$62,000,000 less than in the year before. Inclusive of the backlog of equipment items paid for in prior years, however, deliveries to friendly nations under the program were expected to be about the same as in 1955.

Atomic Energy commission outlays for 1956 were placed at \$1,900,000,000 in the budget report. These would be the highest in history, and \$44,000,000 above 1955.

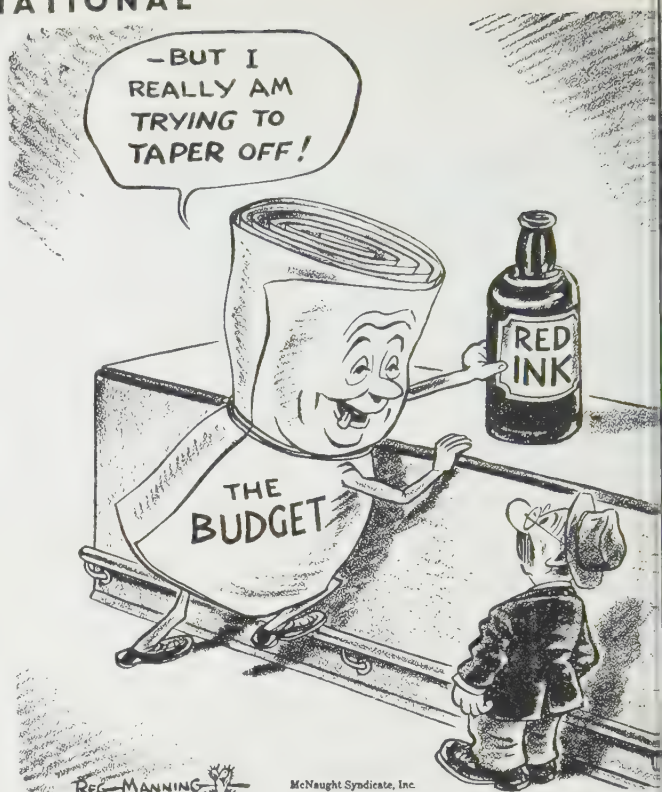
Expenditures for the stockpiling of strategic materials in 1956 were estimated at \$700,000,000, or about \$100,000,000 less than was spent in 1955. The reduction was attributed mainly to diversions from stockpile contracts to satisfy increased private demand for materials. It did not reflect any change in procurement toward long-term objectives.

International Affairs and Finance.—Budget expenditures for international programs of the government in fiscal 1956 were estimated at \$2,121,000,000, down \$63,000,000 from 1955. The largest decrease in this category was for the economic and technical portion of the Mutual Security program, for which scheduled outlays would be reduced to \$1,750,000,000 as compared with \$1,902,000,000 in fiscal 1955. Assistance to western Europe would show a continued reduction while 1956 expenditures for the less developed areas of the world were estimated at about their 1955 levels.

Veterans' Services and Benefits.—The revised budget for fiscal year 1956 placed expenditures for veterans' programs at \$4,839,000,000. The increase of \$383,000,000 over 1955 was earmarked chiefly for disability compensation and pensions, readjustment benefits (covering principally education and training and unemployment compensation) and hospital and medical programs. More veterans were expected to become eligible for these various types of benefits. In addition, increased benefit rates for disability compensation and pensions were effective during only part of fiscal year 1955.

Welfare, Health and Education.—Expenditures for programs covering welfare, health and education were estimated at \$2,425,000,000 for 1956, or \$152,000,000 more than in 1955. Increases occurred chiefly in three types of programs—health, including medical research and the new program for polio prevention; public assistance grants to the states, which were estimated at \$1,464,000,000 for 1956; and grants for the construction of hospitals and other health facilities.

Agriculture and Agricultural Resources.—Expenditures for operating agricultural programs of the government, after rising



"IT AIN'T EASY—" a 1955 cartoon by Manning of the McNaught Syndicate

from \$2,600,000,000 in 1954 to \$4,400,000,000 in 1955, were estimated at \$3,380,000,000 for fiscal year 1956. These movements were dominated by price support outlays. At \$3,300,000,000, such outlays were at a record high in 1955 but were estimated to drop to \$2,200,000,000 in 1956. This expected reduction in net budgetary expenditures was attributed mainly to somewhat lower volume of price support loans and purchases and to an increase in receipts of the Commodity Credit Corporation from sales of commodities out of inventory.

Expenditures for agricultural programs other than price supports were estimated to rise by \$121,000,000. The largest increase was for removing surplus perishable commodities from the market and distributing them to schools and charitable institutions.

Natural Resources.—The government's programs to conserve and develop natural resources were estimated to require expenditures of \$1,023,000,000 in fiscal year 1956 as compared with \$1,075,000,000 in the previous year. Net expenditures of the Tennessee Valley authority were expected to drop from \$17,000,000 to \$42,000,000 because of declining outlays for construction and an increase in operating receipts from the sale of power. However, moderate increases were scheduled for flood control, reclamation and multiple-purpose power projects of the corps of engineers and the bureau of reclamation, as well as for most other natural resources programs.

Commerce and Manpower.—Net expenditures for administering the government's commerce and manpower programs in 1956 were placed at \$2,760,000,000—\$665,000,000 more than actual outlays in 1955. Net expenditures in 1955 had been lowered about \$400,000,000 because of the sale of synthetic rubber plants and inventories. In addition, it was anticipated that outlays for public housing would increase appreciably (because such outlays had been reduced in 1955 by receipts from private refinancing of earlier loans), that federal-aid expenditures for highways would advance to a record high, that the postal deficit would show a further rise and that increases would occur in a number of other items comprising the varied commerce

Table II.—Government Receipts and Expenditures—Great Britain
(£ millions)

Receipts	Exchequer Receipts, 1954-55	Estimate, 1955-56	Expenditures	Exchequer Issues, 1954-55	Estimate, 1955-56
Income tax	1,893	1,877	Debt service	606	636
Corporation tax	135	136	Payments to North Ireland exchequer	50	53
Excise duties	188	185	Other	9	10
Stamp duties	75	74	Total consolidated fund services	665	699
Income tax and excess profits tax	249	205	Supply services:		
Local contributions and other inland revenue duties	1	1	Defense	1,436	1,494
Total inland revenue	2,541	2,478	Civil	2,158	2,315
Customs	1,100	1,132	Customs and excise, inland revenue and		
Excise	772	796	balance of post office votes	46	53
Total customs and excise	1,872	1,928	Total supply services	3,640	3,862
Motor vehicle duties	79	80	Total ordinary expenditure	4,305	4,562
Receipts from taxes	4,492	4,486	Surplus	433	148
Least receiving licences	22	25	Total	4,738	4,710
Receipts from sundry loans	23	24			
Grants-in-aid	201	175			
Total ordinary revenue	4,738	4,710			

Total will not necessarily add to total because of rounding.

power category. On the other hand, net budget expenditures of the Federal National Mortgage association were expected to show a decline of \$459,000,000. This stemmed from estimated receipts of \$220,000,000 in 1956 as against net expenditures of \$239,000,000 in 1955.

General Government.—Expenditures for general government services and activities in fiscal 1956 were included in the budget at \$1,667,000,000, about \$500,000,000 more than in 1955. The increase was accounted for in large measure by the resumption in 1956, after a two-year suspension, of the government's payment to the Civil Service Retirement and Disability fund.

Interest.—Interest payments by the federal government were expected to rise by \$308,000,000 to a total of \$6,765,000,000 in fiscal year 1956. This increase reflected both a growth in the public debt and somewhat higher interest rates.

Great Britain.—The 1955-56 budget of Great Britain presented to the house of commons by Chancellor of the Exchequer A. Butler in April 1955 showed total receipts of £4,710,000,000, about the same as in the preceding fiscal year. (See Table II.) The budget allowed for reduction in taxation (£134,250,000), chiefly through lower individual income tax rates and higher personal allowances, or exemptions.

Total budget expenditures were expected to increase from £4,050,000,000 in fiscal 1954-55 to £4,562,000,000 in the fiscal 1955-56 period. Although Great Britain's defense costs—accounting for about one-third of total ordinary expenditures—were scheduled to advance by almost £60,000,000, the bulk of the anticipated increase in governmental outlays was civilian in character.

Despite the increase in expenditures relative to stable receipts, the 1955-56 budget provided for a surplus of £148,000,000. This was considerably smaller than the £433,000,000 surplus of ordinary receipts over ordinary expenditures in the preceding year.

In late Oct. 1955 Butler introduced a supplementary budget designed to counteract inflation. It called for both increases in taxes and reductions in governmental expenditures.

The budget proposals included a 20% rise in the purchase tax on consumer goods, as well as an increase from 22½% to 27½% in the tax on distributed business profits. Together, these measures were estimated to yield about £110,000,000 on a full year's basis. Increases in postal rates and in charges for telegraph and telephone services were expected to yield an additional £25,000,000 a year.

On the expenditure side of the budget, savings would result from a reduction in housing subsidies and from prospective economies in other public sectors, including the nationalized industries. The amounts by which government spending (as shown in Table II) would be reduced were not specified, but Butler

indicated that they would be substantial. (See also DEBT, NATIONAL; INCOME AND PRODUCT, U.S.; TAXATION; UNITED STATES.) (C. F. Sz.)

Buhl Foundation: see SOCIETIES AND ASSOCIATIONS, U.S.

Building and Construction Industry. During 1955 the building and construction industry continued to play its dominant role in the economy of the United States. New high points in construction activity were reached each month during the year and by September the aggregate value of work put in place amounted to \$31,000,000,000, 12% above the total for the nine-month period of the previous year. On the basis of the experience during the first three quarters of the year, government experts estimated that 1955 would break all previous records with the volume of construction approximating \$42,000,000,000, an amount 11% above the previous high point set in 1954 (see Table I).

Expenditures for residential construction (excluding farms) comprised almost two-fifths of the total. New dwelling units were started at the rate of 1,300,000 a year, a level second only to that reached in 1950. The dollar volume of residential building in the first nine months of 1955 was 24% higher than the volume of the January to September period of previous year, the rise being mainly attributable to the construction of more and larger houses.

The most unexpected development of the year was the reversal of the two-year downward trend in private industrial building. From a trough in the summer of 1954, new investment in industrial plants moved sharply upward during the last half of the year, held level for the first five months of 1955 and then jumped from an outlay of \$183,000,000 in May to \$210,000,000 four months later. Industrial expenditures, Jan.-Sept. 1955, were 15% higher than the total for the same period of the previous year, and the September total was 30% higher than the comparable month of 1954.

The construction of designed shopping centres in the more recently developed suburban areas proceeded at an accelerated rate. The centres were of all types—ranging from small groups of stores clustered around a food supermarket to huge developments containing a large department store and a score of smaller retail and service establishments. During the first nine months of 1955, the total outlay for the construction of new stores, restaurants and garages amounted to the staggering total of \$1,370,000,000, 48% above the amount for the same period of 1954.

Despite the boom some sections of the construction economy lost ground during 1955. Outlays for farm and railroad construction were each down 10% from the previous year. Expenditures



RESCUE WORKERS searching the debris for bodies after a section of a new sports amphitheatre under construction in New York city collapsed May 9, 1955. The concrete floor fell 22 ft. to the ground level

for public housing and for public industrial facilities dropped sharply, in part compensated by increases for military purposes and for schools. But in spite of the rise in educational construction, the U.S. office of education estimated that the nation faced a deficit of 250,000 schoolrooms at the opening of the fall semester, and unless the rate of school construction changed drastically, it appeared that the shortage would not be reduced much below 176,000 rooms by 1960. In all, however, despite some serious problems, the construction industry was in an exuberant state in 1955 and the outlook for 1956 pointed to the establishment of new records.

Construction Costs.—The protracted building boom had a classic influence on the supply of building materials and on construction costs. During the 12-month period ending July 1955, the department of commerce composite index moved consistently upward from 122 to 126 (1947-49=100), a gain of 3%. The major portion of the rise came in the late spring and early summer months when the unusually high building volume was augmented by the characteristic seasonal upturn. There was little variation in the

change in costs among the different types of construction, with commercial and factory buildings up slightly more and residences, hotels and office building up slightly less than the average increase.

Wholesale prices of building material, which had fluctuated within a very narrow range from 1951, began to move steadily upward in mid-1954. By the summer of 1955 the bureau of labor statistics price index had risen from 120.5 to 125.7 (1947-49=100), an all-time high. Commodities mainly responsible for the advance were lumber, up 6%; structural shapes, up 8%; clay products, up 8%; metal sash and asphalt roofing, each up 13%.

It was a banner year for the output of most major building materials. New postwar records were registered in the manufacture of lumber, wood, asphalt, iron, steel, portland cement and clay construction products. But despite the high levels of production, the unusual demands levied by the construction industry caused material shortages to appear in some areas of the nation, particularly in such commodities as portland cement and certain metal items. Unfilled orders for structural steel which mounted steadily from the first of the year, totalled 1,706,000 tons by July 1, 1955. In the first half of the year new orders were one-third above orders in the same period of the previous year. More critical than steel was the copper supply which received two weakening blows in the course of the year—a protracted strike which cost 5% of the annual copper consumption and hurricane floods which destroyed or delayed production in one-third of the nation's brass mills in the late summer and early fall. By the end of the year, materials supply conditions were more or less normal, but experts were predicting that the pressure on supply would cause prices to rise further during the remainder of the year and in early 1956.

Employment and Earnings.—Building and construction continued to provide an important source of employment, with more than 2,600,000 workers engaged in the industry at mid-year. Special trade contractors (plumbing, heating, electrical work, etc.) accounted for approximately half of the workers and general contractors one-third. The remainder were employed on streets, highways and other nonbuilding projects.

Table 1.—New Construction Activity, Continental United States*

Type of construction	1955		1954	First 9 months		Percent change		
	Sept.	Aug.	Sept.	1955	1954	Sept. 1955 from Aug. 1955	Sept. 1954 from Sept. 1953	9 mo. 1955 from 9 mo. 1954
Total new construction	4,001	3,985	3,674	31,059	27,653	†	+9	+
Private, total	2,758	2,761	2,460	22,046	18,727	†	+12	+
Residential (excluding farm)	1,467	1,484	1,327	11,973	9,624	-1	+11	+
New dwelling units	1,325	1,335	1,195	10,795	8,550	-1	+11	+
Additions and alterations	111	117	107	938	846	-5	+4	+
Nonhousekeeping	31	32	25	240	228	-3	+24	+
Nonresidential building	717	688	558	5,507	4,580	+4	+28	+
Industrial	210	203	162	1,724	1,498	+3	+30	+
Warehouses, offices and loft buildings	101	99	88	805	692	+2	+15	+
Stores, restaurants and garages	207	190	122	1,370	923	+9	+70	+
Other nonresidential building	199	196	186	1,608	1,467	+2	+7	+
Religious	70	68	58	539	418	+2	+21	+
Educational	44	43	50	366	387	-2	-12	+
Hospital and institutional	31	31	30	265	250	0	+3	+
Social and recreational	22	23	22	181	166	-4	0	+
Miscellaneous	32	31	26	257	246	+3	+23	+
Farm construction	137	150	153	1,111	1,235	-9	-10	+
Public utility	425	425	410	3,326	3,203	0	+4	+
Railroad	24	26	28	230	259	-8	-14	+
Telephone and telegraph	60	60	57	515	493	0	+5	+
Other public utility	341	339	325	2,581	2,451	+1	+5	+
All other private	12	14	12	129	85	-14	0	+
Public, total	1,243	1,224	1,214	9,013	8,926	+2	+2	+
Residential	21	21	24	196	269	0	-13	+
Nonresidential building	395	397	410	3,339	3,534	-1	-4	+
Industrial	61	60	106	640	1,195	+2	-42	+
Educational	231	230	197	1,871	1,575	†	+17	+
Hospital and institutional	29	32	33	265	281	-9	-12	+
Other nonresidential building	74	75	74	563	483	-1	0	+
Military facilities	128	128	98	949	746	0	+31	+
Highway	495	470	492	2,925	2,827	+5	+1	+
Sewer and water	102	103	91	823	734	-1	+12	+
Miscellaneous public service enterprises	33	32	23	194	168	+3	+43	+
Conservation and development	55	56	63	460	533	-2	-13	+
All other public	14	17	13	127	115	-18	+8	+

*Joint estimates of the Department of Commerce and the Department of Labor.
†Change of less than 0.5%.

The work week in 1955 was virtually the same as in the previous year, ranging from 35 hours in the slow winter months to 40 hours at the seasonal peak. In the late months of 1954 average hourly earnings rose from \$2.51 to \$2.59 and remained at approximately that level during the first half of 1955. This increase brought the building workers' wages to the highest point in record, exceeding \$97 per week in June 1955.

Increase in the wage scale for the organized sections of the industry served to boost the general levels. Union minimum rates rose in most cities and average hourly rates increased for all crafts (see Table II). Carpenters received the greatest rise, 12 cents per hour, while rates in other crafts went up 7 to 10 cents per hour. Proportionally, the increases ranged from 2% for bricklayers and plumbers to 5% for building labourers. At midyear organized building and construction workers were among the highest paid workers in the United States. Bricklayers were receiving \$3.47 per hour on the average, and semi-skilled labour was earning in excess of \$2.00 per hour.

Urban Renewal.—The urban renewal program passed an important milestone in 1955. The \$500,000,000 of capital grants authorized by the Housing act of 1949 was completely committed, and further commitments were made from the second \$500,000,000 approved by congress. The initial authorization was reserved for 316 projects in more than 200 communities. Grant contracts totalling \$180,000,000, covering 100 projects in 67 areas, had been authorized by the fall of 1955. Under the law the federal government might defray as much as two-thirds of project costs through direct capital subsidy.

One of the measures for preventing the further growth of slums and slums was the establishment of a federal program of attaching grants to states and metropolitan areas to enable smaller communities to do the planning necessary to arrest the spread of deterioration. The purpose of the program was to stimulate guidance and control of urban development in the fringe areas around major cities and in smaller communities where effective planning was otherwise not likely to be undertaken. Among the projects that had been financed were a regional study by the Rhode Island Development council to determine ways of reducing storm and hurricane damage to urban communities, preparation or revision of the general plans for the Atlanta, Ga., Little Rock, Ark., and Detroit, Mich., metropolitan areas and special planning studies in a number of small municipalities in the southern states. In the past there had been a tendency for the bulk of federal redevelopment aid to flow to the larger urban centres—one-third of the capital grants had gone to cities of more than 1,000,000 and three-fifths to cities of more than 500,000 population.

Other types of federal grants were made available for demonstration projects that would be useful in guiding citizens and local officials in other cities. The first of these "section 314" awards went to St. Louis, Mo., to help the city develop acceptable standards for measuring the adequacy of commercial and industrial structures comparable to those promulgated in the field of housing by the American Public Health association. In New Orleans, La., a demonstration project was to study all phases of the city's housing program ranging from the effects of code enforcement to the social and economic results of housing

and neighbourhood improvement. (See also ARCHITECTURE; BUSINESS REVIEW; HOUSING; TOWN AND REGIONAL PLANNING.) (CH. RA.)

Bulganin, Nikolai Alexandrovich (1895–). Soviet politician.

was born at Nijni-Novgorod (now Gorky), June 11. He joined the Communist party in 1917 and from 1922 held executive posts in the Higher Council of National Economy. In 1927 he was appointed director of the Moscow power station. From Jan. 1931 he was secretary of the Moscow city committee or "mayor" of the Soviet capital. In 1937 he became chairman of the council of people's commissars of the R.S.F.S.R. and during 1938–41 he was also deputy chairman of the council of people's commissars of the U.S.S.R. and head of the state bank. In 1934 the 17th congress of the All-Union Communist party elected him a member of the central committee, but he was appointed a substitute member of the Politburo only in 1946 and a full member in Feb. 1948. He first donned military uniform in Oct. 1941 as political commissar to G. K. Zhukov's army group, whose task was to defend Moscow. In 1944 his mission was to organize the so-called Polish Committee of National Liberation which he brought to Lublin as the Polish provisional government. On Dec. 22, 1944, now a full general, he succeeded Marshal K. E. Voroshilov as deputy commissar of the Soviet armed forces. He was appointed a deputy chairman of the Soviet council of ministers on March 19, 1946, and on March 3, 1947, as a marshal of the Soviet Union, he succeeded J. V. Stalin as minister of the armed forces. On March 24, 1949, he was relieved of the latter duties, becoming the chief inspector of the Soviet satellite armies. On March 6, 1953, after Stalin's death, he was appointed one of the four deputy chairmen of the council of ministers and minister of the armed forces. When G. M. Malenkov resigned as chairman of the Soviet council of ministers on Feb. 8, 1955, Bulganin succeeded him. In this capacity he presided over the signature of the treaty of mutual assistance between the U.S.S.R. and seven European satellites (Warsaw, May 14); from May 26 to June 2, together with N. S. Khrushchev and four other Soviet delegates, he paid a good-will visit to Yugoslavia; on July 18 he was in Geneva taking part in the conference of the heads of the Big Four Powers; in November and December, with Khrushchev, he made a good-will tour of India, Burma and Afghanistan.

Bulgaria. A people's republic in the eastern part of the Balkan peninsula, Bulgaria is bounded north by Rumania, west by Yugoslavia, south by Greece and east by Turkey and the Black sea. Area 42,796 sq.mi. Pop.: (1946 census) 7,022,206; (1953 est.) 7,500,000. Language (1947 est.): Bulgarian 88%; Turkish 9.8%. Religion (1947 est.): Greek Orthodox 84%; Moslem 11.5% (of which one-sixth Pomaks, or Moslem Bulgars, remainder Turks); Roman Catholic 0.9%; Gregorian Armenian 0.4%; Jewish 0.3%; Protestant 0.2%. Chief towns (pop., 1946 census): Sofia (cap.) 434,888 (1953 est., 600,000); Plovdiv 125,440 (1953 est., 150,000); Stalin, formerly Varna 77,792; Russe 53,420; Burgas 43,684. First secretary of the Bulgarian Communist party in 1955, Todor Zhivkov; chairman of the presidium of the national assembly, Gen. Georgi Damianov; chairman of the council of ministers, Vlko Chervenkov.

History.—There were no major political upheavals in Bulgaria during 1955. The communist rulers gave every indication of wishing to consolidate their regime quietly and win for it a measure of popular support. This desire was manifested notably in the resuscitation of the Fatherland front, the rehabilitation of Agrarian party leaders, the diminution of police terror and a

Table II.—Average Union Wage Scales for Selected Trades, July 1955

Trade	Low	Rate level		Increase	
		Average	High	July 1954–July 1955	Per cent
Bricklayers	\$2.50	\$3.47	\$3.85	8	2
Carpenters	2.18	3.01	3.55	12	4
Craftsmen	2.60	3.17	3.65	8	3
Electricians	1.75	2.87	3.25	10	4
Fitters	2.25	3.36	3.85	9	3
Mechanics	2.63	3.19	3.50	7	2
Building labourers . . . . .	.90	2.04	2.80	10	5

Source: Bureau of Labor Statistics.

certain improvement in the economic conditions of the peasants and the people as a whole. The country's greatest single problem remained the low level of agricultural production.

One of the main causes of inefficiency was declared to be the excessively bureaucratic and centralized administration of agriculture. An effort to remedy this was made in May when the government decreed that both collective and independent farmers would henceforth be responsible for determining the size and nature of crops to be sown, while the central authorities would decide only the general targets. Despite this deference to local initiative there was no tendency to slacken the pressure for further collectivization of farming.

Notwithstanding the admitted shortages of foodstuffs and consumer goods, price reductions ranging from 10% to 15% on a wide range of goods were announced in April.

In foreign affairs the Bulgarian government continued to follow unquestioningly the lead of the Soviet government. In May it was represented at the conference of communist countries in Warsaw and entered into new political and military agreements with the Soviet Union and the other nations of the Soviet bloc. This involved placing a section of the Bulgarian armed forces at the disposal of a joint military command with headquarters in Moscow. In September it was announced that the total number of men under arms would be reduced by 18,000.

In June the Soviet leaders N. A. Bulganin and N. S. Khrushchev visited Sofia, apparently to explain the reasons for their change of policy toward Marshal Tito. Relations, both political and economic, with Yugoslavia were noticeably improved in the latter half of the year. (See also EASTERN EUROPEAN ECONOMIC PLANNING.) (D. Fd.)

Education.—Schools (1953): nursery 5,919, pupils 264,892; (1950) primary 6,112, pupils 755,628, teachers 18,801; higher primary 2,960, pupils 308,160, teachers 12,636; secondary 218, pupils 112,633, teachers 4,624; (1952) vocational, pupils 67,679; institutions of higher education 20, students 31,512, teaching staff about 2,000.

Agriculture.—No reliable data published since 1949. Main crops (metric tons, 1948-50): wheat 1,503,000; maize 890,000; barley 249,000; rye 170,000; oats 97,000; potatoes (1934-38 average) 109,000; tobacco 20,000; sugar, raw 58,000. Wine production (1949) 426,000 hl. Live-stock (1953 est.): sheep and goats 8,400,000; cattle 1,700,000; pigs 2,074,000; horses 460,000. Wool production, greasy basis (1951) 12,700 tons.

Industry.—Employment outside agriculture, manual (1953): 550,000. Production (metric tons, 1954 est.): coal 380,000; lignite 8,400,000; electricity 1,800,000,000 kw.hr.; cement (1952) 674,000; nitrogen fertilizers 70,000; sulphuric acid (1952) 20,800; woollen fabrics (1952) 8,700,000 m.; cotton fabrics (1952) 110,000,000 m.

Finance.—Monetary unit: lev (pl. leva) with an official exchange rate, high and fictitious, of 6.80 leva to the U.S. dollar. Budget (1954 est.): revenue 18,200,000,000 leva; expenditure 17,000,000,000 leva, including 9,500,000,000 leva invested in the national economy.

Foreign Trade.—(1950) Imports U.S. \$178,000,000; exports U.S. \$133,000,000. Main sources of imports (1950): U.S.S.R. 67.4%; Czechoslovakia, Hungary, Poland and Rumania 24.1%. Main destinations of exports: U.S.S.R. 45.1%; four other eastern European countries 30.8%. In 1953, 57% of Bulgarian foreign trade was with the U.S.S.R. and 30% with the other countries of the Soviet bloc. Bulgarian trade with 17 western European countries (1953): exports 24.9%; imports 23.4%.

Transport and Communications.—Roads (1952): 13,870 mi. Licensed motor vehicles (Dec. 1950): cars 6,000, commercial 5,000. Railways (1952): 2,231 mi. Telephones (1954 est.): 61,000; radio receiving sets (1952) about 300,000, including 78,000 community loudspeakers.

Burke, Arleigh Albert (1901-), U.S. naval officer, was born Oct. 19 at Boulder, Colo., and was graduated from the U.S. naval academy at Annapolis, Md., in 1923, later taking an M.S. degree from the University of Michigan, Ann Arbor. As an ensign he served aboard the U.S. battleship "Arizona." Placed in command of a destroyer division and later a destroyer squadron in 1943, he earned the nickname of "31-Knot Burke" because of his swift and hard-hitting destroyer attacks on the Japanese fleet and merchant marine in the Pacific during World War II. After the war he was leader of the so-called "admirals' revolt" against unification of the U.S. armed forces; at the same time he op-

posed the air force's advocacy of B-36 long-range atomic bombers as the key to U.S. strategic offense and proposed instead the construction of a fleet of supercarriers by the navy. Burke was advanced to the rank of rear admiral in June 1950, serving thereafter in the Korean war. At the time of his appointment on May 25, 1955, by Pres. Dwight D. Eisenhower as chief of naval operations, Burke was commander of the U.S. navy's Atlantic destroyer staff and 93rd on the list of ranking naval line officers. His appointment to succeed Adm. Robert B. Carney was effective Aug. 16, 1955, with the rank of full admiral.

Burma. An independent federal republic on the eastern side of the Bay of Bengal, Burma lies between Pakistan and India on the northwest, Tibet on the north and China, Laos and Thailand (Siam) on the east. The republic comprises Burm proper, the Karen, Shan, Kachin and Kayah states, and the Chin special division. Area: 261,757 sq.mi. Pop.: (1941 census 16,823,798; (1954 est.) 19,242,000. Racially, the peoples of Burma are Mongoloid. Religion: Buddhist (90%). Language: Burmese (66%). Largest indigenous minorities: Karens, Shans, Kachins, Chins, etc. Largest immigrant minorities (1955 est.): Indian 600,000, divided equally between Moslems and Hindus. Chinese 350,000. Chief towns (pop., 1953 preliminary census): Rangoon (cap.) 711,520; Mandalay 182,367; Moulmein 101,720; Bassein 77,382; Henzada 60,666; Pegu 45,941; Akyab 41,589. President of the republic in 1955, Ba U; prime minister, N. U. U. Nu.

History.—Various rebellions and much ordinary dacoity continued during 1955. Papun, the last Karen rebel stronghold in the Thaton area, fell to government troops in March and November a leading Arakan insurgent surrendered in response to an amnesty offer made in October in the hope of restoring order before the general election which was due to be held in April 1956. The remnant Chinese Nationalist forces along the eastern frontier were quiescent during the year and following discussions between Burmese and Thai officials at Chiengmai in February, the Thais undertook to give Burma facilities to assist in dealing with them. The army was offered arms and equipment for a brigade as a gift by Marshal Tito of Yugoslavia during his visit in January, and these arms began to arrive later in the year.

There were a number of government changes during the year. In May a new ministry of national solidarity was formed with a Kachin at its head. This and ministerial changes increased the cabinet to 23, of whom 3 were Karens, 2 Kachins and 2 Chins. The social developments on which the government laid great stress continued, but were somewhat inhibited by financial stringency and other difficulties. The minister of co-operative speaking at the first conference of the Union Co-operative council in Rangoon on Sept. 20, reported on the difficulties encountered during the first four years of the five-year plan for co-operatives. The minister of land nationalization, on the other hand, informed the chamber of deputies in September that since 1953, 586,290 ac. of land had been distributed under the Land Nationalization act in 690 villages in 29 districts with satisfactory results.

There was continued difficulty in selling rice despite heavy falls in price. Foreign exchange reserves fell alarmingly despite measures taken on March 7 to restrict imports. The decline in reserves was checked in August and on Sept. 20 it was announced that India would make Burma a loan of 200,000,000 rupees which it was hoped would tide the country over its immediate difficulties. Efforts were made by the government to expand production of agricultural produce such as peanuts, and to restore basic Burmese export industries such as teak. It was announced in October that a British firm had been engaged to open up the Kalewa coal field which it was hoped would yield



PRIME MINISTER NU of Burma inspecting a British royal air force honour guard in London June 16, 1955. His world tour also included visits to Yugoslavia and the U.S.

10,000 tons of coal a year and a survey was begun to see if this could be brought down the Irrawaddy by boat. The budget, which was presented on Sept. 1, provided for a cut of more than one-fourth in expenditure on capital items. To offset the shortage of capital for development the government sought a loan from the International Bank for Reconstruction and Development and on June 10 issued a policy statement welcoming foreign investment in all fields except major public utilities and the manufacture of munitions, and offering safeguards against nationalization.

The government went to great lengths to emphasize its new position in international affairs. The prime minister visited a large number of countries, including China, the Soviet Union, Poland, the United States, Yugoslavia and Israel, and attended an Asian-African conference at Bandung, Indon. Diplomatic relations were established with the German Federal Republic and Czechoslovakia and there was an exchange of consulates general in Kunming and Lashio, with China. Trade agreements, mostly designed to dispose of Burma's rice surplus, were made with countries of every political complexion and on Nov. 8 an agreement was signed to permit the operation of a Burmese air line to Kunming and Canton and a Chinese line to Mandalay and Rangoon. (A. S. B. O.)

Education.—Schools (1954): state primary 6,907, pupils 755,900, teachers (1952) 10,815; secondary and middle about 477 (416 in 1952), pupils 101,300, teachers (1952) 4,612; pupils in private schools 82,200. Teachers in training (1954) 1,027. University of Rangoon and university college of Mandalay (1955): students 9,000.

Finance and Banking.—Monetary unit: kyat, with an exchange rate of 13 to the pound sterling and 4.76 to the U.S. dollar. Budget (1955): revenue 1,079,600,000 kyats; expenditure 1,348,500,000 kyats. Currency circulation (1954) 574,800,000 kyats. Deposit money 417,300,000 kyats. Gold and foreign exchange holdings (1954): U.S. \$142,400,000.

Foreign Trade.—(1954) Imports 946,200,000 kyats; exports 1,061,700,000 kyats. Main sources of imports (1953): India 27%; U.K. 26%; Japan and other sterling area 11%; continental European Payments Union countries 12%; Japan 17%; U.S. and Canada 4%. Main destinations of exports (1953): India 17%; Japan 14%; Ceylon 13%; Indonesia 12%; U.K. 9%; other sterling area 23%. Chief exports (1954): rice 2%; teak 2%; cotton 2%.

Transport and Communications.—Roads (1949): 19,955 km. Motor vehicles in use (1953): cars 12,400; commercial vehicles 9,800. Railways (1954) 2,875 km.; passenger-km. (1953) 605,000,000; freight, ton-km. (1954) 524,900,000. Telephones (Jan. 1954): 7,136. Radio sets (1952): 100,000.

Agriculture.—Main crops (metric tons, 1954): rice 5,908,000; sesame 100,000; peanuts 163,000; cottonseed 35,000; cotton, lint 18,000; sugar, value (1953) 23,000; dry beans (1953) 115,000. Livestock (June 1953, excluding Putao, Chin hills, Shan states and Karenni), cattle 13,000, sheep 30,000, pigs 467,000, buffaloes (Sept. 1953) 793,000, goats (1950) 172,000.

Industry.—Raw materials (metric tons, 1954): natural rubber (net exports) 10,100; tin concentrates, metal content 960; crude oil 176,200; zinc 9,700; tungsten 712; silver 18; salt 63,400.

Buses: see MOTOR TRANSPORTATION; URBAN TRANSPORTATION, U.S.

Business Review. The economy of the United States in 1955 was characterized by high-level activity, marked and sustained recovery from the levelling off in activity which occurred during the last two quarters of 1953 and the first three quarters of 1954, and the establishment of new high peaks in many sectors of the economy. In general, by the end of the third quarter of 1954, the economy had adjusted to the underlying changes in the structure of demand incident to the end, in mid-1953, of the post-Korean rise in defense spending, and by the end of the fourth quarter much of the ground lost during the five quarters of recession had been recovered.

During the first three quarters of 1955, in spite of the continued drop in federal government expenditures, there was rapid expansion in the economy along a broad front sparked by a diversified rise in civilian purchases which provided the expansionary force to accelerate the upward trend.

The upturn in business activity in the fourth quarter of 1954 stemmed, in part, from the continued strength in certain sectors of the economy—construction, finance, utilities and service—not much affected by the demand shift, and was accelerated as other industries which had held stable or dipped only moderately resumed their postwar expansion, and as the durable-goods industries along with the related mining and transportation industries, hardest hit by the demand shift, began to feel the stimulus of the accelerated expansion in the automobile industry and increased consumer demand for other durable commodities. By the end of the first quarter of 1955, nondurable-goods production had recovered all the ground lost during the recession, and it reached a new high peak in the second quarter. Durable-goods production expanded rapidly during the first two quarters of the year and by the end of the third quarter had advanced to a new high postwar peak.

Although employment declined from Sept. 1954 through Feb. 1955, labour income continued to rise, reflecting the increase in average hourly earnings and the lengthening of the work week in the manufacturing industries by approximately one hour. Both total personal income and disposable personal income after taxes, of which labour income is the main component, increased during the fourth quarter of 1954, and after a slight drop in Jan. 1955 expanded rapidly through July to establish a new high peak from which there was only a minor decline in August.

The upward trend in personal consumption expenditures was uninterrupted during the period of readjustment and was accelerated during the first three quarters of the year. The expansion in disposable personal income and the propensity of consumers to spend, combined with the rapid increase in gross private domestic investment, served to cushion the effects of demand readjustments in the sectors of the economy affected by the substantial drop in government expenditures for security. Consumer demand was further augmented by the rapid expansion in consumer credit, especially instalment credit which climbed to a new high peak of more than \$26,000,000,000 in August, about one-half of which was automobile finance paper.

Production of consumer goods tended to keep pace with expanding consumer demand with the result that retail prices remained substantially unchanged during the first three quarters of the year at levels only slightly below the peaks established following the rapid post-Korean war increase in 1950. Wholesale prices of commodities other than farm and food products during the first two quarters of the year were somewhat above the level of 1954, and a rapid rise during the third quarter carried them above the previous peak in the first quarter of 1951. Prices

of farm products at wholesale rose during the first four months of the year from the Dec. 1954 low, but after April the decline which had been in process since early 1951 was resumed and a new low was reached in Aug. 1955 from which there was only a slight upturn in September.

National Product.—The gross national product, the total output of goods and services, as estimated by the department of commerce, rose in the first quarter of 1955 to an annual rate of \$375,300,000,000, which was \$17,000,000,000 above the first quarter of 1954. During the second quarter of 1955 the annual rate was stepped up to \$384,800,000,000, and in the third quarter it was further increased to an annual rate of \$392,000,000,000, a new all-time high. The previous high annual rate had been \$370,000,000,000 in the second quarter of 1953.

The reversal in the fourth quarter of 1954 in the downward trend in the gross national product which had been in process since the second quarter in 1953 was primarily the result of an expansion in gross private domestic investment and an increase in personal consumption expenditures. Of the \$8,300,000,000 increase in the gross national product in the fourth quarter of 1954 from the third quarter, \$4,800,000,000 represented expansion in private domestic investment and \$3,100,000,000 expansion in personal consumption expenditures. The expansion in both private domestic investment and personal consumption expenditures continued throughout the first three quarters of 1955. In the third quarter there was some slackening in the rate of increase in private domestic investment but the rate of personal consumption expenditures continued to increase. Pri-

vate domestic investment in the third quarter of 1955 at an annual rate of \$60,700,000,000 represented an increase of \$14,800,000,000 from the third quarter of 1954, of \$6,600,000,000 from the first quarter of 1955 and of \$600,000,000 from the second quarter of 1955. Personal consumption expenditures estimated at an annual rate of \$256,500,000,000 in the third quarter of 1955 represented an increase of \$18,600,000,000 from the third quarter of 1954, of \$10,700,000,000 from the first quarter of 1955 and of \$6,000,000,000 from the second quarter of 1955.

The continued increase in the annual rate of gross private domestic investment from the fourth quarter of 1954 through the third quarter of 1955 was primarily the result of expansion in fixed investment although after the fourth quarter of 1954 there was an expansion in business inventories following the liquidation of inventories throughout the four quarters of 1954. Fixed investment in the third quarter of 1955 at an annual rate of \$57,700,000,000 was \$7,000,000,000 above the third quarter of 1954 and \$5,000,000,000 above the first quarter of 1955. The investment in business inventories at an annual rate of \$3,000,000,000 in the third quarter of 1955 was an increase of \$1,500,000,000 from the first quarter of the year although it was a drop of \$1,300,000,000 from the high second-quarter rate of \$4,300,000,000.

During the first quarter of 1955, the annual rate of government expenditures for goods and services was stepped up to \$1,300,000,000 to \$75,800,000,000, but dropped to \$74,900,000,000 during the second quarter and at an estimated \$75,500,000,000 during the third quarter.

Per Cent Changes in Selected Business Indicators, United States

(Oct. 1954—Sept. 1955 From Selected Earlier Periods)

Business or economic indicator	Per cent change				Per cent change from preceding year												Per cent change		
	Oct. 1954—Sept. 1955				Jan. 1955	Feb. 1955	Mar. 1955	Apr. 1955	May 1955	June 1955	July 1955	Aug. 1955	Sept. 1955	Sept. 1955 from:					
	Oct. 1938—Sept. 1939	Oct. 1943—Sept. 1944	Oct. 1953—Sept. 1954	from: Oct. 1954	from Jan. 1954	from Feb. 1954	from Mar. 1954	from Apr. 1954	from May 1954	from June 1954	from July 1954	from Aug. 1954	from Sept. 1954	Jan. 1955	May 1955	July 1955			
General business:																			
Business activity ¹	*	+38.4	+10.5	+7.9	+11.5	+13.1	+13.8	+14.5	+14.1	+17.8	+13.1†	+11.8†	+0.9†	+5.1†	+3.4†	+5.1†			
Bank debits ²	*	+145.9	+9.7	+9.5	+8.0	+8.0	+6.8	+16.9	+11.9	+14.2	+12.0	+14.3	+5.7	+0.9	+3.4	+5.1†			
Commercial failures ³	-27.2	+653.5	+0.8	+8.3	-5.3	-5.8	-7.4	+1.3	-5.3	+0.6	-2.6	+0.4	-12.5	-13.9	-13.9	-13.9			
Personal income:																			
Salaries and wages	+352.4	+77.9	+4.1	+2.0	+2.5	+3.8	+4.8	+5.9	+6.2	+8.0	+7.9	+8.3	+6.4	+2.3	+0.0	+0.0			
Total	+317.2	+83.0	+3.8	+2.5	+2.4	+3.3	+4.4	+5.1	+5.2	+6.3	+6.5	+6.8	+5.2	+2.0	+0.0	+0.0			
Civilian nonagricultural employment ⁴	+56.2	+23.6	+1.9	+0.7	+0.9	+1.0	+1.7	+2.7	+3.4	+4.8	+4.7	+4.1	+3.7	+2.0	+0.0	+0.0			
Unemployment ⁴	-71.4	+280.0	-6.3	+8.4	-7.8	-14.7	-14.5	-24.7	-20.0	-26.2	-31.1	-30.7	-35.8	-13.7	-13.7	-13.7			
Employment and earnings (mfg.)⁵:																			
Number Employed	+62.1	+13.6	+0.4	+3.4	+1.6	+0.1	+2.2	+3.9	+5.3	+6.3	+7.0	+6.5	+7.0	+4.0	+3.5	+3.5			
Pay rolls	+418.6	+42.6	+5.8	+0.8	+3.1	+6.3	+9.1	+11.5	+12.0	+14.5	+14.8	+15.5	+12.7	+6.2	+5.7	+5.7			
Per production worker⁵:																			
Weekly earnings	+212.3	+65.0	+5.4	+4.3	+4.9	+6.2	+6.8	+7.3	+6.4	+7.7	+7.4	+8.4	+5.3	+2.1	+2.1	+2.1			
Hourly earnings	+189.4	+84.1	+3.2	+2.2	+2.8	+3.4	+3.3	+3.3	+3.3	+5.0	+5.0	+5.0	+3.3	+1.6	+1.6	+1.6			
Hours per week	+9.0	-10.4	+2.1	+2.0	+2.0	+2.8	+3.3	+3.8	+3.0	+2.5	+2.3	+3.3	+2.0	+0.5	+0.5	+0.5			
Industrial production⁶:																			
Durable goods	+234.5	+7.5	+7.9	+2.8	+5.8	+9.6	+12.7	+12.5	+14.8	+15.7	+17.0	+16.8	+10.3	+4.6	+4.6	+4.6			
Nondurable goods	+93.4	+22.1	+7.3	+7.1	+6.1	+8.8	+8.7	+8.5	+10.3	+10.5	+9.6	+8.7	+3.3	+1.6	+1.6	+1.6			
Total	+145.0	+6.0	+7.7	+5.6	+6.4	+9.8	+10.6	+10.4	+12.1	+13.0	+13.8	+13.7	+6.8	+2.2	+2.2	+2.2			
Value construction contracts awarded⁶:																			
Residential	+686.7	+2084.9	+33.0	+49.3	+46.3	+48.2	+34.4	+22.5	+32.0	+28.7	+20.6	-5.7	+6.2	-27.5	-27.5	-27.5			
Nonresidential	+623.7	+814.7	+15.7	+19.4	+14.0	+42.6	+16.6	+8.0	+28.4	+39.1	+23.8	+9.6	+25.5	-2.3	-2.3	-2.3			
Public works and utilities	+297.9	+536.0	+17.7	+15.2	+24.1	+17.9	+88.1	+4.8	+29.4	-6.7	+14.7	+51.2	+137.7	+32.3	+32.3	+32.3			
Total	+537.3	+994.0	+23.2	+30.6	+29.5	+39.8	+37.2	+13.5	+30.1	+23.7	+20.5	+12.0	+35.3	-6.9	-6.9	-6.9			
Distribution⁷:																			
Department store sales	+247.4	+95.8	+6.0	+10.2	+1.8	+7.5	+8.2	+8.3	+2.7	+10.7	+6.3	+9.0	+1.7	+3.4	+3.4	+3.4			
Total retail sales	*	*	+7.5	+7.6	+5.8	+8.6	+9.1	+8.6	+7.3	+7.0	+12.4	+12.3	+19.6	+2.7	+2.7	+2.7			
Consumer credit outstanding—total ⁸	+391.8	+567.3	+8.7	+3.6	+4.9	+7.6	+9.1	+11.3	+13.3	+14.5	+17.1	+18.8	+15.2	+8.6	+8.6	+8.6			
Wholesale prices:																			
Other than farm and food ⁹	+101.1	+65.2	+1.2	+0.5	+1.1	+1.2	+1.0	+0.9	+1.2	+1.9	+2.7	+3.5	+2.8	+2.5	+2.5	+2.5			
Prices received by farmers ⁷	+155.3	+22.3	-4.3	-5.8	-5.1	-4.7	-3.9	-4.3	-1.6	-3.3	-6.4	-4.5	-3.3	-3.7	-3.7	-3.7			
Total ¹⁰	+121.3	+63.7	-0.1	-0.7	-0.1	-0.5	-0.5	-0.9	+0.3	+0.1	+0.4	+1.5	+1.4	+1.5	+1.5	+1.5			
Retail prices:																			
Food ⁵	+135.7	+64.8	-1.6	-2.2	-1.6	-1.2	-1.1	-1.9	-2.2	-2.2	-2.4	-0.7	+0.9	+0.5	+0.5	+0.5			
Total cost of living ⁵	+92.4	+53.0	-0.5	-0.8	-0.6	-0.4	-0.3	-0.7	-0.6	-0.4	-0.4	+0.2	+0.5	+0.6	+0.6	+0.6			
Prices paid by farmers ⁷	+118.9	+51.6	-0.1	+0.4	†	+0.4	†	-1.5	-0.8	-0.4	-1.5	-1.9	-1.9	-1.5	-1.5	-1.5			
Banking items of member banks¹¹:																			
Loans	+418.3	+283.1	+7.9	+4.3	+4.2	+6.2	+8.4	+9.4	+12.4	+15.7	+17.7	+18.6	+12.3	+6.3	+6.3	+6.3			
Investments in U.S. government obligations	+234.6	-11.3	+3.3	+11.0	+8.4	+4.6	+8.3	+2.4	-3.6	-4.3	-13.6	-14.7	-16.5	-9.5	-9.5	-9.5			
Total investments	+218.3	+3.7	+4.7	+11.4	+9.7	+6.5	+9.1	+3.7	-1.7	-2.4	-10.1	-11.3	-13.0	-7.5	-7.5	-7.5			
Money in circulation	+337.8	+41.4	+0.1	-0.4	-0.3	+0.1	+0.1	+0.4	+0.8	+1.1	+1.5	+1.1	+1.2	+1.7	+1.7	+1.7			
Foreign trade (merchandise)¹²:																			
Exports	+409.4	+4.2	+0.6	+6.8	+4.3	+19.3	-11.4	-6.6	-10.7	-1.8	+6.2	*	+5.3	+6.2	+6.2	+6.2			
Imports	+403.7	+180.2	+5.6	+4.5	+5.0	+18.2	-9.0	+16.5	-0.8	+7.7	+16.3	*	+10.2	+10.2	+10.2	+10.2			
Corporate profits after taxes ¹³	*	*	*	*	*	+25.2	*	*	+27.4	*	*	*	*	*	*	*			

*Not available.

†Not a strictly accurate reflection of business activity after Aug. 1, 1955, when the series was lowered about 5% by the elimination of electric power used by the Atomic Energy Commission.

‡Change less than 0.05%.

§Sept. 1955 estimated.

||Change from Aug. 1955.

*Reported quarterly.

Source: ¹New York Times. ²Federal Reserve Board. ³Dun and Bradstreet, Inc. ⁴United States Department of Commerce. ⁵United States Department of Labour. ⁶F. W. Dodge Corporation. ⁷United States Department of Agriculture.

00,000 for the third quarter as \$300,000,000 below the third quarter of 1954 and the first quarter of 1955.

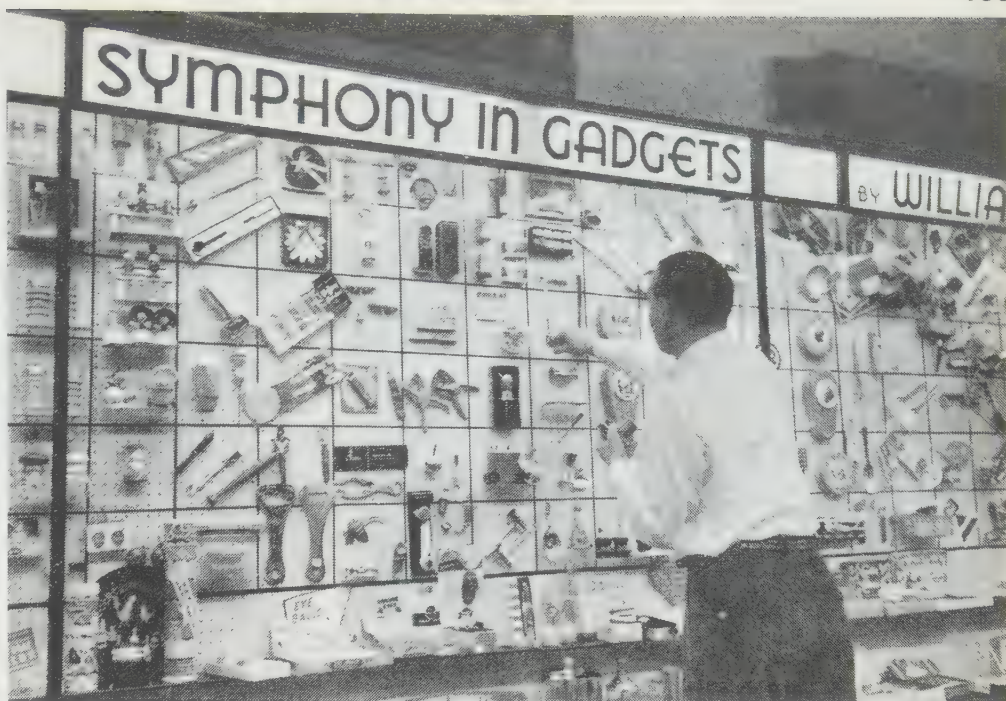
National Income.—In the fourth quarter of 1954 the downward trend in the national income, or purchasing power distributed through the economy, which had been in progress since the second quarter of 1953, was reversed. The annual rate of income flow continued to increase through the first two quarters of 1955. At a seasonally adjusted annual rate of \$20,700,000,000 in the second quarter of 1955, the total was \$300,000,000 above the first quarter, \$17,500,000,000 above the fourth quarter of 1954 and \$1,800,000,000 above the corresponding quarter in 1954. The accelerating advance to mid-1955 wiped out the previous decline and carried the total to a new high, 4% above the previous peak recorded two years earlier in the second quarter of 1953. The income flow to employees continued to increase through the first three quarters of 1955. In the third quarter the Council of Economic Advisers estimated the annual rate at \$224,300,000,000, a new high \$12,900,000,000 above the third-quarter 1953 peak of \$211,400,000,000. The 1955 third-quarter total was at a rate \$11,200,000,000 above the first quarter of the year and \$4,800,000,000 above the second quarter.

Corporate profits before taxes and after inventory valuation adjustments increased steadily from the fourth quarter of 1954 through the second quarter of 1955, reflecting the expansion in production and the increased tempo of business activity. For the second quarter of 1955, the Council of Economic Advisers estimated the annual rate at \$42,200,000,000, a new high \$800,000,000 above the 1953 first-quarter peak.

Proprietors' income in business and the professions increased rapidly though moderately through the third quarter of 1955, when it was at an annual rate of \$27,500,000,000. Rental income for persons remained substantially unchanged after the fourth quarter of 1954 at \$10,700,000,000, practically the same rate that prevailed throughout 1953 and 1954.

Proprietors' income from farming including adjustments for inventory changes continued, through the third quarter of 1955, the decline which had been in process with only short-lived interruptions since the fourth quarter of 1951. Farm proprietors' income for the third quarter of 1955 was estimated by the Council of Economic Advisers at an annual rate of \$10,500,000,000, a drop of \$1,000,000,000 from the first quarter and of \$300,000,000 from the 1951 annual average of \$15,800,000,000. (See also INCOME AND PRODUCT, U.S.)

Personal Income, Spending and Savings.—Consumers' personal consumption expenditures continued to increase through the third quarter of 1955 and at a somewhat accelerated rate after the fourth quarter of 1954. The estimated rate for the third quarter of 1955 was \$256,500,000,000, an increase of \$2,700,000,000 from the first quarter, of \$15,500,000,000 from the fourth quarter and of \$18,600,000,000 from the third quarter of 1954. The Council of Economic Advisers estimated personal savings at an annual rate of \$15,500,000,000 in the third quarter of 1955, a drop of \$1,300,000,000 from the fourth



DISPLAY OF 1,001 GADGETS at the 23rd National Housewares show at Atlantic City, N.J., July 1955

quarter of 1954 and of \$5,500,000,000 from the first quarter of 1954. Personal savings during the first three quarters of 1955 averaged 5.7% of disposable personal income as compared with an average of 7.2% for the year 1954. Total personal income, which increased steadily throughout 1954, continued to increase through the first three quarters of 1955, reflecting primarily the increases in wages and salary income and in proprietors' income in business and the professions. The Council of Economic Advisers estimated the personal income flow in the third quarter of 1955 at an annual rate of \$306,000,000,000, an increase of \$15,200,000,000 from the fourth quarter of 1954, of \$13,400,000,000 from the first quarter of 1955 and of \$5,500,000,000 from the second quarter. Personal taxes in the third quarter of 1955 were estimated at \$34,000,000,000, an increase of \$1,400,000,000 from the first quarter and of \$600,000,000 from the second quarter.

Government Expenditures.—Federal, state and local government purchases of goods and services, for the first three quarters of 1955, as reported by the department of commerce, were at substantially the same level as in the last three quarters of 1954, at an average annual rate of \$75,400,000,000. Federal government expenditures for national security during the first three quarters of 1955 remained substantially unchanged from the 1954 fourth-quarter rate of \$40,500,000,000. The continued increase in state and local government expenditures throughout 1954 and the first three quarters of 1955 tended to offset somewhat the drop in federal government expenditures. State and local government expenditures at an annual rate of \$30,100,000,000 in the third quarter of 1955 were up \$1,400,000,000 from the fourth quarter of 1954 and were \$5,000,000,000 above the corresponding quarter in 1953. (See also BUDGET, NATIONAL.)

Industrial Production.—The federal reserve board index of industrial production in Dec. 1954 rose to 130% of the 1947-49 average, a gain of 6 points during the last quarter of the year. There was a further gain of 2 points to 132 in Jan. 1955 and successive gains each month thereafter through September, when the index stood at 141% of the 1947-49 average, a gain of 11 points from Dec. 1954 and of 18 points from the low point reached in Aug. 1954.



AUTOMATIC MESSAGE CONVEYOR introduced in 1955 to provide credit information within one minute after the inquiry is received. Devised by Credit Exchange, Inc., of New York city, a company maintaining credit ratings of more than 300,000 retailers in the apparel industry, the device records inquiries, transcribes them on standard forms and carries the forms to clerks for immediate checking

By the end of the second quarter in 1955 the substantially uninterrupted upward trend in nondurable-goods production which had been in progress since Jan. 1954 was halted. During the third quarter of 1955 the trend in nondurable-goods production was downward and the index in September, at 125% of the 1947-49 average, was 3 points below the level in June but was 12 points above the Jan. 1954 level. After July 1954 the trend in durable-goods production was continuously upward through Sept. 1955, when the index reached 160% of the 1947-49 average, a gain of 25 points from the July 1954 low and of 5 points during the third quarter of 1955 as compared with the 3-point third-quarter decline in nondurable-goods production.

Employment.—Total employment declined slightly in Sept. 1954, dropped sharply during the fourth quarter of 1954 and continued to drop through Feb. 1955. The total number employed at the low point in Feb. 1955, as reported by the department of labour, was 59,938,000. In Jan. and Feb. 1955, 5.3% of the civilian labour force was unemployed. During the following six-month period of 1955, March through August, total employment increased sharply, both in agricultural and nonagricultural employment. The number employed in Aug. 1955 was reported at 65,488,000, an increase of 5,500,000 from the February low, and unemployment had dropped to 3.3% of the civilian labour force.

The upward trend in total employment was checked in September by a sharp decline of 1,094,000 in nonagricultural employment; agricultural employment increased by 339,000. Thus, total employment in September at 64,733,000 was 755,000 below August. The total number in the civilian labour force declined also in September as the temporary entrants for the summer months returned to school in the fall. The August-September drop of 844,000 in the civilian labour force was greater than the drop in the number employed with the result that unemployment in September dropped to 3.2% of the civilian labour force. (See also **EMPLOYMENT**.)

Wages and Hours.—During the fourth quarter of 1954 and through the first three quarters of 1955 average hourly earnings of production and related workers in manufacturing crept up-

ward slowly but steadily, increasing from \$1.81 per hour in Sept. 1954 to \$1.90 per hour in Sept. 1955 as reported by the department of labour.

Average hours worked per week in manufacturing industries during the first three quarters of 1955 were 40.5 hours per week as compared with 39.5 for the first three quarters of 1954. The increase in hours worked per week occurred primarily in the durable-goods industries where the average for the first three quarters of 1955 at 41.2 hours per week was 1.3 hours per week greater than the average of 39.9 during the first three quarters of 1954. In the nondurable-goods industries, hours worked per week during the first three quarters of the year averaged 39.0 as compared with 38.8 for the first three quarters of 1954.

Average weekly earnings of production and related workers in manufacturing increased steadily from July 1954 through Sept. 1955 when average weekly earnings at \$77.90 per week were \$6.04 per week greater than the \$71.86 average in Sept. 1954 and were \$6.98 above the 1954 low in July of \$70.92. Average weekly earnings in the durable-goods industries rose from \$77.00 in Sept. 1954 to \$84.45 in Sept. 1955, an increase of \$7.06 per week as compared with an increase of \$3.33 per week in the nondurable-goods industries where the increase was from \$65.00 in Sept. 1954 to \$68.57 in Sept. 1955. (See also **WAGES AND HOURS**.)

Prices.—The department of labour's all-commodities wholesale price index fluctuated around 110% of the 1947-49 average during the first nine months of 1955, which was substantially the same level as in the corresponding period of 1954. However, there were divergent trends in the major components of the all-commodity index. The wholesale farm products index in Sept. 1955, at 89.3% of the 1947-49 average, was down 4.3 points from Sept. 1954 and was 24.1 points below the 1951 monthly average. The wholesale price index of commodities other than farm products and processed foods reached 118.4% of the 1947-49 average in Sept. 1955, an increase of 3.2 points from January 1954 and of 4 points from Sept. 1954. The parity ratio for farm prices, that is, the ratio of the index of prices received by farmers to the parity index based on average prices in the period 1910-14, dropped to 85 in Sept. 1955.

Consumer prices at retail were substantially stable throughout the first three quarters of 1955, fluctuating around 114% of the 1947-49 average, at relatively the same level as prevailed throughout 1954. (See also **PRICES**.)

New Plant and Equipment.—Business expenditures for plant and equipment, after declining throughout 1954 from the high annual rate reached in mid-1953, turned sharply upward at the first quarter of 1955. The department of commerce and the Securities and Exchange commission estimated expenditures for the fourth quarter of 1955 at an annual rate of \$29,730,000,000, an increase of \$3,030,000,000 from the previous 1953 high of \$26,700,000,000.

Expenditures for new plant and equipment in the manufacturing industries constituted roughly 40% of the total new plant and equipment expenditures in 1955. Beginning with the second quarter of 1955, the annual rate of manufacturing expenditures was stepped up through the fourth quarter of the year, when the annual rate was estimated at \$12,050,000,000, an increase in annual rate of \$1,880,000,000 from the first quarter of 1955, and of \$1,470,000,000 from the fourth quarter of 1954. Of the \$12,050,000,000 estimated annual rate of manufacturing expenditures in 1955, \$5,960,000,000 was attributed to durable-goods industries and \$6,090,000,000 to nondurable-goods industries. However, of the \$1,880,000,000 increase in expenditures in the fourth quarter from the first quarter, \$1,180,000,000 was attributable to durable-goods industries and only \$700,000,000 to nondurable-goods industries. Expenditures for new plant

ipment in mining, at \$920,000,000 in the fourth quarter of 1954, were substantially the same as in the fourth quarter of 1953. Public utilities expenditures in the fourth quarter, at an annual rate of \$4,680,000,000, and commercial building expenditures, at \$9,480,000,000, were up from the fourth quarter of 1953 by \$570,000,000 and \$1,020,000,000, respectively.

Construction.—Expenditures for new construction, after dipping slightly in Oct. 1954 from the new high level established in the second quarter of 1954, turned sharply upward during the last two months of the year and reached a new high level during the first three quarters of 1955. For the first nine months of 1955, the seasonally adjusted average annual rate was \$37,744,000,000 as compared with \$37,600,000,000 for the year 1954, indicating that the level of expenditures during the first three quarters of 1955 was slightly more than \$4,000,000,000 above the level of expenditures in 1954.

Private construction—residential nonfarm and business construction—constituted about 70% of the total, and federal, state and local government construction, the remainder. Total private construction in September, at a seasonally adjusted annual rate of \$30,200,000,000, was \$1,400,000,000 above Jan. 1955 and \$3,200,000,000 above Sept. 1954. Public construction in September, at an annual rate of \$11,800,000,000, was \$600,000,000 below Jan. 1955 but was \$400,000,000 above Sept. 1954, a low point in 1954. The bulk of the increase in the total of private construction was in nonfarm residential construction, which reached an annual rate of \$16,000,000,000 in Jan. 1955 and which high level it fluctuated during the first three quarters of 1955. (See also BUILDING AND CONSTRUCTION INDUSTRY; HOUSING.)

Consumer Credit.—Consumer credit continued to expand during the fourth quarter of 1954, reaching a new postwar high in December. The slight drop during the first quarter of 1955 was wiped out by the sharp increase during the second quarter, and the volume continued to rise through August when the board of governors of the federal reserve system reported the amount outstanding at \$33,636,000,000, a new all-time high. In each of the first eight months of 1955 the amount of consumer credit

outstanding was greater than in the corresponding month of 1954. Of the total consumer credit outstanding in Aug. 1955, 77% was instalment credit which at \$26,155,000,000 was \$3,719,000,000 greater than in Jan. 1955 and \$4,254,000,000 greater than in Aug. 1954. Of the instalment credit, 51% was automobile paper. Automobile credit outstanding in Aug. 1955, at \$13,547,000,000, was \$3,088,000,000 above Jan. 1955 and \$3,198,000,000 above Aug. 1954. Personal loans also increased throughout the first eight months in 1955, and the amount outstanding in Aug. 1955, at \$5,257,000,000, was \$463,000,000 above Jan. 1955 and \$638,000,000 above Aug. 1954. The amount of instalment loans for consumer goods other than automobiles outstanding in Aug. 1955 was \$5,762,000,000, or \$153,000,000 above Jan. 1955 and \$468,000,000 above Aug. 1954. Loans for repair and modernization during the first eight months of 1955 were smaller than in the corresponding months of 1954; the amount outstanding fluctuated between \$1,530,000,000 in March and \$1,589,000,000 in August.

Noninstalment credit during the first eight months of 1955 fluctuated between \$6,974,000,000 in March 1955 and \$7,557,000,000 in June, and the level was only slightly above that of 1954. (See also CONSUMER CREDIT; FEDERAL RESERVE SYSTEM.)

Commercial Bank Loans and Investments.—Loans of commercial banks as reported by the board of governors of the federal reserve system increased sharply during the fourth quarter of 1954, levelled off during the first two months of 1955 and increased sharply from March through September. For the first eight months of 1955 commercial bank loans averaged \$73,730,000,000 as compared with \$63,050,000,000 for the same period in 1954, an increase of \$10,680,000,000 in the 1955 average. Commercial bank investments in United States government securities after the first quarter of 1954 increased rapidly through October when the total reached \$70,200,000,000. From Nov. 1954 through Aug. 1955 commercial bank investments in government securities dropped steadily with only minor interruptions in April and May. By Aug. 1955 investments in government securities had declined to \$62,500,000,000, a decrease of \$7,700,000,000 from the Oct. 1954 level.

Sales and Inventories.—Manufacturers' sales, after dropping slowly from mid-1953 through Oct. 1954, increased in November and December and continued to increase through Aug. 1955. The drop in manufacturers' inventories which began late in the fourth quarter of 1953 was halted in the fourth quarter of 1954, remained relatively constant through the first four months of 1955 and increased slowly from May through August.

Seasonally adjusted manufacturers' sales in Aug. 1955, as reported by the U.S. department of commerce, at \$27,400,000,000 were up \$4,900,000,000 from the Oct. 1954 low and \$3,100,000,000 from Jan. 1955. Manufacturers' inventories in August, at \$44,300,000,000, were down \$2,787,000,000 from the previous high point in Oct. 1953 but were \$1,100,000,000 greater than in Jan. 1955. During the first eight months of 1955 wholesale sales fluctuated around \$9,500,000,000 and inventories around \$11,500,000,000. Retail sales during the same period fluctuated around \$15,000,000,000 and inventories between \$22,200,000,000 and \$23,400,000,000. The levels of both wholesale and retail sales and inventories during the first eight months of 1955 were substantially the same as in the corresponding period of 1954.

Corporate Profits.—Corporate profits before taxes and after taxes increased steadily throughout 1954, interrupted only by a slight levelling off in the third quarter, and rose sharply in the first two quarters of 1955. In the second quarter of 1955 corporate profits before taxes, as reported by the department of commerce, were at a seasonally adjusted annual rate of \$43,000,000,000, an increase in annual rate of \$9,300,000,000 from the second quarter of 1954, of \$7,000,000,000 from the fourth



STOCKHOLDERS at the 1955 meeting of Montgomery Ward & Co. in which financier Louis Wolfson unsuccessfully attempted to gain control of the mail-order institution

quarter of 1954 and of \$2,100,000,000 from the first quarter of 1955. Profits after taxes were at an annual rate of \$21,400,000,000 in the second quarter of 1955, an increase in annual rate of \$4,700,000,000 from the second quarter of 1954, of \$3,500,000,000 from the fourth quarter of 1954 and of \$1,100,000,000 from the first quarter of 1955.

Although dividend payments in the last two quarters of 1954 and the first two quarters of 1955 were at new high levels at annual rates of slightly more than \$10,000,000,000, undistributed profits rose sharply during the first two quarters of 1955. Undistributed profits and dividend payments in the first two quarters of 1955 were at the same annual rates, \$10,200,000,000 each in the first quarter and \$10,700,000,000 each in the second.

(V. B. B.)

Great Britain.—The year 1954 was one of exceptional business prosperity and the Christmas season one of the most active on record. Expenditure for the last quarter of the year was 7% higher (in 1948 prices) than in the last quarter of 1953.

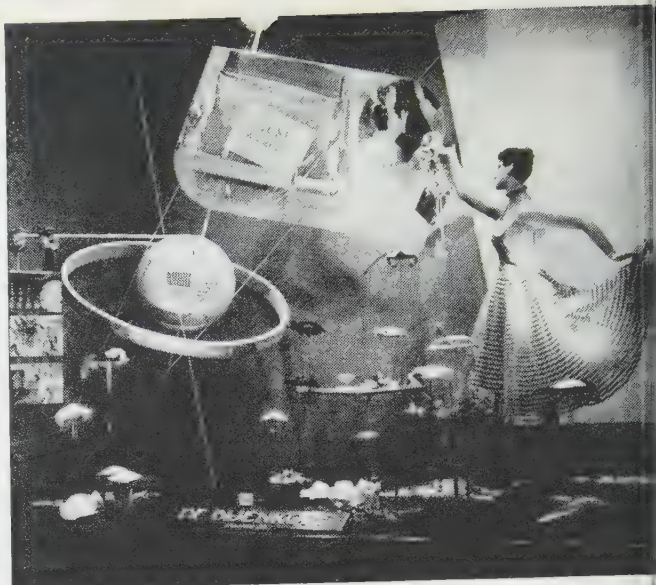
The new year opened with business continuing at a high level, but the mood was not wholly complacent, and the causes of the boom were examined with some degree of anxiety. There was talk of inflation. The authorities decided that a brake should be applied, and on Jan. 27, 1955, the bank rate was raised from 3% to 3½%. This measure was not greatly heeded and was followed on Feb. 24 by a further increase to 4½%. The official diagnosis was made known in April, in the government's customary economic survey (Cmd. 9412). It admitted that production was high—the improvement on the preceding year was in fact unexpectedly large and continued so for a number of months. Less satisfactory was the way in which this production was distributed, too much for direct consumption and too little left for export. The report warned the nation that a payments crisis might be impending.

The budget which followed on April 19 confined itself mainly to a reduction of sixpence in the standard rate of income tax, which had the administrative convenience of taking large numbers of people out of the ranks of income-tax payers altogether. The budget was described as one of moderate incentives; it was also described as an exercise in electioneering—the general election was due on May 26. On the whole it showed plainly enough that the chancellor knew he was facing an inflationary situation.

The budget did nothing to improve the uneasy balance of Great Britain's economy. Consumption remained high, and though the balance of trade showed some improvement, this trend did not have time to establish itself. The balance was upset by a dockers' strike, the effects of which, aggravated by a strike of the railway footplate men, revealed the dangers to which the economy lay open. For a while overseas trade was severely diminished and it was widely felt that some of the lost exports could not be made good, although this view later proved too pessimistic. The number of working days lost through strikes was higher than in the preceding year, and the strikes occurred largely in key industries.

The inflationary situation was aggravated by the continued rise in wages. A substantial transfer of spending power undoubtedly occurred from individuals and companies who might be expected to save to those who were disposed to spend. The rise in wage rates in the first half of the year was substantially higher than in the corresponding period of 1954.

It took some time for the effect of increases in the bank rate on credit to be felt. In the first half of the year bank deposits showed a partly seasonal fall, but at the same time advances to customers grew, and at a more rapid rate than in the corresponding period of 1954. At the same time cash in hand, treasury bills and investments (mainly government paper) contracted, a movement contrary to that recorded a year earlier.



SHOW WINDOW of department store in The Hague, Neth., featuring U.S. products. In 1955 the store, De Bijenkorf, carried out an intensive promotion of the "American way of life" through the display and sales of U.S. goods in its stores in The Hague, Amsterdam and Rotterdam

The net result was a pronounced fall in liquidity. Yet the inflationary trend continued. Eventually the chancellor decided on a policy of action and on July 25 caused a letter to be addressed to the banks asking them to reduce their advances. At the same time he arranged that higher deposits should be required for the instalment purchase of certain goods. He also asked industrial undertakings to reduce their capital expenditure.

In the conditions prevailing in the first half of the year business was excellent. Unemployment remained at an extremely low level. The output of steel was about 7% higher than in the previous year; that of machine tools (in the first quarter) about 14% higher; that of motorcars about 22% higher, but it was significant that the number of cars exported did not show a similar expansion. The output of coal languished, the result partly of a drift of labour from the mines and partly of restrictive practices in the pits. But the general boom was reflected in the growth of the number of people in civil employment. (See also BANKING; INTERNATIONAL TRADE; LAW; STOCKS AND BONDS; TARIFFS; TAXATION.)

(W. H. J. N.)

Butter: see DAIRY PRODUCTS; VEGETABLE OILS AND ANIMAL FATS.

Byrd, Richard Evelyn (1888—), U.S. explorer and naval officer, was born at Westchester, Va., on Oct. 25. He was graduated from the U.S. naval academy at Annapolis, Md., in 1912, subsequently advancing to the rank of rear admiral, retired. An early naval pilot (1918), he was in command of U.S. naval air bases in Canada during the latter part of World War I. In 1925 he led the naval section of the Navy-MacMillan polar expedition. On May 9, 1926, he was co-pilot with Floyd Bennett on the first flight by man over the North Pole. (Later, with three crewmen, he was first to fly over the South Pole Nov. 29, 1929.) June 29–July 1, 1927, with three others, Byrd flew the Atlantic eastward from New York City. The plane was forced down near Ver-sur-Mer, Fr., after failing to land in Paris because of bad weather.

Byrd's greatest fame came as leader of a series of expeditions to the Antarctic, in 1928–30, 1933–35, 1939–41 and 1946–47. During the first he established the Little America camp in the Ross sea. In the second he nearly lost his life when he went alone at a weather base for five months. The third expedition

ited in the most extensive exploration of the Antarctic to date. The fourth, in addition to gathering important scientific data, was undertaken to train military personnel for combat in polar regions. More than 1,000,000 sq.mi. of new territory was mapped during the four expeditions. (See also *Encyclopedia Britannica*.)

Byrd's fifth trip to the Antarctic was announced in 1955. On March 28 he was appointed commander of an expedition to return in the fall of 1955 as part of the United States' participation in events of the International Geophysical year (1957-58). The first section of the expedition sailed from Boston on March 30. On Nov. 2 it was announced that Byrd had been placed in charge of the entire United States Antarctic program. He left for the Antarctic later that month.

Cacao: see COCOA.

Lead: see MINERAL AND METAL PRODUCTION AND PRICES.
Calendar of Events, 1955: see pages 1-16.

California. Nicknamed the "Golden state" because of the importance of gold in its early history, California achieved statehood on Sept. 9, 1850. The state ranks second nationally in both area and population. A total area of 163,693 sq.mi. includes 1,953 sq.mi. of water area. California is situated at the southwestern corner of the United States. As of July 1, 1955, the estimate of California population indicated 12,700,000 inhabitants (1950 U.S. census, 10,586,223). Chief cities (with 1950 census figures in parentheses) were Los Angeles, 4,663 (1,970,358); San Francisco, 801,000 (775,357); San Diego, 446,000 (334,387); Oakland, 400,000 (384,575); Long Beach, 285,000 (250,767); Sacramento (the state capital), 158,000 (137,572); Berkeley, 115,000 (113,805); Fresno, 114,000 (96,669); Glendale, 113,000 (95,702); Pasadena, 110,079 (104,000); San Jose, 108,746 (95,280); Richmond, 90,000 (99,545).

History.—The state officers in 1955 remained Goodwin J. Knight, governor; Harold J. Powers, lieutenant governor; Frank Jordan, secretary of state; Charles G. Johnson, treasurer; Edmund G. ("Pat") Brown, attorney general; Robert C. Kirkland, controller; Roy E. Simpson, superintendent of public instruction. The electorate voted in 1954 to transfer the functions of state liquor control from the state board of equalization to a newly created state liquor department, with the former continuing its activities to tax equalization matters.

The year 1955 saw smog (combined smoke and fog) become a critical problem. Previously confined to southern California, it continued to spread despite attempted remedies including restrictions on backyard incinerators. Increased concern was shown because of the reported deleterious effects of smog and a \$5,000,000 smog research program was launched by the state.

Because of pressing highway construction needs the state gasoline tax was retained at 6 cents per gallon instead of reverting to 5½ cents per gallon as previously planned.

Unusually high summer temperatures accompanied by serious forest fires made it a destructive year in both forestry and agriculture. However, the farm labour program alleviated greatly the perennial Mexican "wetback" (illegal immigrant) labour problem by permitting more facile legal entry.

California stepped up its already accelerated manufacturing industry with expansion and new construction of factories.

The children of California hailed the opening of producer Walt Disney's \$17,000,000 "Disneyland."

California's uranium hunting population increased to figures which probably exceeded the number of gold seekers in 1849.

Education.—Average daily school attendance for budgetary purposes for 1953-54 was calculated at 1,618,942 for elementary school districts, at 152,277 for high school districts and at 98,927 for junior college districts. Social Insurance and Assistance, Public Welfare and Related Programs.—

As of July 1955 there were 268,750 recipients of old-age security payments with average monthly aid being \$66.05 per person (July 1954, 271,764 at \$68.97 per recipient). Aid to the needy blind program paid 12,242 persons average payments of \$83.76. An average of \$49.64 was paid for support of 150,904 needy children, while general home relief was provided for 26,719 cases involving 46,128 persons.

For the month of July 1955 the four California-administered social insurance programs compensated 85,800 unemployed or disabled claimants per week in a total amount of \$10,106,571 for the month. Total operating expenses for the state department of corrections for the year 1954-55 were estimated at \$21,147,334. Total population of California correctional institutions as of June 30, 1955, numbered 15,573, including 568 women. Inmates of youth authority institutions totalled 3,082 (as of Aug. 31, 1955), of which 315 were in its two schools for girls, 240 in its three forestry camps for boys, and 1,367 in its four schools for boys; the remainder were in other institutions or prisons.

Communications.—Final automobile registrations for 1954 were 4,984,516. Total expenditures by the state division of highways for reconditioning, resurfacing and construction of highways for 1954-55 were estimated at \$245,945,023 including \$28,619,105 in federal aid contributions (1953-54, \$242,266,603 including \$32,275,140 in federal assistance). Figures compiled in 1950 indicated 7,518 mi. of steam railways and 702 mi. of electric railroads in California. As of Dec. 31, 1953, the state had 464 airfields, including 219 public and 245 limited airports, with 8,183 planes based in California airports. At the same time there were 4,118 mi. of federal airways. As of Jan. 1, 1955, there were 4,979,840 telephone stations within the state.

Banking and Finance.—Total assets of the 138 state-licensed savings and loan associations operating in California (as of Dec. 31, 1954) were \$1,663,681,821, while 68 federal savings and loan associations had assets of \$1,678,556,732, and total bank debits reached \$133,807,080,000. As of April 11, 1955, California's 104 federal reserve member banks had total assets of \$18,081,137,000.

Estimated total state revenue for 1954-55 was \$1,397,477,165 (1953-54, \$1,271,447,494), and estimated total expenditures were \$1,473,292,706 (1953-54, \$1,381,400,475). California's net bonded debt (outstanding Nov. 30, 1954) was \$659,422,592. Per capita income for 1955 was calculated at \$2,020 and per capita tax at \$99.90, while state tax collections in 1954-55 amounted to \$1,265,718,000 (1953-54, \$1,214,788,000).

Agriculture.—California's gross cash farm income again led the nation during the year 1954, being \$2,519,398,000 (1953, \$2,643,950,000). Returns from livestock and poultry products aggregated \$905,299,000 (1953, \$971,250,000), and crop returns brought \$1,599,297,000 (1953, \$1,662,660,000). Government payments added \$14,802,000 to state farm income. Total value of truck crops for 1954 was \$330,620,000, field crops \$693,909,000 and fruit and nut crops \$511,268,000.

Manufacturing.—As of Aug. 1955, 1,157,300 wage and salary workers were employed in California manufacturing industries, being the highest figure since World War II. Approximately 424,300 were employed in production of nondurable goods and 733,000 in the manufacture of durable goods. At the midyear point total civilian employment was 5,172,000 while unemployment figures showed 166,000 not working. Preliminary estimates of 1954 retail trade indicated \$15,400,000,000 spent, marking a decrease of 0.3% from the preceding year's total. Public and private construction figures were estimated at 2% higher than in 1953, or \$4,056,000,000. (D. C. Cr.)



OPENING DAY AT "DISNEYLAND," near Anaheim, Calif., a children's amusement park designed by Walt Disney, creator of "Mickey Mouse" cartoons, motion-picture and television producer. The park was opened July 17, 1955

Table I.—Leading Agricultural Products of California

Crop	Indicated 1955	1954	Average, 1944-53
Cotton, bales	1,230,000	1,487,000	1,048,000
Hay, tons	6,197,000	6,243,000	5,849,000
Potatoes, bu.	50,255,000	38,210,000	41,965,000
Oranges, boxes	38,000,000	39,140,000	44,479,000
Lemons, boxes	13,200,000	14,000,000	13,001,000
Barley, bu.	61,005,000	69,898,000	48,582,000
Wheat, bu.	8,240,000	9,260,000	11,464,000
Beans, dry, bags (100 lb.)	4,680,000	5,122,000	4,442,000
Rice, bags (100 lb.)	10,923,000	10,872,000	8,893,000
Sugar beets, short tons	3,526,000	4,641,000	2,554,000
Hops, lb.	8,476,000	10,080,000	13,826,000
Peaches, bu.	33,753,000	31,252,000	32,948,000
Pears, bu.	14,168,000	16,751,000	13,622,000
Apples, bu.	8,630,000	9,200,000	8,174,000
Corn, bu.	12,650,000	7,680,000	2,330,000
Grapes, tons	2,916,000	2,329,000	2,744,900
Apricots, tons	230,000	139,000	211,500
Prunes, tons	137,000	179,000	173,900
Plums, tons	87,000	72,000	80,700
Walnuts, tons	68,000	67,000	64,990
Almonds, tons	35,600	43,200	38,180

Source: U.S. Department of Agriculture.

Table II.—Principal Industries of California

	All employees 1953	Salaries and wages 1953 (in 000s)	Value added by manu- facture 1953 (in 000s)	Value added by manu- facture 1952 (in 000s)
Food and kindred products	129,764	\$ 496,889	\$1,158,766	\$1,181,260
Apparel and related products	54,242	169,821	286,952	275,113
Lumber and products (except furniture)	58,865	248,511	433,976	359,639
Furniture and fixtures	21,376	89,216	150,385	118,904
Paper and allied products	20,014	86,355	175,475	154,557
Printing and publishing industries	48,065	230,761	390,790	392,616
Petroleum and coal products	20,339	104,296	266,566	231,426
Stone, clay, and glass products	36,409	146,093	301,323	248,547
Primary metal industries	47,586	217,102	391,851	342,878
Fabricated metal products	75,836	338,640	605,312	483,946
Machinery (except electrical)	70,917	341,314	610,919	503,750
Electrical machinery	63,209	284,382	449,064	310,724
Transportation equipment	278,316	1,362,009	1,964,976	1,481,605
Miscellaneous manufactures	43,352	171,730	259,267	...
Administrative and auxiliary	19,915	104,532	...	...

Source: U.S. Department of Commerce, Annual Survey of Manufactures, 1953.

*Withheld because the estimate did not meet publication standards, either on the basis of the associated standard error of estimate or on the basis of a consistency review.

Table III.—Mineral Production of California
(In short tons, except as noted)

Mineral	Quantity 1953	Value 1953	Quantity 1952	Value 1952
Boron minerals	715,000	\$17,668,000	584,000	\$ 14,105,000
Cement (bbl.)	32,002,000	90,873,000	29,786,000	79,458,000
Chromite	27,000	2,078,000	15,000	1,269,000
Clays	2,430,000	4,953,000	2,743,000	4,852,000
Coke*	749,000	?	610,000	?
Copper	382	219,000	800	387,000
Gold (oz.)	235,000	8,211,000	258,000	9,036,000
Gypsum	1,199,000	2,856,000	1,236,000	2,721,000
Iron ore	1,901,000	?	1,639,000	?
Iron, pig*	1,085,000	?	975,000	?
Lead	9,000	2,270,000	11,000	3,606,000
Lime	301,000	4,653,000	239,000	3,753,000
Mercury (flasks, 76 lb.)	9,000	1,793,000	7,000	1,442,000
Natural gas (thousand cu. ft.)	531,346,000	104,675,000	517,450,000	86,414,000
Natural gasoline (thousand gallons)	910,350	85,691,000	870,996	64,945,000
Petroleum (bbl.)	365,085,000	909,060,000	359,450,000	801,570,000
Petroleum gases (thousand gallons)	397,572	21,961,000	393,792	16,700,000
Pumice and pumicite	433,000	648,000	130,000	794,000
Salt	1,123,000	6,263,000	1,149,000	4,880,000
Sand and gravel	58,430,000	53,224,000	53,051,000	43,633,000
Silver (oz.)	1,036,000	938,000	1,100,000	995,000
Stone	14,514,000	18,479,000	14,375,000	17,697,000
Talc	126,000	1,133,000	121,000	2,868,000
Tungsten concentrate 60% WO ₃	2,000	8,907,000	3,000	11,361,000
Zinc	5,000	1,232,000	9,000	3,127,000
Other minerals . . . . .	...	45,098,000	...	39,517,000
Total		\$1,392,883,000		\$1,215,130,000

*Values for processed materials are not included in the totals.

†Value included with other minerals.

Mineral Production.—Table III shows the tonnage and value of mineral commodities produced in California whose value was more than \$100,000, for 1952 and 1953 (preliminary). In 1953, the state led all others in output of borates, chromite, diatomite, mercury and sand and gravel, was second in cement, gypsum, petroleum, pumice, talc and tungsten, third in gold, magnesite, bromine and sulphur, and fourth in asbestos, natural gas and pyrite. The state ranked second in value of its mineral commodities, with 9.69% of the U.S. total in 1953.

Cambodia. An independent kingdom situated in the southern part of the Indochinese peninsula, on both banks of the Mekong river, Cambodia is bounded west and north by Thailand, northeast by Laos, east and southeast by the National Republic of Vietnam and southwest by the Gulf of Siam. Area: 65,958 sq.mi. Pop. (1954 est.): 4,100,000. The Cambodians are

Thai-speaking Khmers. Religion: Buddhist. Capital (pop., 1954 est.): Pnom Penh, 375,000. Ruler, King Norodom Suramarit premier in 1955 Norodom Sihanouk (former king and present king's son).

History.—The strange personality of Norodom Sihanouk dominated the political stage in Cambodia during 1955. The young king, in opposition to the Democratic party—which he had a majority in the assembly dissolved on Jan. 13, 1953, and was inclining farther and farther toward communism—put the case to the people in a referendum in Feb. 1955 and secured a majority for the monarchy of 909,000 votes against 1,740,000. Almost immediately, he abdicated in favour of his father Norodom Suramarit. On Sept. 11 elections were held for a new assembly: the Democrats got only 20% of the votes, and all 91 seats went to the Socialist Community party founded by Norodom Sihanouk, who became president of the council of ministers. On Sept. 25 he had a resolution passed by which Cambodia ceased to be an associate state of the French Union and became an independent sovereign state; votes were given to women, and each province was granted its own elected assembly. (Hu. DE.)

Cameroons: see BRITISH WEST AFRICA; TRUST TERRITORIES

Cameroun: see FRENCH EQUATORIAL AFRICA; FRENCH UNION

Camp Fire Girls: see SOCIETIES AND ASSOCIATIONS, U.S.

Canada. A member of the Commonwealth of Nations, Canada is a federal union covering all of North America north of the United States except Alaska. Area: 3,845,774 sq. miles. Capital: Ottawa (q.v.). Governor general, Vincent Massey (q.v.); prime minister, Louis Stephen St. Laurent (q.v.). Pop. (1951 census) 14,009,429; (June 1, 1955, official est.) 16,010,000.

History.—The year 1955 was a prosperous and eventful one for Canada. The mild recession recorded in 1954 already showed signs of terminating before Jan. 1955. Canada responded rapidly to increased industrial activity in the United States during the winter of 1954-55. Exports of Canadian base metals, lumber, pulp and paper to its southern neighbour rose substantially in the early months of 1955; coupled with a higher demand from Britain and Europe, the effect was to raise Canadian exports to the first third of the year to a figure 12% above 1954 and only just short of the all-time record. Once the favourable turn in the economic climate had been appraised, there was a renewed zest in capital investment. By mid-1955, industrial production was running 9% above the previous year. Employment in August reached the highest point in Canadian history. Unemployment figures were 25% lower than the year before. In September, Public Works Minister Robert H. Winters announced that

Table I.—Largest Cities of Canada

Estimated population, 1954			
City	Population	City	Population
Montreal, Que.	1,021,520	Edmonton, Alta.	159,000
Toronto, Ont.	675,754	Calgary, Alta.	129,000
Vancouver, B. C.	344,833	Windsor, Ont.	120,000
Winnipeg, Man.	235,710	London, Ont.	95,000
Hamilton, Ont.	208,321	Halifax, N. S.	85,000
Ottawa, Ont.	202,045	Verdun, Que.	77,000
Quebec, Que.	164,016	Regina, Sask.	71,000

Table II.—Area and Population of Canada

Provinces and territories	Total area	1951 census	Density per square mile	June 1, 1955 est.
Alberta	255,285	939,501	3.7	1,060,000
British Columbia	366,255	1,165,210	3.2	1,300,000
Manitoba	246,512	776,541	3.2	840,000
New Brunswick	27,985	515,697	18.4	550,000
Newfoundland and Labrador	155,364	361,416	2.3	410,000
Nova Scotia	21,068	642,584	30.5	680,000
Ontario	412,582	4,597,542	11.1	5,180,000
Prince Edward Island	2,184	98,429	45.1	100,000
Quebec	594,860	4,055,681	6.8	4,520,000
Saskatchewan	251,700	831,728	3.3	880,000
Northwest Territories	1,304,903	16,004	.01	10,000
Yukon Territory	207,076	9,096	.04	10,000
Total Canada	3,845,774	14,009,429	3.6	15,600,000

1955 would see a record of 125,000 housing units started. The thawing of the "cold war" brought warnings from the Canadian government that vigilance continued to be necessary. There was no sharp reduction in expenditure on national defense. The budget forecast of April indicated that defense expenditures, which amounted to 40% of the national budget of \$4,255,000,000 in 1954-55, would continue in the same general range (defense estimates for 1955-56 were \$1,775,000,000, or 42% of a total federal budget of \$4,362,000,000). While maintaining a level of defense expenditures far above any previous experience (except in times of actual hostilities), the Canadian government participated in negotiations looking toward an easing of international tension. External Affairs Minister Lester B. Pearson with a party of officials and newsmen left Ottawa at the end of September for a tour of ten countries, including a week in the U.S.S.R. and attendance at the Colombo conference at Singapore. While in the U.S.S.R. Pearson initiated discussions looking toward a trade agreement between the two countries. In August a party of Soviet farm executives toured Canada after a similar visit to the United States.

External relations were important in other fields. U.S. Secretary of State John Foster Dulles visited Ottawa in March and September, on the latter occasion discussing orderly disposal of North American food surpluses. On Jan. 26 the Canadian House of Commons voted 213 to 12 in favour of admitting a rearmcd Western Germany into the North Atlantic Treaty organization (NATO). In February, Canada participated in the commonwealth prime ministers' conference at London.

The annual budget was brought down on April 5. Finance Minister Walter Harris announced a deficit on operations for the fiscal year ended March 31, 1955, of about \$194,000,000, or 4.6% of the annual expenditure. A small deficit was also in sight for the year 1955-56, Harris said, with taxes at their current level. However, in view of the renewed economic expansion already very noticeable early in the year, the finance minister announced a substantial reduction in personal income taxes throughout the board, to begin July 1. The cut averaged, for the whole year, from 12% to 13% reduction, for 85% of Canada's taxpayers, with smaller percentages for those with high incomes. Finance Minister Harris also cut the corporation income tax rate by 2%, from 49% to 47%. The excise tax on automobiles was reduced from 15% to 10%, and the 10% excise tax on tires and tubes wiped out. There were no material changes in customs tariff rates. The minister justified his tax reductions in the face of an expected deficit on the ground that they would tend to encourage the restoration of the upward trend in Canada's economic activity. Even with reduced returns resulting from the tax cuts, he expected that business expansion in March 31, 1956, would bring government revenues and expenditures close to a balance.

A series of important meetings and negotiations between the federal government and the ten provinces was held on the subject of tax allocation and governmental responsibilities, the most important taking place in early October at Ottawa. During World War II, the federal government had found it necessary to collect such large sums from personal and corporation incomes taxes as to embarrass provincial collection of such levies, and a rental scheme was evolved under which Ottawa paid substantial annual sums for exclusive rental of such fields. When hostilities ended, these wartime agreements lapsed, but were succeeded by similar tax agreements freely entered into by most provinces. Nine of the ten provinces were operating under such agreements in 1955, but Quebec resolutely refused to sign, and obtained instead an arrangement for occupying a portion of these fields co-jointly with the federal government. The nine existing tax agreements were to expire in 1957. The conferences

in 1955 were to discuss, among other things, the evolution of a formula which might satisfy the nine provinces already in the scheme, and also the peculiar needs of Quebec. Considerable progress toward a more acceptable national formula was made, and the extensive discussions were scheduled to continue until 1957. Little headway was possible in the establishment of a national health insurance plan or in the close integration of national investment.

The year 1955 was not particularly eventful in party politics. The Liberal party in power at Ottawa under Prime Minister Louis St. Laurent lost an old Liberal seat in New Brunswick in a September by-election but in general retained its solid hold on power for the 20th consecutive year. In Alberta the Social Credit party in June lost its overwhelming representation in the legislature but remained comfortably in power with 37 seats (a loss of 15), the Liberals as chief opposition party gaining 11 seats for a total of 15.

The 500,000,000 bu. wheat crop was the fourth unusually heavy crop in five years. Added to a total of nearly 500,000,000 bu. still in storage at harvest time it brought the stocks on hand in September to 992,000,000 bu., the third highest mark in history. This succession of bumper harvests overtaxed storage capacity and opened up a serious problem of providing cash income for wheat farmers for grain, much of which had little prospect of moving off the farms for many months.

(See also articles on individual provinces and territories; also ACCIDENTS; CANALS AND INLAND WATERWAYS; CONSUMER CREDIT; EDUCATION; ELECTRICAL INDUSTRIES; FOREIGN INVESTMENTS; FORESTS; HORSE RACING; HOUSING; INDUSTRIAL HEALTH; LABOUR UNIONS; MOTION PICTURES; MUNICIPAL GOVERNMENT; NEWSPAPERS AND MAGAZINES; POST OFFICE; PUBLIC UTILITIES; RIVERS AND HARBOURS; SOCIAL SECURITY; STRIKES; THEATRE; WILDLIFE CONSERVATION.) (Wd. E.)

Education.—In the school year 1951-52 there were 30,710 provincially controlled elementary and secondary schools with 93,694 teachers and 2,502,403 pupils; evening classes had 187,216 pupils and correspondence courses 24,524 pupils. Other provincially controlled schools included 13 schools for the deaf and blind with 311 teachers and 2,026 pupils and 112 normal schools with 1,205 teachers and 11,463 students. Privately controlled schools included 799 academic schools with 5,194 teachers and 100,614 pupils and 225 business training schools with 778 teachers and 18,901 day students and 16,167 evening students. Indian and territorial schools numbered 479 with 1,000 teachers and 28,045 pupils. There were 238 institutions of higher learning with total enrolment of 156,157 and university-grade enrolment of 63,499.

Finance.—The monetary unit is the Canadian dollar, with a par value of U.S. \$0.909 since Sept. 30, 1949. Under the exchange system introduced Sept. 30, 1951, all exchange transactions for U.S. dollars were conducted on a free market in which the value of the Canadian dollar ranged in the first 10 months of 1955 between a high of U.S. \$1.03687 (Jan. 14) and a low of U.S. \$0.99984 (Oct. 19). The federal budget for the fiscal year ending March 31, 1956, estimated revenue at \$4,202,000,000 and expenditure at \$4,362,000,000; actual revenue in 1954-55 (preliminary) was \$4,107,100,000, expenditure \$4,255,400,000. The net federal debt on March 31, 1955 (preliminary), was \$11,264,200,000 (1954: \$11,115,937,064). Currency in circulation on July 31, 1955, totalled \$1,509,000,000 (Dec. 31, 1954: \$1,548,000,000). The U.S. department of commerce estimated U.S. direct investments in Canada in 1954 at U.S. \$5,939,000,000, of which \$2,553,000,000 represented manufacturing investments and \$1,160,000,000 petroleum investments. The cost-of-living index stood at 120 in Aug. 1955 (1948=100).

Trade.—Exports in 1954 were valued at \$3,876,134,388 (1953: \$4,117,405,882); re-exports, \$65,644,868 (\$55,195,233); imports, \$4,093,196,338 (\$4,382,830,430). In the first seven months of 1955 exports were valued at \$2,380,000,000 (1954: \$2,163,800,000); re-exports, \$40,100,000 (\$36,600,000); imports, \$2,582,100,000 (\$2,391,400,000). In 1954, Canada's principal customers were the U.S. (60%), the U.K. (17%), Japan (2.5%), western Germany (2.2%) and Belgium (1.4%). Leading suppliers were the U.S. (72%), the U.K. (10%), Venezuela (4.1%), western Germany (1.1%) and Brazil (0.8%). Leading exports were newsprint (17%), wheat (10%), planks and boards (8.4%), wood pulp (7.0%) and aluminum and products (4.8%). Leading import groups were iron and steel and manufactures (32%), nonmetallic minerals and products (except chemicals) (15%), of which petroleum and products accounted for 8%), agricultural and vegetable products (except chemicals, fibres and wood) (13%), nonferrous metals and products (8.7%) and fibres, textiles and textile products (7.1%).

Transport and Communications.—The combined length of railway track in operation in 1953 was 58,695 mi. Passengers carried in 1954 totalled 28,188,777 (1953: 28,736,159), freight 156,739,694 short tons (176,751,636 tons). On Dec. 31, 1954, the merchant marine had 2,560 vessels (100 tons and over) aggregating 2,024,180 gross tons and 14,008 vessels (under 100 tons) aggregating 235,371 tons. In 1954, Canadian airlines flew 59-

319,191 revenue miles and carried 2,316,665 revenue passengers, 103,174,610 lb. of revenue freight and 22,161,523 lb. of mail. Highway mileage (Dec. 31, 1953) totalled 517,809. In 1954 motor vehicle registration increased by 213,917 to 3,644,589, including 2,682,430 passenger cars and 918,459 commercial vehicles.

On Dec. 31, 1953, Canada had 3,606,407 telephones or 24.4 per 100 population. On Nov. 1, 1954, there were 171 standard broadcast-band stations, 37 short-wave stations, 31 frequency-modulation stations and 24 television stations and at the end of 1954 over 1,000,000 television sets were in use.

Agriculture and Fisheries.—Total cash farm income in 1954 (preliminary) was \$2,377,834,000 (1953: \$2,776,003,000). Cash receipts from sales of livestock and poultry were \$841,535,000, grains, seeds and hay \$630,426,000, dairy products and eggs \$538,410,000, forest products (farm sales) \$83,336,000, fruits \$46,380,000 and furs \$12,192,000. Table III shows acreage and estimated production of principal field crops in 1954 and 1955. Livestock on farms (June 1, 1955) included horses 901,400, cattle 10,239,000, sheep 1,722,700, hogs 6,079,000, poultry 66,214,000. Production in 1954 (preliminary figures) included wool 8,480,000 lb., butter (creamery) 312,665,000 lb., cheese (cheddar) 82,127,000 lb. and milk 16,760,000,000 lb.

Sea-fish landings in 1954 (preliminary) totalled 1,900,512,000 lb. valued at an estimated \$82,762,000. In the year ending June 30, 1954, 6,275,000 pelts were taken, valued at \$19,288,000, of which fur farms accounted for a record 49%.

Manufacturing.—In 1953 Canada had 38,107 industrial establishments employing 1,327,451 persons who earned \$3,957,018,348; value added by manufacture was \$7,993,069,351 and gross value of factory shipments totalled \$17,785,416,854. Table IV shows the principal statistics of the ten leading manufacturing industries in 1953. Production in 1954 included steel ingots and castings 3,194,122 short tons, pig iron 2,213,433 tons, ferro-alloys 109,833 tons, cement 22,584,023 bbl. of 350 lb. each, electric power 69,136,584,000 kw.hr., passenger cars 282,038, commercial vehicles 68,114. Production of sawn timber was estimated at 7,300,000,000 bd.ft., wood pulp at 9,684,503 short tons and newsprint at 5,984,207 tons.

Minerals.—Mineral production (excluding pitchblende products) was valued at \$1,444,196,460 (preliminary) in 1954 (1953: \$1,336,303,503). Table V shows the production and value of leading minerals in 1953 and 1954. The length of oil pipelines was 4,656 mi. on Dec. 31, 1954, and in 1954 the flow of oil, including deliveries of foreign crude petroleum and products, was 174,421,388 bbl. Natural gas production totalled 122,854,500,000 cu.ft., in 1954. (J. W. Mw.)

Table III.—Principal Field Crops of Canada, 1954 and 1955

Crop	Acres		Bushels	
	1954	1955	1954	1955*
Wheat	24,266,800	21,504,400	308,909,000	494,090,000
Oats for grain	10,160,600	11,178,000	306,793,000	403,835,000
Barley	7,855,500	9,912,300	175,509,000	251,781,000
Rye	850,500	778,000	14,176,000	14,711,000
Mixed grains	1,632,600	1,705,200	61,454,000	65,154,000
Corn for grain	418,000	510,000	22,339,000	31,510,000
Potatoes	296,200	306,300	50,834,000	63,578,000
Flaxseed	1,206,000	1,988,400	11,238,000	21,498,000
Tame hay	10,802,000	11,055,000	19,549,000†	20,018,000†
Sugar beets	90,453	81,874	1,003,869†	933,000†

*Preliminary estimate, November 1955.

†Short tons.

Source: Dominion Bureau of Statistics.

Table IV.—Leading Manufacturing Industries of Canada in 1953

Industry	Estab- lish- ments (Number)	Employees (Number)	Salaries and Wages (In 000)	Value Added by Manufacture (In 000)	Value of Factory Shipments (In 000)
Pulp and paper	127	58,194	\$235,742	\$599,935	\$1,179,665
Nonferrous metal smelting and refining	18	25,115	94,546	310,207	870,918
Motor vehicles	20	32,973	131,316	273,598	835,555
Slaughtering and meat- packing	152	22,887	74,432	152,023	829,468
Petroleum products	55	11,858	48,575	159,603	694,989
Sawmills	8,194	60,933	142,131	269,066	580,694
Primary iron and steel	62	34,956	129,710	216,958	458,904
Aircraft and parts	43	38,048	142,376	260,548	398,744
Butter and cheese	1,527	20,697	52,508	95,787	396,956
Railway rolling stock	36	35,447	118,026	153,678	338,321

Source: Dominion Bureau of Statistics.

Table V.—Leading Minerals of Canada, 1953 and 1954

Mineral, unit	1953		1954*	
	Quantity	Value	Quantity	Value
Petroleum, crude, bbl.	80,898,897	\$200,582,276	95,480,100	\$245,995,500
Nickel, lb.	287,385,777	160,430,098	319,983,340	180,196,300
Copper, lb.	506,504,074	150,953,742	599,851,280	174,139,274
Gold, fine oz.	4,055,723	139,597,985	4,279,852	145,814,558
Coal, short ton	15,900,673	102,721,875	14,825,000	96,078,000
Zinc, lb.	803,523,295	96,101,386	747,718,334	89,277,569
Asbestos, short ton	911,226	86,052,895	926,883	83,079,931
Lead, lb.	387,411,588	50,076,822	442,542,820	58,990,957
Iron ore, short ton	6,509,818	44,102,944	7,280,256	46,758,382
Silver, fine oz.	28,299,335	23,774,271	31,541,757	26,261,667

*Preliminary estimate, April 1955.

Source: Dominion Bureau of Statistics.

Canadian Literature.

Fiction.—For the second year in succession, new novelists definitely overshadowed the veterans in 1955. Whatever the reasons, the fact could not be denied. The most distinguished veteran to produce during 1955 was Nova Scotia's Will R. Bird, and he stuck to his well-loved and frequently limned home area.

Despite the title, *The Sky Yorkshirer*, many of the scenes were laid in Nova Scotia, and Bird conveyed, with his familiar pungency, the flavour of ordinary Nova Scotian life just before and after World War I. Novelist Constance Beresford-Howe surprised her following by delving into 16th-century English history for plot material for *My Lady Greensleeves*, which described an authentic divorce case of the period with a liveliness that just missed distinction. Lionel Shapiro used his World War II experiences for the background of *The Sixth of June*, which reported, with moving accuracy, the individual tensions and conflicts which punctuated human relations in wartime Britain. Jan Hilliard, like Will Bird, explored the Nova Scotian scene, and took *A View of the Town*, which, for humour, event and character, easily matched Nova Scotian experts like both Bird and Thomas Raddall. Miss Hilliard's town was Inverness back in 1781, and her view recreated it with gusto and guffaws.

But the newcomers so far overshadowed the veterans, in quantity and quality, that critics felt reassured about the future of the novel in Canada. And the newcomers were widely distributed, geographically. In New Brunswick, Stuart Trueman produced a rollicking story about *Cousin Elva* who ran a tourist home. In Quebec, E. M. Granger Bennett used the lives of Louis Hebert and his family to portray, with suspense and excitement, *Land for Their Inheritance*; Brian Moore used his Belfast background to project the inner spirit of an Irish spinster, *Judith Heurne*; Ian Stormont (pseudonym) used his personal scientific training to dream up a fantasy which foretold post-H-bomb life in Canada with *Tan Ming*, a princess who was imprisoned while in a coma. In Ontario, Magdelana Eggleson used her adolescent Alberta mining town experiences for the plot of *Mountain Shadows*, which involves the conflicts of nationalities; Gale Taylor delved into the conflicting loyalties of second-generation Canadian Doukhobors, one of whom was *Anastasia's Daughter*; Evelyn Weller used the evolution across half a century of her own Toronto street for the action of *Cardinal Road*. In Saskatchewan, Mary Hiemstra used her *Gull Farm* life for a graphic narrative of prairie pioneering from 1903 onward. In British Columbia, Hubert Evans drew on his intimate knowledge of Pacific coast Indians who find, because of racial discrimination, there is more than *Mist on the River* in the canneries.

Poetry.—The 1955 poetry crop was meager, suffering as usual from public indifference and publishing wariness. Lorne Pierce defined the talent of Bliss Carman with *The Selected Poems of Bliss Carman*; G. H. Needler did the same for John Galt with *Poems of John Galt*. Arthur Bourinot printed *Ten Narrative Poems* to round out his poetic collection to 24 volumes. L. Eugenie Perry of Vancouver collected her craft-worthy nature poems under the title *Green Timbers*.

Nonfiction.—The fascination of Canadian writers for history remained as unslackened as it was inexplicable. Such work topped the nonfiction list by the traditional margin, and the scope was no less wide than in former years. A list of titles indicates the impact of this kind of writing upon publishers' resources, library shelves and reading public: *Canada's Flying Heritage* by Frank H. Ellis, *Ottawa: Portrait of a Capital* by Blodwen Davies, *Regina: The Queen City* by Earl Drake, *The Struggle for the Border* by Bruce Hutchison, *The Barley and the Stream* (brewing history) by Merrill Denison, *Toronto Hydro Recollections* by E. M. Ashworth, *Foundations of Canadian Nationhood* by Chester B. Martin, *Done at Grand Island* (the Acadians) by Will R. Bird, *Saskatchewan: The History of a Province* by J. F. C. Wright.

An aspect of history is, of course, biography, and as usual Canadian writers leaned hard into this subject. Donald Creighton

n finished his two-tome life of John A. Macdonald with *John Macdonald: the Old Chieftain*; James S. Marshall reported Captain Vancouver's voyage with *Adventures in Two Hemispheres*; W. S. MacNutt recreated the Marquis of Lorne's governorship with *Days of Lorne*; D. G. G. Kerr did the same for *Edmund Head*. More recent Canadians were subjects in several books of unexpected merit, including *Emily Carr As I New Her* by Carol Pearson, *My Mother, the Judge* (Helen MacGill) by Elsie G. MacGill, *That's What I'm Here For* (Archdeacon McElheran) by Irene Brock McElheran, *Swim to Glory* (Marilyn Bell) by Ron McAllister. Roy St. George Stubbs, with a unique flair for capsule biography, produced a cond serving, *Prairie Portraits*, which comfortably stood comparison with his earlier *Lawyers and Luymen*.

The arctic, another perennial Canadian theme, was not overlooked in 1955, and several books described aspects of it. They included Roland Wild's *Arctic Command*, a fascinating report the voyages of the "Nascopie" among the arctic islands; Philip . Godsell's *Pilots of the Purple Twilight*, an equally thrilling report of arctic flying; Nan Shipley's *Anna and the Indians*, a graphic recital of northern missionary work; Fred Bodsworth's *First of the Curlews*, a moving description of far north wildlife.

Juvenile.—It is not unfair to say that children's books jumped in 1955. There certainly were fewer than in 1954, and in the whole, quality was down. Exceptions were Margaret Bryan's *The Trail of the Red Canoe*, recounting excitement in Ontario's Algonquin park; John Craig's *Wagons West*, recreating the 1842 migration of land-hungry, Indian-pestered pioneers from Missouri to Oregon; Marion Lineweaver's *The Wildlife*, catching the flavour of salt-water sailing; and Marianna MacDonald's *Smugglers Cove*, capturing both adventure and smugglers in New Brunswick. Other juveniles included *Buckskin Brigadier* by Edward McCourt, *Return of the Viking* by Eva-Lis Suonio, *Korean Boy* by Chong-Yong Pak and Jock Carroll, *Living in Canada* by Alex A. Cameron, Mary Quale Innis and Arnold Boggs. (C. Cy.)

French.—The best books published in 1955 were all in the field of history and biography. This, in recent times, is exceptional. Lately, the novel and poetry definitely had stood out among all literary genres in French Canada. In 1955, however, the contributions to these two creative fields of writing were negligible. Young poets published their first small collections, yet none of them made any deep impression, with the possible exception of Gérard Bessette with his *Poèmes temporels*, a collection of poems in which the main theme was the passing of time and which showed a Mallarméan taste for musical lines. Young novelists also put out their first novel, but none of them established himself as a genuine writer. The less mediocre novel of the year was probably Bertrand Vac's *Saint-Pépin*, a bomy portrayal of small town politicians. The best piece of creative writing was Jean-Louis Gagnon's *La Fin des haricots*, such in the style of Guareschi's novels, and a highly humorous and satirical short story assailing all forms of dogmatism. This short story was to be found in the first issue of the new periodical, *Ecrits du Canada français*, in which appeared also Robert L'Étranger's first play, *L'Etrangère*, which was lacking in dramatic tension.

Among the best books of the year were Auguste Viatte's *Histoire littéraire de l'Amérique française*, a general survey, more sociological than literary in approach, of French writing in Canada, the United States and the French colonies in America; Louis Lachance's *La Lumière de l'âme*, which was a popularization of St. Thomas Aquinas's theory of grace; and Laure Rièse's *Amé de la poésie canadienne française*, a much too conservative anthology in which were ignored some of the best contemporary poets.

Important biographies appeared in 1955, namely: Marcel Trudel's *Chiniquy*, the first major work on this much-discussed religious reformer; Léon Pouliot's *Mgr Bourget et son temps* (the first volume of four or five), which was not only a biography of the bishop of Montreal but also a history of the situation of the Roman Catholic Church in Montreal in the middle of the 19th century; Adrien Thério's *Jules Fournier*, which did not do justice to one of the best polemicists of the beginning of the 20th century. The success-vocalist Félix Leclerc also published a fanciful autobiography, *Moi, mes souliers*.

Much attention was paid throughout Canada to the bicentenary of the deportation of the Acadians, which was also marked by the publication of Robert Rumilly's *Histoire des Acadiens* (in two volumes) and of Bona Arsenault's *L'Acadie des ancêtres*. Gustave Lanctôt collected, in *Une Nouvelle-France inconnue*, monographs on various aspects of the early history of Canada, the most important of which was *Servitudes de l'Eglise sous le régime français*. Merrill Denison's *The Barley and the Stream* was also published in French under the title of *Au pied du courant*.

On the whole, the year's crop was poor. (See also LITERARY PRIZES.) (G. SR.)

Canals and Inland Waterways. By 1955, approximately 23,000 mi. of inland and intracoastal waterways of the United States had been improved by the federal government. Major arteries in the inland and intracoastal waterway system had minimum 9- and 12-ft. channel depths needed by modern barge navigation. The traffic passing through the waterways had grown from 8,600,000,000 ton-miles in 1929 to 75,100,000,000 ton-miles in 1953, an increase of 800% in 25 years, and to 82,500,000,000 ton-miles in 1954. Total inland water-borne commerce in the U.S. in 1954, including that on the Great Lakes, was as shown in the table.

The federal investment chargeable to these waterways totalled about \$1,900,000,000 through fiscal year 1954. It was estimated on a conservative basis that transportation savings had exceeded that amount in the same 25-year period.

The Mississippi river system is the most extensive part of the nation's inland waterway network. The system links with dependable navigable channels, the Great Lakes on the north and the Gulf of Mexico on the south. Improved tributaries of the Mississippi river extend like broad turnpikes to rich sources of raw materials and to great centres of industry.

One of the most interesting improvements under way in the fiscal year ending June 30, 1956, was on the Calumet-Sag navigation project, which, when completed, would provide a more adequate barge navigation channel between the Illinois waterway at Joliet, Ill., and Lake Michigan southeast of Chicago. In other words, it would provide a better connection between the Mississippi river navigation system and the Great Lakes.

The existing 60-ft.-wide Calumet-Sag channel, restricted by many low bridges, limited tows to only one or two barges. By widening the channel to 225 ft. and altering, rebuilding or removing obstructive rail and highway bridges, modern tows of from six to eight barges and carrying 6,000 to 10,000 tons would be able to operate. Congress appropriated \$4,000,000 for initiation of construction on the Cal-Sag improvements during fiscal year 1956. The initiating phase of the operation included dredging in the western part of the Calumet-Sag channel and work on

Atlantic coast waterways	23,091,189,000 ton-miles
Gulf coast waterways	12,479,509,000 "
Pacific coast waterways	4,317,574,000 "
Mississippi river system	42,609,492,000 "
Great Lakes system	91,174,887,000 "
Other waterways	6,075,000 "
Total	173,678,726,000

the altering of two rail bridges.

Another improvement project which was under way on the inland waterways was that of modernizing the Ohio river navigation locks and dams. The Ohio river, a tributary of the Mississippi river, had been improved by the federal government by a system of 46 locks and dams, extending from Pittsburgh to the mouth of the river near Cairo, Ill., a distance of approximately 981 mi. The project contemplated the replacement of this lock and dam system with one of 21 structures. Five of the existing structures would be retained with improvements, and 16 new replacement structures would be constructed.

During 1955 work was under way on three of the contemplated new structures: New Cumberland locks and dam, replacing existing locks and dams 7, 8 and 9; Greenup locks and dam, replacing existing locks and dams 27, 28 and 29; and Markland locks and dam, replacing existing locks and dams 35, 36, 37, 38 and 39. The new structures would comprise a nonnavigable dam and two parallel locks, 110 by 1,200 ft. and 110 by 600 ft. in size, at each of the three locations. (S. D. S.)

Canada.—The world's deepest causeway, linking Cape Breton Island to the Nova Scotia mainland, was officially opened on Aug. 13, 1955. The Canso causeway is built on 10,000,000 tons of rock fill blasted out of Cape Porcupine, a mountain conveniently situated within a few hundred yards, and runs in an elongated figure S, 4,500 ft. over water, from Auld cove to Balache point. A two-lane highway, single-track railway and pedestrian walk take up its 80-ft. width which broadens to an 800-ft. base at its widest point. About 21 mi. of railway diversion by the Canadian National railways was involved in the \$20,000,000 project, as well as the inclusion of a canal to handle ship traffic through the strait. The navigation lock is 820 ft. long, 80 ft. wide and 32 ft. deep and is crossed by a swing bridge. The Strait of Canso no longer exists, having been replaced by two landlocked bays. The canal, dug out of the shore on the Cape Breton side, serves as the connecting waterway between the Atlantic ocean and the Gulf of St. Lawrence.

Construction was begun on the St. Lawrence seaway project in Oct. 1954, with a start made on the excavation of a navigation channel and the building of a dike between the Jacques Cartier and Victoria bridges at Montreal. Subsequently, more than 20 contracts approximating \$40,000,000 were let out of the \$215,000,000 Canada had earmarked for its share of the seaway undertaken jointly with the United States. Projects under way included a canal and lock, 768 ft. long, 80 ft. wide and 30 ft. deep, at Iroquois in the International rapids section, at a cost of \$6,470,000; dredging Lake St. Louis and Lake St. Francis; and excavation of an overland part of the seaway channel in the Lachine area. The 1,200-mi. 27-ft.-deep channel, extending from the head of the Great Lakes to the Atlantic ocean, was expected to be ready for opening of navigation in the spring of 1959.

The amount of freight transported through the Canadian canals during 1954 totalled 30,070,701 short tons compared with the record of 33,373,064 tons established in 1953. Other comparative figures, with 1953 in parentheses, were: vessel passages, 25,292 (27,563); passengers carried, 116,231 (112,082). Of the vessel passages, 83.3% were of Canadian or British registry, 3,145 flew the U.S. flag and the remaining 1,081 were registered in other countries. Expenditures were \$7,793,748 (\$8,394,586); revenues, \$1,599,328 (\$1,594,890). (W. H. V. A.)

Great Britain.—The seventh annual report of the British Transport commission was submitted to the minister of transport and civil aviation on June 24, 1955. Total traffic carried on the nationalized waterways in 1954 declined by 463,000 tons to a level of about 12,250,000 tons. Slight increases in carryings of liquids in bulk to nearly 2,000,000 tons and of general mer-



CANAL IN VENICE (It.) drained in Feb. 1955 to permit the removal of refuse and silt from its bottom. Workmen are standing under the famous Bridge of Sighs

chandise to about 4,000,000 tons were offset by a decline of about 600,000 tons in coal traffic to 6,300,000 tons, 9% below the 1953 level. There was a deficit of £119,000 on waterway operating, against £83,176 in 1953. In carrying activities, the deficit was £80,000 against £35,408 in 1953.

German Federal Republic.—Clearing and restoration work was continued and the total length of navigable inland waterways was brought up to 3,465 km., consisting of 967 km. of canals and 2,498 km. of navigable rivers. Work proceeded upon the enlargement of the Dortmund-Ems canal including a scheme for dredging to 2.5 m. (by the end of 1958) to accommodate 1,000-ton ships; upon the canalization of the upper Rhine; and upon the building of the Rhine-Main-Donau (Danube) waterway. Total traffic in 1954 slightly exceeded that of 1936. On the Kiel canal alone, traffic in 1954 was double that of 1936.

Pakistan.—The Kotri barrage across the Indus near Hyderabad was opened with the objects of controlling the flow, preserving navigation and irrigating more than 2,700,000 ac. of formerly unproductive land; 43 sluice gates (each spanning 100 ft.) and a navigation lock with a pair of lifting and rotating gates were fitted into the main barrage length of 3,000 ft. The barrage was made of concrete with stone facings. It was announced that among other benefits the barrage would ensure the water supply of both Hyderabad and Karachi to be substantially increased and a reserve of hydroelectric power would become available.

Iraq.—The Ramadi barrage on the Euphrates river was brought to the ultimate stage of construction, thus completing the Habbaniya flood scheme. The main objects of the scheme were the control of dangerous floodwaters and the irrigation of desertland.

Suez Canal.—The Canal company decided to construct two bypasses immediately, one at Port Said and the other at Kab-

d also to proceed with the first section of a two-part scheme for widening and deepening the canal, with the object of making possible the passage of 45 to 50 ships a day instead of the existing maximum of 40 ships, and also to enable large tankers, averaging 36 ft., to proceed at normal speed without causing excessive erosion. It was decided to make the Port Said bypass 3 km. long, on a line nearly parallel to the main canal, by extending the Hussein basin, and to do the work at Kabret by a new excavation on a length of 3.7 km., to be dug out in the southern part of the Great Bitter lake parallel to the maritime canal. It was decided to proceed at once with widening and deepening those parts of the canal where the cross section was less than 1,256 sq.m. and to defer, for the time being, certain proposed works where the cross section was greater, but with the ultimate object of giving the canal a wetted cross section varying according to district from 1,475 to 1,550 sq.m. See also ELECTRICAL INDUSTRIES; IRRIGATION; RIVERS AND HARBOURS.) (A. H. J. B.)

Canary Islands: see SPAIN.

Cancer. The term cancer is applied to all malignant tumours and this includes sarcomas—cancers arising in connective tissues (bone, tendon, muscle, etc.)—as well as the much more numerous carcinomas originating in the skin, the tissues lining the digestive and respiratory systems and the glandular structures. Malignant diseases involving the blood-forming tissues—leukemia, Hodgkin's disease and lymphosarcoma—are regarded as closely related to cancer.

Statistical Trends.—During 1955 in the United States cancer claimed 243,000 lives, a rate of 148 per 100,000. Although the crude death rate showed an increase over the figure for the previous year, the age-standardized death rates for most types of cancer continued to decline or to show no significant change. Cancer of the lung continued its striking increase, the burden of which was borne largely by males. The favourable trends noted for cancer in general among women resulted in important measure from improved curability of cancer of the uterus, to which the nation-wide program of public education and more widespread detection methods contributed.

Financial Support.—The national anticancer crusade of the American Cancer society was supported by voluntary contributions amounting to \$24,450,000, of which 28%, or \$6,846,000, was allocated for support of fundamental and clinical research and for the training of young investigators and physicians.

The federal government appropriated \$24,828,000 for its program of research and control, of which \$16,809,000 was in support of laboratory and clinical investigations. Contributions to the Damon Runyon fund, exclusively allocated to research support, totalled approximately \$1,500,000.

Education.—Education of the public stressed the early signs and symptoms of cancer, the importance of early diagnosis and the value of periodic physical examinations. Opinion surveys disclosed that those who know most about cancer have the most realistic and least fearful attitudes toward it, while those who know least about it are, in general, the most fearful.

Facilities.—The American College of Surgeons reported the existence of 506 approved cancer consultative (diagnostic) and treatment clinics and 135 approved cancer consultative clinics. Even approved cancer hospitals were listed. About 25 radioactive cobalt irradiators were operating, most of them installed within the past two years. Research was being carried on in laboratories and hospitals, many of them associated with universities, in more than 215 institutions.

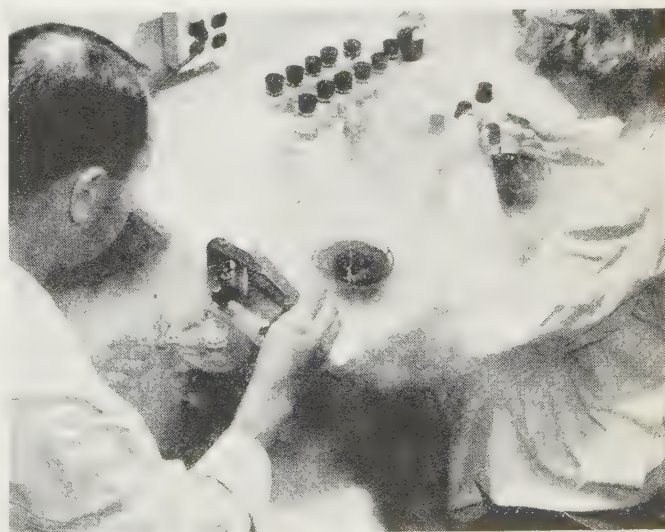
Advances.—Further experience with the vaginal cytologic method of diagnosis (smear diagnosis) confirmed its value in

disclosing cancer of the uterus, often in a very early stage when the rate of cure is as high as 80%. It became increasingly apparent that wide application of the test could sharply reduce deaths from uterine cancer, the leading cause of cancer deaths among women. Further study of cells in the vaginal secretion suggested a means of determining the best way of treating cancer of the neck of the womb—by surgery or by irradiation—in individual cases. Since the nucleus appears to control cell division, a characteristic feature of cancer, much research interest was focused on the minute chemical processes of the cancer cell, especially on how the nuclear substance is formed. Such studies made it possible to construct for the first time a model of one of the important components of the chromosomes, deoxyribosenucleic acid B. Numerous investigations of the chemical make-up of tobacco and its combustion products were undertaken and it was reported that benzpyrene, a cancer-inciting chemical, had been identified in the ash of cigarette paper.

The compound haematoporphyrin concentrates in tumour tissues (and in a few normal tissues in which cell division is active); by examining organs affected by cancer with ultra-violet light after the compound had been given to the patient, it was possible to determine with precision the extent of disease. The usefulness of carefully planned and selected ultraradical operations for extensive cancer became more firmly established. In one clinic 12% of women with advanced cancer of the pelvis untreatable by any other means were found to be alive and without evidence of cancer five years after removal of all the pelvic organs. In other clinical studies, the pituitary gland, located at the base of the brain, was removed in order to eliminate all possible sources of growth-stimulating hormones as a means of controlling rampant cancer of the breast and prostate. Some investigators held that improvement followed in about half the cases, while others were less enthusiastic.

A follow-up report on the Los Angeles county (Calif.) chest X-ray survey conducted about five years earlier disclosed that of the chest tumours discovered and operated on, 75% were removable and that 36% of this group were alive and well three years later. These figures were decidedly more hopeful than the usual experience with cancer of the lung and they gave strong support to the value of routine chest X-rays.

A review of recent developments in the chemotherapy (drug treatment) of cancer revealed that 14 chemical compounds, 4



PREPARING FROZEN TISSUE SECTIONS for cancer diagnosis at Brookhaven National Laboratory, Upton, N.Y., in 1955. The pathologist on the left is operating a freezing microtome in his left hand and a slicer, which shaves tissue thin enough for microscope use, in his right; the technician on the right is dyeing the slices so that individual cells may be easily identified

types of hormones and 5 radioactive isotopes were, with varying success, restraining the course of leukemia, Hodgkin's disease, lymphosarcoma, multiple myeloma, polycythaemia and cancer of the lung, ovary, thyroid, breast and prostate. While the results were unpredictable and usually temporary, they represented an epochal advance, the more remarkable for having been achieved in the space of 15 years. (See also BLOOD, DISEASES OF THE; SURGERY; X-RAY AND RADIOLOGY. (CH. C.)

Candy. More than 1,500 confectionery manufacturers in the United States produced approximately 2,700,000,000 lb. of candy in 1955, valued at \$1,100,000,000 at the wholesale level and almost \$2,000,000,000 at the retail level. This compares with 2,267,000,000 lb. valued at \$1,019,000,000 at the wholesale level in 1954. Almost 100,000 persons were employed in candy production and about 75,000 more in selling and distributing through wholesale channels. More than 2,000,000 retail outlets in the United States sold confectionery products.

The most significant development in the candy industry during the year was the levelling off of the cocoa bean market at the 30 to 35 cents per pound price range. This contrasted with an unparalleled fluctuation in the price of cocoa beans in the previous year, when a high of 72 cents per pound was reached.

There was no material change in candy consumption in 1955, with the American consumer buying approximately 16½ lb. of candy per person per year.

Major developments of the year were: (1) the continued increase in importation of confectionery products from abroad, especially from England; (2) the planning of a promotional campaign by the candy industry to overcome the propaganda of diet faddists; (3) continued liquidation of smaller manufacturing plants and mergers of others with larger operations in other fields; (4) interest shown by the industry in automation and automechanization of its production facilities; (5) greater interest in research and product development; (6) further emphasis on sanitation in the candy plant; and (7) continued and increasing use of hard-fat coatings.

The five-cent bar goods business again showed a decline, while ten-cent candy sales enjoyed another increase; as the year drew to a close the dime-bar business amounted to more than 30% of total bar goods sales. The sale of package goods in the price range of \$1 or more per pound remained relatively stable, showing only a 2% decrease in poundage. Sales of package goods in the retail price class of 50 to 99 cents per pound also declined.

Imports of sugar candy and confectionery into the United States increased to 20,000,000 lb. valued at more than \$8,000,000. This compares with 19,537,000 lb. with an import value of \$7,310,000 the year before. The United Kingdom accounted for approximately 70% of all candy imports. Exports of candy and chocolate from the United States continued to be negligible.

(D. Gw.)

Cane Sugar: see SUGAR.

Canning Industry. The United States and territorial pack of canned fruits, vegetables, juices, specialties, milk, meat and fish was approximately 610,000,000 cases during the 1954-55 season, according to the National Canners association. This quantity was 18,000,000 cases less than the large pack of 1953. Two of the seven groups of canned foods, canned fruits and canned fish, showed slight increases in production in 1954 compared with 1953. Each of the other major groups of canned foods registered slight declines from 1953. The pack of various canned foods from 1939 through 1954 is shown in Table I.

Production of canned baby foods in the U.S. in 1954 again registered a new high with a pack of 160,558,000 doz.—3%

above the 1953 production.

The quantity of poultry canned or used in canning during 1954 reached an all-time high of more than 230,000,000 lb.—24% above the 185,000,000 lb. canned in 1953. Poultry canned during the first six months of 1955 was 8% more than canned during 1954 in the same period.

The 1,130,000,000 lb. of fish canned in 1954 by U.S. canners was approximately one-fourth of the total catch of all fish. Ninety-nine percent of all tuna caught in 1954 was canned, 90% of the sardines and 80% of the salmon.

About 45% of the total acreage of all vegetables produced in the U.S. in 1954 was processed, and about one-fifth of the U.S. 1954 production of all fruits was canned.

The 11 major vegetables produced for processing in the U.S. in 1954 had a farm value of \$244,000,000. The farm value of the fruits canned in the U.S. in 1954 was \$133,000,000.

Canned food exports from the U.S. in 1954 totalled 788,000,000 lb. with a value of \$117,000,000. The 1954 export tonnage of canned foods was 8% above 1953 and the dollar value was 5% above 1953. Canned fruits, vegetables and juices represented 72% of all U.S. canned foods exported in 1954, compared with 67% in 1953. Exports of canned foods during the first six months of 1955 were 14% above canned food exports during the same period of 1954. Canada was by far the most important foreign market for U.S. canned fruits, vegetables and juices in 1954, taking about 17% of all U.S. exports of the commodities. The three next most important export markets for these commodities were Cuba, western Germany and the United Kingdom.

The per capita consumption of canned foods of all kinds in the U.S. during 1954 was estimated to be about 130 lb. The per capita consumption of selected groups of canned foods from 1939 to 1954 is shown in Table II.

Table I.—Production of Various Canned Foods in the U.S.
(In 000,000 of standard cases)

Year	Fruits	Juices	Vegetables	Specialties	Milk	Fish	Meat*
1939	52	43	108	74	51	19	9
1940	49	55	133	79	58	19	12
1941	62	59	163	92	77	23	20
1942	59	73	194	54	83	18	43
1943	47	79	179	53	73	17	46
1944	57	95	170	69	82	18	43
1945	52	111	177	83	90	19	43
1946	83	105	201	102	74	21	30
1947	68	98	166	104	77	22	24
1948	66	94	158	111	81	24	24
1949	71	91	164	112	66	26	23
1950	77	109	166	113	68	30	27
1951	83	104	209	118	67	25	33
1952	77	109	194	120	66	26	30
1953	80	114	189	127	60	26	32
1954†	83	100	183	125	59	28	32

*Excluding meat soups. †Preliminary.

Source: National Canners Association, Washington, D.C.

Table II.—Apparent Annual Civilian per Capita Consumption* of Various Canned Foods, U.S.
(In lb.)

Year	Fruits	Juices	Vegetables	Soups	Baby Foods†	Fish
1939	15.7	8.4	28.8	6.3	0.4	4.6
1940	18.7	10.0	31.0	6.7	0.5	4.1
1941	17.5	12.0	32.7	6.9	0.7	4.2
1942	17.0	12.8	34.8	7.3	1.2	2.8
1943	12.4	11.4	32.4	5.3	1.6	1.8
1944	9.1	13.1	31.0	6.6	2.1	2.5
1945	14.2	17.7	35.7	7.4	2.7	2.5
1946	21.9	22.6	41.0	8.7	2.8	3.8
1947	17.9	19.2	36.1	8.7	2.8	3.6
1948	17.8	21.4	33.1	9.6	3.5	3.8
1949	18.6	19.7	33.8	9.6	3.3	4.1
1950	20.9	18.6	36.6	10.2	3.4	4.3
1951	18.6	19.0	36.6	10.5	3.4	4.0
1952	20.6	18.6	35.8	11.2	3.6	4.1
1953	20.9	19.1	36.4	11.2	3.9	4.3
1954†	19.2	18.4	35.9	11.2	4.0	4.4

*Derived by U.S. Department of Agriculture from data on production and utilization from the annual supply of each food (production plus carry-over stocks plus imports) are deducted exports, government purchases and carry-over stocks. The residue is considered to be civilian consumption. This is divided by estimated population to determine per capita consumption.

†Estimated on the basis of total population, rather than on the population of children. On the basis of the number of children under the age of 3 years, consumption of foods in 1954 amounted to about 55 lb. per child a year.

‡Preliminary.

Source: U.S. Department of Agriculture, Agricultural Marketing Service.

During 1954 retail prices of canned fruits and vegetables averaged 104% of the 1947-49 average compared with 112.6% for all foods. During the first 8 months of 1955 the retail price index declined slightly to an average of 103.2% while the all foods index stood at 111.1%. Wholesale price indexes during 1954 reflected the relatively higher level of canned fruit prices compared with canned vegetables. However, during the first 8 months of 1955 wholesale prices of canned fruits and vegetables declined about 1½% while prices of canned vegetables increased slightly.

During 1955 extensive tests were conducted by the Federal Civil Defense administration in co-operation with the U.S. Atomic Energy commission and the canning industry to determine the effects of large-scale exposure of canned foods to gamma radiation. These tests revealed that canned foods on shelves or in basements about a mile from the blast were perfectly safe for human consumption immediately following a nuclear blast of nominal size. The test blast was the equivalent of 30,000 tons of T.N.T., or about 1½ times the strength of the Hiroshima bomb. Canned and glass-packed foods in houses and other structures as close as 4,700 ft. from the shot tower were substantially free of radioactivity. There was no bulging or bursting of containers from blast pressures. At 5,500 ft. canned and glass-packed foods were exposed in commercial fibreboard boxes on the ground surface with no protection. Although case surfaces at this distance were scorched and one case burned, the contents were undamaged, showed no induced radioactivity, and were found suitable for immediate use following the blast.

Tests made to determine the effects of exposure on vitamin content of canned foods exposed in shallow trenches within a fourth of a mile of the shot tower showed that niacin and riboflavin were completely unaffected in many of the products tested while sustaining only very minor losses in others. There was a loss of carotene in the vegetables and fruits tested. Nearly all of the products retained more than 80% of their thiamine and more than 90% of their ascorbic acid. The vitamin content of all the products tested was still well within the range ordinarily found in commercial production, and comparison with recommended daily allowances for each of the vitamins showed that canned foods normally considered good sources for one or more of these vitamins could still be regarded as good sources after exposure in this manner to the effects of intense radiation.

(H. L. Sr.)

Cape Verde Islands: see PORTUGUESE OVERSEAS TERRITORIES.

Cartographic Societies: see SOCIETIES AND ASSOCIATIONS, U.S.

Carnivals: see SHOWS.

Caroline Islands: see MARSHALL, CAROLINE AND MARIANA ISLANDS.

Cartography. International.—The Pan American Institute of Geography and History held its sixth general assembly in Mexico City, Mex., July 25-Aug. 3, 1955. Each country reported on recent advances and committees adopted resolutions on topographic maps, aerophotogrammetry, aeronautical charts, surveys of urban areas, and standardization of terms and terminology. A United Nations regional cartographic conference for Asia and the far east was held at Mussoorie, India, in February, attended by representatives of 19 countries and various international organizations. The role of mapping in development plans for the national economy was stressed. Standardized methods of triangulation, measurement, surveying, aerial photography and types of equipment were discussed, with countries exchanging valuable data on advances achieved.

Western Hemisphere.—The first sheets of the *National*

Atlas of the United States, showing the standard deviation of monthly average temperature, were published by the U.S. weather bureau. The Earth Sciences division, National Academy of Sciences-National Research council published "Map Standardization for a Loose-Leaf National Atlas." The U.S. Geological survey completed mapping of Kentucky at 1:24,000 scale. A map of "Uranium Deposits of the United States" at 1:5,000,000 scale proved to be a best-seller. The U.S. Coast and Geodetic survey announced completion of the arc of triangulation between Point Barrow and Demarcation Point on the Alaska-Canada boundary, thus finishing the trigonometric survey of the entire Alaskan perimeter. Rand McNally and Co. published a centennial anniversary edition of the cosmopolitan *World Atlas*. The Scripps Institution of Oceanography mapped an undersea mountain chain 500 mi. long and 100 mi. wide in water 15,000 ft. deep in the Pacific ocean between Clipperton and the Revilla Gigedo Islands.

The National Air Photographic library reported that Canada was almost completely covered by aerial photographs of which about two-thirds were vertical photographs. Maps and aeronautical charts at 1:500,000 scale provided complete coverage of that country. Noteworthy special-purpose maps produced in Canada included: "A Geological Map of Newfoundland" at 1:760,320 scale published by the province; "Mineral Map of the Province of Quebec" at 1:7,600,000 scale published by the Quebec ministry of mines; and "Principal Mining Areas and Producing Mines" at 1:7,603,200 scale published by the Geological Survey of Canada.

The National Cartographic Institute of Cuba published six topographic maps at 1:20,000 scale covering Havana. The Military Cartographic department of Mexico published 13 sheets in the Valle de Mexico and 6 sheets in the Isthmus of Tehuantepec at 1:25,000 scale. A new shaded-relief map of Honduras at 1:500,000 scale was completed by the Honduran government. Ten maps at 1:50,000 scale were printed by El Salvador: 4 sheets were in work, and 30 were planned. A fine example of shaded relief is depicted on the "Preliminary Map of the Department of Cundinamarca," Colombia, at 1:250,000 scale, published for the Bank of the Republic. A "Geological Map of the Republic of Venezuela" in four sheets at 1:1,000,000 scale was published by the government of that country.

The National Council of Geography of Brazil published a summary of technical work by the Division of Cartography. The Military Geographic Institute of Uruguay completed 37 maps at 1:50,000 scale with two being in work. A 1:200,000-scale map of Paysandu department was also produced. The Argentina National Meteorological service reported that 100 sheets of the "Climatic Atlas of Argentina" had been completed. The Military Geographic Institute of Chile reported complete map coverage of the country at 1:250,000 scale.

Europe.—Volume iii (northern Europe) of *The Times Atlas of the World* was published in April. The remaining four volumes of this outstanding contribution were to be published at the rate of one volume a year until completed in 1959. The Society of Antiquaries published two sheets of the "Tabula Imperii Romani" at 1:1,000,000 scale: sheet HI 33 Lepcis Magna and HI 34 Cyrene. The Military Geographic Institute of Belgium completed production of a new type R (rapid) series at 1:50,000 and 1:100,000 scales, compiled from old survey data and recent cultural information. The Touring Club of Italy was producing a new loose-leaf edition of the *International Atlas* to contain 175 pages of maps and a 250-page index. The date for completion was 1957. Three contoured maps of Stockholm at 1:50,000 scale were published by the National Map Service of Sweden. Recently published maps of the *Atlas of Sweden* included: 19-20, "Glaciation and Changes in Level in Quaternary

Age"; 21-22, "Striae, Terminal Moraines, Ice Recession Lines"; and 73-74, "Production and Consumption of Wheat and Rye." The Geodetic Institute of Denmark published volume 1 (Nord Jylland) of the *Atlas of Denmark* at 1:100,000 scale.

The German Democratic Republic (East Germany) was producing a special map series at 1:5,000 and 1:10,000 scales. The 1:5,000 scale experimental mapping program which began in 1952 in Hungary was officially adopted as the standard base for future mapping. The Cartographic Service of Czechoslovakia had a topographic mapping program underway to completely map the country at 1:10,000 scale. Industrial areas were to be mapped at 1:5,000 scale. New maps published in the U.S.S.R. included a physical map of the U.S.S.R. and an administrative map of the European areas of the country at 1:4,000,000 scale; and administrative maps at 1:5,000,000 and 1:8,000,000 scales of the U.S.S.R. Political and administrative maps at medium and small scale were published for Smolensk, Sumy, Chuvash, Tatar, Archangel, Kalinin, Penza, Sverdlovsk and Stalingrad. Volumes 24-32 of the *Great Soviet Encyclopaedia* included maps on the Leninabad, Leningrad, Merv, Minsk, Mogilev, Molodechno, Molotov, Moscow, Murmansk, Namangan, Nikolayev, Nizhne-amur, Novgorod, Novosibirsk, Odessa, Omsk, Orlov, Osh, Pavlodar and Penza *oblasts*; Nagorno-Karabakh autonomous *oblast*; the Mordova A.S.S.R. and Novaya Zemlya.

Asia.—A working party of the UN Economic Commission for Asia and the Far East met in Bangkok, Thailand, Sept. 12-24, 1955, to standardize hydrographic terminology.

In Israel, the ZVI Friedlander Qiryat Haiyim prepared a communications map of that country at 1:340,000 scale. Administrative divisions of Iran, as of 1953, were depicted on a 1:2,000,000 scale map made by the Iranian ministry of the interior. The harbour of Rangoon was charted at 1:3,600 scale by the board of management for the port. A land utilization map of Penang, Malaya, was published by the Malayan Survey department. A city plan of Johore at 1:6,366 scale was published by the city's survey. In the People's Republic of China, a long-term research project of field survey and mapping of the upper and middle Yellow river basin was initiated by the Institute of Geography, Academia Sinica. This organization also began a field survey of soils and water conservation in the northwestern provinces.

Africa.—The (British) Directorate of Colonial Surveys in co-operation with local survey departments was progressing in mapping Africa, as follows: at 1:50,000 scale preliminary plots in Basutoland, Nigeria, Northern Rhodesia, Nyasaland, Swaziland and Tanganyika; at 1:125,000 scale in Bechuanaland, Somaliland Protectorate and Tanganyika. Maps at 1:1,000,000 and 1:2,000,000 scales were prepared for Cameroons under U.K. trusteeship. A map of 1951 population distribution in South Africa was published at 1:1,500,000 scale by the South African government printer. The department of the surveyor-general at Salisbury published a hypsometric map of Rhodesia and Nyasaland at 1:3,000,000 scale.

Two soil maps were published: "Soil Regions of Ethiopia" at 1:4,500,000 scale by the ministry of education; and a provisional map of soils at 1:2,000,000 scale by the Mozambique Centre of Scientific Research.

Oceania.—The Australian Institute of Cartographers published the first issue of its official magazine, *Cartography*, in Dec. 1954.

The Australian National Mapping office was producing a new series of aeronautical charts at 1:1,000,000 scale covering the entire continent (as a contribution to the International Civil Aviation organization standard world aeronautical chart). A new Australian Geographical series at 1:1,000,000 scale was expected to be completed in two years; 18 out of 58 sheets had been published. Special maps had been published of Antarctica at

1:10,000,000, of Papua and New Guinea, and of Australia (four sheets) at 1:2,534,400 scale and of the Northern Territory at 1:2,000,000 scale. In the last five years, Australia had prepared basic planimetric and photomap coverage for more than 25% of the country.

The (British) Directorate of Colonial Surveys produced three sheets of a 1:50,000-scale sketch map of Guadalcanal, in the Solomon Islands.

Two sheets at 1:500,000 scale of Sarawak and Brunei were published by the Land and Survey department at Kuching.

An atlas "Indonesia Dan Dunia", was published in Djakarta. (See also COAST AND GEODETIC SURVEY, U.S.; GEOLOGICAL SURVEY, U.S.; NATIONAL GEOGRAPHIC SOCIETY.) (W. B. BR.)

Catastrophes: see DISASTERS.

Catholic Church: see ROMAN CATHOLIC CHURCH.

Catholic Community Service, National: see SOCIETIES AND ASSOCIATIONS, U.S.

Catholic Organizations for Youth: see SOCIETIES AND ASSOCIATIONS, U.S.

Catholic Welfare Conference, National: see SOCIETIES AND ASSOCIATIONS, U.S.

Cattle: see LIVESTOCK.

Cement. In 1954, world output of cement increased 194,000,000 metric tons (213,850,000 short tons) as reported in MINERAL AND METAL PRODUCTION AND PRICES. The U.S. output was 23.8% of the total.

United States.—The accompanying table is based on U. S. bureau of mines reports. Preliminary figures for 1954 indicate

Cement Industry in the U.S.

(Millions of barrels, 376 lb. each)

	1946	1947	1948	1949	1950	1951	1952	1953	1954
Production	166.5	189.5	208.9	212.9	230.3	249.5	252.7	261.1	261.1
Portland cement . . .	164.1	186.5	205.4	209.9	226.0	246.0	249.3	258.6	258.6
Other varieties . . .	2.5	3.0	3.4	3.2	4.2	3.4	3.4	3.4	3.4
Shipments	172.1	190.4	207.7	209.3	232.0	244.6	254.8	261.1	261.1
Portland cement . . .	169.6	187.5	204.3	206.2	227.8	241.2	251.4	258.6	258.6
Other varieties . . .	2.5	2.9	3.4	3.2	4.2	3.5	3.4	3.4	3.4
Stocks									
Portland cement . . .	11.0	10.0	11.2	14.7	13.0	18.1	16.0	16.0	16.0
Clinker	3.9	3.6	3.8	4.6	3.9	4.7	5.3	5.3	5.3
Other varieties . . .	0.1	0.1	0.2	0.2	0.2	0.2	0.1	0.1	0.1
Exports	5.2	6.8	5.9	4.6	2.4	2.9	3.2	3.2	3.2
Available supply . . .	166.9	183.5	202.0	204.9	231.0	242.6	251.1	258.6	258.6

that 157 plants utilizing 92% of their annual capacity produced 271,277,000 bbl. of portland cement and shipped 274,096,000 bbl. Exports totalled 4,925,714 bbl. Year-end stocks were down to 16,722 bbl. Plans announced at the beginning of 1955 were for expansion by 20,000,000 bbl. during 1955. Output in the first half of 1955, using 95% of capacity, was 11% more than the output in the first half of 1954, and shipments were 11% greater. (F. E. H.)

Census Data, U.S. The total population of the United States, including members of the armed forces overseas, was estimated at about 165,762,000 Sept. 1, 1955, by the bureau of the census. This figure represented an increase of 14,630,000, or 9.7%, from April 1, 1954, the date of the last census, and an increase of 2,818,000, or 1.7%, over the estimate for Sept. 1, 1954.

Between the 1950 census and July 1, 1955, the most recent date for which estimates of the population classified by age had been made, the population, including overseas armed forces, increased by about 14,116,000, or 9.3%, to a total of 165,200,000. The rate of growth of some of the age groups was substantially greater, however, particularly the younger age groups and the elderly. The number of children 5 to 9 years old increased by about 30%, or more than three times the average for all ages, and those 10 to 14 years old gained approximately 2

During this period. The number of persons 65 years old and over increased by about 16%. Changes in the population, including armed forces overseas, between April 1950 and July 1955, by broad age groups, are given in Table I.

Table I.—Composition of U.S. Population, by Age, 1955 and 1950

Age	Population including armed forces overseas		Change, April 1950 to July 1955	
	July 1955	April 1950	Number	Per cent
All ages . . .	165,248,000	151,132,000	+14,116,000	+9.3
Under 5 years . . .	18,305,000	16,164,000	+2,141,000	+13.2
5 to 13 years . . .	28,096,000	22,154,000	+5,942,000	+26.8
13 to 17 years . . .	9,238,000	8,435,000	+803,000	+9.5
17 to 24 years . . .	15,106,000	16,081,000	-976,000	-6.1
24 to 44 years . . .	46,946,000	45,385,000	+1,561,000	+3.4
44 to 64 years . . .	33,429,000	30,720,000	+2,709,000	+8.8
64 years and over . . .	14,128,000	12,195,000	+1,933,000	+15.9

Population by Age.—The effect of the rapid growth of the population of elementary school age was generally well known throughout the country. Of considerable importance, moreover, was the fact that there were considerably more than 18,000,000 children of preschool age (under 5 years)—one-eighth more than in 1950. Most of these children would be entering school during the next five years, and they would add considerably to the problems already facing many school administrators and local boards of education. (A rather smaller number of children would be leaving school by dropout or graduation over this period.)

Persons of high school age (14 to 17 years) showed moderate increases while the college age population (18 to 24 years) declined between 1950 and 1955. The 14-to-17-year age group increased by about 800,000, or 9.5%, from 1950, and it was anticipated that this group would continue to grow at a fairly rapid pace for several years to come. The college age group, on the other hand, was expected to show only very slight increases for the next several years. After 1960 this group would begin to grow more rapidly, as the larger number of persons born during World War II and the postwar years replaced the smaller number born in the middle and latter half of the 1930s. The population 65 years and over continued to show rapid gains, increasing by about 1,900,000 between 1950 and 1955. There were about 14,100,000 persons in this group on July 1, 1955. In comparison, there were 12,200,000 in 1950 and about 10,000,000 in 1940. At the beginning of the century this group numbered about 3,000,000.

Civilian Population of States.—Most of the states shared the 12,650,000 growth of the civilian population in the continental United States between April 1950 and July 1955. The total civilian population in 1955 was 162,284,000 as compared with 149,634,000 in 1950. (The total number in the armed forces in the United States and overseas on July 1, 1955, was about 2,964,000, but detailed information on geographic distribution of the armed forces was not available for security reasons.) The gains in civilian population were not evenly distributed throughout the country. As in earlier years, the west had the largest annual rate of growth among the major regions. Several states outside the west also had high rates of increase, while losses were indicated for seven states. In consideration of possible errors in the estimates, changes of population within 1 or 2 or three percentage points, plus or minus, as shown in Table II, should be regarded as indicating little or no change.

Population Projections.—Revised projections of the U.S. population, based on various assumed fertility rates, were published by the census bureau late in 1955 for five-year intervals from 1960 to 1975. The projected figures for 1960 were in a range of 176,500,000 to 179,400,000; for 1965, the range was from 186,300,000 to 193,300,000; for 1970, the range was from 196,400,000 to 209,400,000; for 1975, the range was from 206,000,000 to 228,500,000. In announcing the projections, the census bureau pointed out that the major uncertainty in projections of the future population was that relating to fertility. The pro-

jections for the population already born were based on expected mortality rates, while the projections for the groups yet to be born during the 1955-75 period varied according to assumed fertility rates. The projections also were based on the assumption that there would be no disastrous war, major economic depression, epidemic or other catastrophe.

Table II.—Estimates of the Civilian Population, for Continental United States, by Regions, Divisions and States, July 1, 1955*

Region, division and state	July 1, 1955	April 1, 1950	Increase (+) or decrease (—), April 1, 1950, to July 1, 1955	
			Amount	Per cent
Continental United States . . .	162,284,000	149,634,000	+12,650,000	+8.5
Regions				
Northeastern states . . .	42,393,000	39,344,000	+3,049,000	+7.8
North central states . . .	48,137,000	44,369,000	+3,768,000	+8.5
The south . . .	49,144,000	46,653,000	+2,492,000	+5.3
The west . . .	22,610,000	19,269,000	+3,341,000	+17.3
Northeastern states				
New England . . .	9,839,000	9,261,000	+577,000	+6.2
Middle Atlantic . . .	32,555,000	30,083,000	+2,472,000	+8.2
North central states				
East north central . . .	33,480,000	30,337,000	+3,144,000	+10.4
West north central . . .	14,657,000	14,032,000	+625,000	+4.5
The south				
South Atlantic . . .	22,547,000	20,860,000	+1,687,000	+8.1
East south central . . .	11,438,000	11,412,000	+26,000	+0.2
West south central . . .	15,159,000	14,380,000	+779,000	+5.4
The west				
Mountain . . .	5,753,000	5,021,000	+732,000	+14.6
Pacific . . .	16,857,000	14,248,000	+2,609,000	+18.3
New England				
Maine . . .	890,000	912,000	-22,000	-2.4
New Hampshire . . .	553,000	531,000	+22,000	+4.1
Vermont . . .	377,000	378,000	-1,000	-0.2
Massachusetts . . .	4,972,000	4,665,000	+307,000	+6.6
Rhode Island . . .	814,000	774,000	+40,000	+5.1
Connecticut . . .	2,233,000	2,001,000	+232,000	+11.6
Middle Atlantic				
New York . . .	16,053,000	14,801,000	+1,252,000	+8.5
New Jersey . . .	5,370,000	4,802,000	+568,000	+11.8
Pennsylvania . . .	11,132,000	10,480,000	+652,000	+6.2
East north central				
Ohio . . .	8,946,000	7,938,000	+1,008,000	+12.7
Indiana . . .	4,325,000	3,932,000	+393,000	+10.0
Illinois . . .	9,297,000	8,672,000	+625,000	+7.2
Michigan . . .	7,222,000	6,361,000	+861,000	+13.5
Wisconsin . . .	3,691,000	3,433,000	+257,000	+7.5
West north central				
Minnesota . . .	3,169,000	2,981,000	+188,000	+6.3
Iowa . . .	2,690,000	2,621,000	+69,000	+2.6
Missouri . . .	4,094,000	3,952,000	+142,000	+3.6
North Dakota . . .	641,000	620,000	+22,000	+3.5
South Dakota . . .	672,000	650,000	+22,000	+3.4
Nebraska . . .	1,369,000	1,322,000	+47,000	+3.6
Kansas . . .	2,021,000	1,887,000	+134,000	+7.1
South Atlantic				
Delaware . . .	380,000	318,000	+62,000	+19.5
Maryland . . .	2,593,000	2,301,000	+292,000	+12.7
District of Columbia . . .	831,000	787,000	+44,000	+5.6
Virginia . . .	3,421,000	3,208,000	+214,000	+6.7
West Virginia . . .	2,001,000	2,005,000	-4,000	-0.2
North Carolina . . .	4,190,000	4,014,000	+175,000	+4.4
South Carolina . . .	2,226,000	2,096,000	+131,000	+6.2
Georgia . . .	3,539,000	3,402,000	+137,000	+4.0
Florida . . .	3,364,000	2,729,000	+635,000	+23.3
East south central				
Kentucky . . .	2,948,000	2,913,000	+34,000	+1.2
Tennessee . . .	3,399,000	3,281,000	+118,000	+3.6
Alabama . . .	3,006,000	3,053,000	-47,000	-1.6
Mississippi . . .	2,085,000	2,164,000	-79,000	-3.7
West south central				
Arkansas . . .	1,770,000	1,908,000	-138,000	-7.2
Louisiana . . .	2,902,000	2,670,000	+232,000	+8.7
Oklahoma . . .	2,136,000	2,218,000	-82,000	-3.7
Texas . . .	8,351,000	7,584,000	+766,000	+10.1
Mountain				
Montana . . .	628,000	589,000	+39,000	+6.6
Idaho . . .	606,000	588,000	+17,000	+2.9
Wyoming . . .	295,000	282,000	+13,000	+4.7
Colorado . . .	1,508,000	1,307,000	+201,000	+15.4
New Mexico . . .	769,000	668,000	+101,000	+15.1
Arizona . . .	955,000	742,000	+213,000	+28.7
Utah . . .	776,000	687,000	+89,000	+12.9
Nevada . . .	216,000	157,000	+59,000	+37.6
Pacific				
Washington . . .	2,497,000	2,317,000	+180,000	+7.8
Oregon . . .	1,664,000	1,519,000	+145,000	+9.6
California . . .	12,696,000	10,413,000	+2,283,000	+21.9

*Figures exclude persons in the armed forces stationed in each area. Each estimate has been independently rounded to the nearest thousand and from figures computed to the last digit; hence, the sums of parts shown may differ slightly from the totals shown. Percentages are based on unrounded numbers.

Population by Residence.—Almost all of the increase in the civilian population of the U.S. after April 1950 was in the population of 168 of the standard metropolitan areas of the country, according to figures from the census bureau's current population survey conducted in April 1955. Of the 11,800,000 increase in the civilian population over the five-year period,

11,500,000 were in the metropolitan areas. The civilian population in the metropolitan areas rose from 83,800,000 to 95,300,000, an increase of 13.7%. The civilian population in the territory outside the metropolitan areas increased from 65,800,000 to a little more than 66,200,000, up only $\frac{1}{2}$ of 1%. Within the metropolitan areas, the rate of growth in the outlying parts (27.8%) was seven times as rapid as in the central cities (3.8%). Growth in the outlying parts of the metropolitan areas was greatest in the territory classified as rural in 1950. The civilian population of this area increased by 5,100,000, or 46.5%, whereas the population living in urban territory outside the central cities rose by 4,500,000, or 19.1%. Undoubtedly, much of this formerly rural territory had been built up since 1950 and would qualify for inclusion as urban. In the territory outside the metropolitan areas, the urban population increased by 5.0% to 24,200,000. The rural population, on the other hand, declined by 1.9% to 41,900,000.

The total farm population in April 1955 was estimated at about 22,200,000, a decrease of nearly 3,000,000 from 1950 when an estimated 25,100,000 were living on farms.

Marital Status.—The number of married and widowed women continued to increase substantially between 1950 and

Table III.—Projections of U.S. Population to 1975

Year (July 1)	Series AA*	Series A†	Series B‡	Series C§
1960	179,400,000	177,800,000	177,800,000	176,500,000
1965	193,300,000	190,300,000	190,300,000	186,300,000
1970	209,400,000	204,600,000	203,000,000	196,400,000
1975	228,500,000	221,500,000	214,600,000	206,900,000

*Series AA projections assume continued growth to 1975 at the 1954–55 level of fertility. †Series A projections assume growth to 1975 at the 1950–53 level of fertility. ‡Series B projections assume that growth at the 1950–53 level of fertility continues to 1965, then declines to about the prewar level by 1975. §Series C projections assume that the 1950–53 level of fertility declines from 1953 to about the prewar level of fertility by 1975.

1955, but the number of single women remained about the same, according to the April 1955 current population survey. In the five years, the number of women 14 years old and over increased by 3,600,000, or approximately 700,000 per year. The increase among married women amounted to about 550,000 per year, and the increase among widows amounted to about 150,000 per year. Changes in the number of single women and divorced women were small. In April 1955 the number of women 14 years old and over was about 60,300,000, of whom about 40,300,000 were married, 7,600,000 were widows, 11,000,000 were single and 1,400,000 were divorced.

About 1,400,000 of the married women were separated from their husbands.

There were about 56,000,000 men 14 years old and over in the population covered by the survey, or about 1,700,000 more than in 1950. The number of single men declined by about 700,000 during the five years to about 13,500,000 in 1955. A very large decline of about 1,000,000 single men in the civilian age group 20 to 24 years old resulted not only from an expansion of the armed forces but also from an increase in the number of married and from the relatively small number of births in the early 1930s. The number of married men of all ages increased by 2,100,000 in five years, whereas the total number of civilian men increased by only 1,700,000. Of the 56,000,000 total for men 14 years old and over in 1955, 39,100,000 were married, 2,400,000 were widowers, 13,500,000 were single and about 1,000,000 were divorced.

Income of Individuals.—About 78,000,000 Americans, 14 years of age and over, had some income in 1954 and the average (median) income was \$2,300, about the same as in 1953, according to results of the April 1955 survey.

The average income of an estimated 50,000,000 men who had some income in 1954 was \$3,200. For the 28,000,000 women with some income, the average income figure was about \$1,200.

The average income of men, which had been rising steadily between 1945 and 1953, levelled off at \$3,200 in 1953 and 1954.

Their average income had risen about \$1,400, or 75% above the 1945 figure of \$1,800. The average income of women during the same period increased by about \$250, or 30% above a 1945 figure of \$900. One reason for the relatively smaller increase in the income of women was the fact that the effect of wage increases for women workers had been partially offset by an increase in the proportion of intermittent workers whose annual earnings tended to be low.

Between 1947 and 1954 most occupation groups experienced steadily rising levels of income. During this period, average income increased sharply for all employed men except farmers and farm labourers, whose incomes, on the average, fluctuated erratically from year to year. The greatest relative gains were made by men in one of the highest paid groups, the salaried managerial workers (\$3,700 to \$5,700) and by the most highly skilled "blue collar" group, the craftsmen (\$2,700 to \$4,300). Among women the largest relative gains in average income were recorded by the highest paid group, the professional workers (\$1,900 to \$3,000).

Income of Families.—Average (median) family income in the United States was estimated at \$4,200 in 1954. This figure was about the same as in 1953 but \$300 higher than in 1952. The increase since 1952 probably represented a significant gain in purchasing power for the average family, since prices rose only slightly during the same period.

Of the nation's 42,000,000 families, about 16,000,000, or two-fifths, received incomes of \$5,000 or more in 1954 while 8,000,000, or one-fifth, had incomes of less than \$2,000. The remaining 18,000,000 families were in the \$2,000-to-\$5,000 bracket.

The 7% gain in family income from 1952 largely reflected the continued rise in wage rates for workers in most major industries. The survey data indicated that the median wage of salary income rose between 7% and 8% from 1952 to 1954. During this period, average income from farm self-employment decreased substantially while receipts from other sources of income remained stable.

Civilian Labour Force.—The total civilian labour force, 14 years old and over, averaged about 65,500,000 during the first three quarters of 1955 with a peak of 67,700,000 in August. The total civilian labour force averaged about 64,500,000 in 1954 with a peak of about 65,500,000 in August.

In Aug. 1955 total civilian employment reached a record level of 65,500,000, according to the census bureau's "Monthly Report on the Labor Force." Through the first nine months of the year, civilian employment averaged about 62,700,000, as compared with a monthly average of 61,200,000 for the year 1954. In September civilian unemployment was estimated at 2,100,000, the lowest point since the fall of 1953. The monthly average unemployment was about 2,800,000 for the first nine months of 1955 as compared with a 3,200,000 monthly average for the year 1954.

Another peak established during 1955 was in the number of employed women and teen-age girls which in July reached 20,200,000, breaking over the 20,000,000 mark for the first time. The female employment total represented nearly 31% of the total number of all employed persons in July.

Number of Households.—There were an estimated 47,800,000 households in the United States in April 1955. This was an increase of 4,200,000, or about 850,000 a year, from 1950. In 1955 there were about 42,200,000 urban and rural nonfarm households and 5,500,000 farm households as compared with 37,300,000 nonfarm and 6,300,000 farm households five years earlier. Thus the increase for the five-year period was entirely in nonfarm areas. Farm households in the United States have been decreasing in number at an average annual rate of about

50,000 during the five years 1950-55. Nonfarm households had been increasing at a rate of about 1,000,000 yearly during the same period. The number of married couples living doubled up households with others reached a postwar low of about 1,300,000, while in 1950 about 2,000,000 and in 1947 about 2,900,000 did not maintain their own households. A survey covering the second quarter of 1955 indicated that available vacant dwelling units amounted to about 2.3% of the nation's housing compared with a rate of 1.6% in 1950.

Enrolment in Schools.—Enrolment in school at the beginning of the 1954-55 school year was a record high of 36,100,000. Elementary school enrolment (first 8 grades) was 24,400,000, high school enrolment (grades 9 to 12) was 7,700,000 and college enrolment was 2,400,000. In addition, about 1,500,000 children were enrolled in kindergarten. About 30,000,000 persons were enrolled in public schools below the college level and 1,000,000 were enrolled in private schools, including parochial schools. Growth in private elementary and high school enrolment had taken place twice as fast, percentage-wise, as in similar levels of public schools since 1948, the first year for which such census data were available. During these six years the number of public school pupils increased by 4,800,000, or 20%, whereas the number of private school pupils increased by 1,200,000, or 9%. About 856,000 persons 14 to 34 years old were enrolled in special schools, providing instruction in trade or business, outside the regular school system.

Commerce and Industry.—The growth of the manufacturing industries in the United States after World War II is shown in a comparison of statistics from the *Annual Survey of Manufactures* for 1953 with data published in the 1947 *Census of Manufactures*. Total manufacturing employment during the period rose from 14,300,000 in 1947 to 17,100,000 in 1953. Value added by manufacture rose from \$74,400,000,000 to \$121,700,000,000.

A census of manufactures was conducted during 1955, covering operations of factories in 1954, and tabulation of the results was begun in November with publication of final results scheduled for completion by midsummer of 1956.

Census of Agriculture.—By Nov. 1955 the census bureau had published preliminary data of the 1954 *Census of Agriculture* for 33 states and about 2,000 counties. U.S. summary data had not yet become available. However, indications were that the census would show a decrease of about 8% to 10% during the five years 1950-55 in the total number of farms. Part of this decrease resulted from the consolidation of acreage into larger farms. Part of the change arose from the fact that the operators of hundreds of thousands of small marginal farms had found full or part-time jobs in industry that enabled them to get a better living, and their small farmsteads had become rural homes.

Moreover, suburban residential developments had diverted land away from agriculture.

Census Improvements.—During the year, the census bureau installed its second electronic data computing system (UNIVAC) to supplement the capacity of the first such system which was specially built for census work and had been in operation for several years. Speedier publication of the results of current surveys based on sample data had been made possible by use of this equipment and addition of the second system was made to expedite the publication of data collected in the full-scale censuses. Preparations also were under way in the fall of 1955 for the expansion of the sample used in the current population survey which collects the data on which the census bureau bases its monthly estimates of employment and unemployment, as well as other items of information about the population. (See also BIRTH STATISTICS; BUDGET, NATIONAL; EMPLOYMENT; Hous-

ING; IMMIGRATION, EMIGRATION AND NATURALIZATION; INCOME AND PRODUCT, U.S.; INTERNATIONAL TRADE; MARRIAGE AND DIVORCE; WAGES AND HOURS; WEALTH AND INCOME, DISTRIBUTION OF.)

(R. W. B.)

Centennials: see CALENDAR, 1956, page xxii.

Central African Federation: see RHODESIA AND NYASALAND, FEDERATION OF.

Ceramics. The year 1955 was significant with regard to ceramics and ceramic products. There was a more general appreciation of what ceramics encompasses, as well as an increased appreciation of the importance of ceramic developments to progress in the fields of electronics, rockets, jet engines and nuclear engines. There was more interest in and emphasis on ceramic education, ceramic research and ceramic developments. Curriculums were strengthened, numerous ceramic research laboratories were established, and many capable scientific minds were attracted to the field.

During the year, volume output and value of ceramic products throughout the world increased appreciably. These products included abrasives, cements, enamels, structural clay products, sewer pipe, refractories and white wares (sanitary ware, electrical porcelain, table ware, wall tile, floor tile and dielectrics). Competition for markets throughout the world increased, and greater impetus was given to the manufacture of ceramic products in many European, middle east, and far east countries.

Increased production of ceramics was closely allied with reconstruction programs, new building programs, road-building programs, increased population and the increase in metal production. Special developments in the field were brought about by the demands of the electronic industry, the communications and transportation industries, defense programs and atomic energy developments.

Every segment of the industry was concerned with a greater use of automatic equipment, lower production costs, the application of quality control, the improvement of quality of product and more satisfactory packaging. Improvements were made in mixing, tempering, shaping, drying and firing, with attendant step-ups in production and a lowering of costs. Although great strides were made in practically every phase of production, particular note should be made of advances in the areas of plastic pressing, injection moulding, hot pressing, dimension control and the use of electricity in melting and firing.

There was a greater than usual search for workable deposits of unique raw materials as well as for deposits of standard raw materials. Associated with this search was an ever increasing interest in the areas of beneficiation and mineral conservation. These programs, together with associated technological studies, resulted in the reconsideration of product composition and mineral utilization. Concentrated attention was given to compounds of beryllium, columbium, hafnium, lanthanum, lithium, molybdenum, neodymium, tantalum and titanium as well as to the carbides, graphite, silicides and phosphors.

A great deal of progress was made in the area of single crystal development and in the use of chemically pure compounds in body compositions. Greater attention was given to the importance of solid state chemistry and solid state physics, and significant contributions were made to the understanding of reactions involved in heating mixtures of fine powders.

The industry produced new refractories for use at temperatures above 2,000° C., refractories for use in contact with special molten metals (including titanium), specific high-temperature resistors, ceramic rectifiers, ceramic semiconductors, ceramic cutting tools, refractory coating for metals, ceramic coatings for concrete blocks and piezoelectric products.

Important developments took place in the area of lightweight products, blocks for airfield runways, prestressed ceramics, thermal-shock resistant ceramic products, cooking ware, the efflorescence of building products, larger and thinner glazed tile, improved sewer pipe joining materials, unique building blocks and facings and insulation products.

The year saw increasing use of coloured ceramic products, the application of tile to exterior walls, the acceptance of mastic for tile setting, the use of a shorter kiln in the cement industry, the proving up of aluminum enamels, concentrated studies on the properties of brittle materials, and greater advances in products made of metals and ceramics (cermets). (J. F. McM.)

Cereals: see BARLEY; CORN; OATS; RICE; RYE; WHEAT.

Ceylon. A realm of the Commonwealth of Nations, Ceylon occupies an island southeast of the most southerly point of India. Area: 25,332 sq.mi. Pop.: (1946 census) 6,657,339; (1953 census revised) 8,098,637, including 5,621,332 Sinhalese, 908,705 Ceylon Tamils, 468,146 Ceylon Moors and 984,327 Indians (mostly Tamils). Language: Sinhalese 69%, Tamil 21%. Religion: Buddhist 61%, Hindu 22%, Moslem 9%, Christian (mainly Roman Catholic) 7%. Chief towns (pop., 1953 census): Colombo (cap.) 423,481; Jaffna 77,218; Dehiwala-Mt. Lavinia 80,086; Moratuwa 58,160; Kandy 57,359; Galle 55,874; Kotte 53,862. Queen, Elizabeth II; governor general in 1954, Sir Oliver Goonetilleke; prime minister, Sir John Kotelawala.

History.—The more prominent role in Asian affairs which Ceylon had begun to play two years before was continued during 1955. This was emphasized at the Asian-African conference (q.v.) at Bandung, Java, in April. Sir John Kotelawala, the prime minister, spoke out against the threat of communist expansion, and returned to Colombo with enhanced prestige. In January and February the prime minister attended the meetings of commonwealth prime ministers in London and paid brief official visits to the capitals of Egypt, Italy, France, the Republic of Ireland, the Netherlands and western Germany. In November he visited Australia.

Civil defense plans for immediate introduction in case of emergency were completed during the year. A foreign issue of importance was that of Ceylon's admission to United Nations membership, vetoed hitherto by the U.S.S.R.

Friction with India over the status of Indians in Ceylon continued and repeated discussions took place over points in the 1954 agreement which remained in dispute between the two countries. At the end of the year agreement still appeared as far off as ever.

During the budget debate in July the prime minister claimed that Ceylon was in a better financial position than at any time during the last 25 years. The public debt, which stood at Rs. 933,000,000 at the end of Sept. 1953, had been reduced to Rs. 905,000,000 and the amount of Rs. 184,000,000 which the government then owed in treasury bills had come down to Rs. 65,000,000. The revenue for 1954-55 reached a record figure of nearly Rs. 1,200,000,000 and a development loan of Rs. 75,000,000, floated in Colombo in March, was fully subscribed.

Under these favourable auspices, and with the world prices of Ceylon's three main export commodities—tea, rubber and coconut products—remaining at remunerative levels, the Ceylon government announced its second six-year development plan. The plan was based on a total expenditure of Rs. 2,529,000,000 of which 77% would be devoted to economic projects, 16% to social services and 3½% to defense and administration.

Trade expansion was pursued and a Ceylon delegation led by S. C. Shirley Corea, minister of commerce, visited 17 European countries to seek new markets for Ceylon goods. As a result,

trade agreements were negotiated with Italy, France, Czechoslovakia and Spain. Corea later visited Peking for the renewal of the rice-rubber agreement, on terms favourable to Ceylon. Trade relations with Japan were made closer by the visits of Japanese industrial advisers and rice experts and by the introduction into Ceylon of Japanese textile looms and technical equipment for a joint fishing venture.

In response to public pressure the government agreed that Sinhalese and Tamil should become the official languages of Ceylon in place of English in 1957. As a result, extensive changes in school curriculums were planned.

To mark Buddha Jayanti, the 2,500th year of Buddhism, the foundation stone was laid for an extension to the Temple of the Tooth at Kandy. A total eclipse of the sun on June 20 drew teams of scientists from all over the world but observation was impeded by clouds. (Jo. Hn.)

Education.—(May 1954) Aided schools: English, primary 21, pupils 13,182, teachers 546; English secondary (including junior) 580, pupils 265,271, teachers 10,463; collegiate 49, pupils 30,509, teachers 1,371; Sinhalese and Tamil (day and estate schools) 5,971, pupils 1,285,221, teachers 35,020; pirivenas (centres of oriental learning) 147, pupils 5,561, teachers 593. Unaided schools 87, pupils 19,311, teachers 91. Vocational schools and colleges (including fine arts) 8. Teachers' training schools (Sinhalese and Tamil) 18, students 2,790, teachers 200; English teachers' training college, students 96, teachers 22. One university with 2,000 students and 253 teaching staff.

Finance and Banking.—Monetary unit: rupee, with an exchange rate of Rs. 4.8 to the U.S. dollar. Budget estimates (1954, 1955 in parentheses) revenue Rs. 868,200,000 (Rs. 901,300,000); expenditure Rs. 900,600,000 (Rs. 934,700,000). Total public debt (Dec. 1954) Rs. 952,000,000, which Rs. 126,000,000 sterling loan. Currency circulation (Dec. 1954) Rs. 362,000,000, (Aug. 1955) Rs. 371,000,000. Bank deposits (Dec. 1954) Rs. 601,000,000, (Aug. 1955) Rs. 606,000,000. Gold and foreign exchange (Dec. 1954) 201,000,000 U.S. dollars, (Aug. 1955) 238,000,000 U.S. dollars.

Foreign Trade.—(1954) Imports Rs. 1,397,000,000, exports 1,809,000,000. Main sources of imports (1954): U.K. 21%; India 14%; other continental European Payments union countries 10%; Burma 9%; other sterling area 14%; U.S. and Canada 4%. Main destinations of exports: U.K. 29%; U.S. and Canada 11%; India, Burma 25%; other continental E.P.U. countries 7%. Main exports: tea 62%; rubber 16%; coconut products 12%.



PREMIER OF CEYLON, Sir John Kotelawala (centre), kneeling before altar at the Knightsbridge, London, Buddhist temple during his visit to Britain in Nov. 1954

transport and Communications.—Roads (fit for motor traffic, 1955) 00 km. Motor vehicles in use (1953): cars 49,800, commercial vehicles 19,000. Railways (1955) 1,442 km.; passengers carried (1952–53) 41,940, freight carried (1954) 1,620,000,000 metric tons. Air transport (1953): 1,468,000 km. flown; passenger-km. 20,089,000, freight 000 ton-km.; (1954): 1,620,000,000 passenger-km., freight 144,000,000 ton-km. Telephones (Jan. 1954) 22,855. Licensed radio receivers 53): 77,000.

Agriculture.—Main crops (metric tons, 1953; 1954 in parenthesis): tea 19,000 (166,300); rice 572,000; millet 22,000; copra 236,800; coconut 237,000; rubber 100,200 (94,000); cocoa beans (exports) 2,800; sweet potatoes and yams (1952) 50,000; cassava (1952) 223,000. Livestock (Sept. 1954): cattle 1,276,000; sheep 94,000; pigs (1953) 170; buffaloes (1953) 655,558; goats (1953) 498,977. Industry.—Manufactured gas (1954): 8,280,000 cu.m. Electricity 163,000 kw.hr. Production (metric tons, 1953): cement 65,900; salt 100. Graphite: value of output (1952) Rs. 7,500,000.

ad: see FRENCH EQUATORIAL AFRICA.

Members of Commerce: see SOCIETIES AND ASSOCIATIONS, 5.

Channel Islands: see GREAT BRITAIN & NORTHERN IRELAND, UNITED KINGDOM OF.

Charles Hayden Foundation: see SOCIETIES AND ASSOCIATIONS, U.S.

Cheese: see DAIRY PRODUCTS.

Chemistry. By the beginning of 1955, the chemical industry stood fourth among all manufacturing industries in the United States. Claiming more than \$15,000,000,000 in total assets, it was outranked only by petroleum and coal, primary metals, and food and beverages. Sales of chemical and allied products during 1954, totalling \$20,400,000,000, ranked fourth (after food and beverages, petroleum and coal, motor vehicles and parts and nonelectrical machinery). Sales were expected to reach \$22,000,000,000 or more in 1955—double the 1945 level.

Expiration of the excess-profits tax after 1953 and accelerated depreciation of defense-supporting facilities permitted earnings to rise at a faster rate than sales. A typical cross section of chemical firms, for example, showed an average 17% gain in sales during the first half of 1955 over the corresponding period of 1954, while net earnings rose an average of 31%.

But retained earnings together with depreciation reserves are not enough to pay for new facilities. In 1955, for the fourth successive year, capital expenditures exceeded \$1,000,000,000, and perhaps a third or more of the money was obtained from new financing.

Mergers.—The year was marked by a number of mergers, continuing a trend that makes it more difficult year by year to determine with any degree of precision which firms are indeed chemical firms. The drive toward diversification had caused many nonchemical corporations to acquire chemical companies. Examples in 1955: Borden Co. (food) acquired American Monomer Corp. and Monomer Polymer, Inc.; Merritt-Chapman & Pratt (construction) acquired Tennessee Products and Chemical Corp.; Monsanto Chemical Co. acquired Lion Oil Co. (petroleum).

Foreign Trade.—Meanwhile, trends were evident in the U.S. foreign chemical trade. Chemical exports in 1954 totalled about \$1,000,000,000, almost 25% above the 1953 total, while imports fell to \$245,000,000, or about 15% below those of the previous year. Preliminary figures for 1955 indicated, however, that the trend may have halted, that exports may have levelled off as imports turned up.

Foreign Resurgence.—The reasons for a narrowing trade gap are not hard to find. The German industry, traditional rival of the U.S. industry, had climbed into third place (behind the U.S. and Great Britain) as a chemical exporter, with about 12% of the world's total chemical exports. Having garnered about as much European business as they could, German industrialists are driving for markets in the underindustrialized nations of

South America, Africa and Asia.

The Japanese industry, too, built up since World War II, had become a factor to reckon with in world trade. Its chemical exports to Argentina and Brazil, for example, while still small, \$2,300,000 and \$3,700,000, respectively, were 230% and 570% above 1953 totals.

In Great Britain, as in the U.S., chemical growth had outpaced manufacturing in general. The output had increased about 65% over 1948, and was expected in 1955 to be 10% over the 1954 level.

Canada's industry, only one-twentieth the size of that in the United States, had nevertheless grown proportionally faster in recent years, and Canada was exporting 22% of its chemical production as compared with 5% for the U.S. There was reason to believe that Canada would become an increasingly important factor in world chemicals as further utilization was made of the Alberta oil and gas fields, of Canada's abundant salt, lime and coal reserves, its newly discovered potash deposits, and its low-cost hydroelectric power.

Less industrialized nations like India, Pakistan, Egypt and the Union of South Africa had started to manufacture their own chemical products, and would therefore buy less from the U.S. and Europe.

Research.—Research spending by the United States chemical industry had risen about 10% a year each year since 1952, and in 1955 totalled about \$300,000,000. During the year about \$38,000,000 of new research facilities were planned or were under construction.

A result of this emphasis on research was that about 20% of the 1955 chemical output was of products introduced since 1939. More than 80% of the agricultural chemicals trade, for example, was in products that were not commercially available 10 years before, and 90% of the drug prescriptions were for drugs that did not exist 15 years earlier.

Estimated Growth of the Chemical Industry, U.S.

Products	1953 sales volume	1935–50 growth (% per year)	1952–60 growth (% per year)
Plastics and resins	\$1,410,000,000	15	14.5
Man-made fibres	1,195,000,000	12	9
Fertilizers	1,096,000,000	9	5
Synthetic rubber	529,000,000	*	6.5
Medicinals	409,000,000	19	12.5
Antiknock agents	250,000,000	13	9.5
Dyes	168,000,000	3	6
Surface-active agents	145,000,000	34	7.5
Agricultural pesticides	119,000,000	8	7.5

*Not available.

New Drugs.—Perhaps the two most dramatic health achievements during the year were the introduction of the Salk vaccine for poliomyelitis and the extension of the use of drugs for the mentally ill. The vaccine is a biological rather than a chemical development, but the drugs for the emotionally disturbed, the usefulness of which were discovered in 1954, are within the purview of the chemical industry.

The two most promising drugs were reserpine, an alkaloid extracted from an Indian plant, and chlorpromazine, a synthetic compound.

One advance of the year was the discovery (by Chas. Pfizer & Co. chemists) that reserpine could be extracted from a more readily available Central American shrub. Pfizer, S. B. Penick & Co., and Syntex, S.A., were believed to be making it from this source. Another advance was the isolation of other promising alkaloids from the mixture present in the plants. Rescinamine was isolated by Riker Laboratories; canescine, by Sandoz, Inc.; raunormine (possibly identical with canescine), by S. B. Penick; and deserpidine, by the Ciba Co.

Possibly more significant was the synthesis by Wm. S. Merrell Co. (division of Vick Chemical Co.) of α -(4-piperidyl) benzhydrol hydrochloride, trade-named Frenquel. In preliminary

trials the drug blocked hallucinations in 60% of schizophrenics and alcoholics, showed value in postsurgical confusion states, and appeared to be particularly effective in the early, acute stage of schizophrenia.

Since more than half the nation's hospital beds had been given over to mental patients, and since it cost more than \$1,000,000,000 of taxes to care for them for one year, developments in this field were of economic as well as scientific and humanitarian interest.

Another alkaloid advance was the synthesis by Eli Lilly & Co. of lysergic acid, an intermediate useful in the synthesis of ergot alkaloids. These, in turn, are used in the treatment of high blood pressure and migraine headache. Although the synthesis was difficult, it might well prove economic since the natural alkaloids were selling for \$60,000 per pound.

Several new antibiotics, clinically promising but still not commercialized, were unveiled during the year: anisomycin (Chas. Pfizer), active against fungi and protozoa but not bacteria; PA-105 (Pfizer), active against Gram-positive bacteria; celesticetin (Upjohn), against Gram-positive organisms and, to a limited extent, fungi; fungichromin and fungichromatin (Sharp & Dohme), against fungi; pleomycin (Sharp & Dohme), against Gram-positive and -negative bacteria, but irritating to tissue; spiramycin (Rhone-Poulenc, France), against Gram-positive organisms; etamycin (Bristol Laboratories), against tuberculosis bacillus; griseoviridin and viridogrisein (Parke, Davis), against broad-spectrum antibiotics with proved value in animals but no published data on human therapy; and puromycin (Lederle Laboratories), synthesized from D-xylose.

Cycloserine, an antibiotic developed by Commercial Solvents Corp. and also studied by Eli Lilly & Co., appeared to be a potent weapon against tuberculosis. It improved 36 out of 37 severely ill pulmonary tuberculosis patients in a New York hospital, but its toxicity (in four of the cases) might be a barrier to general use.

Hormone therapy for arthritis and numerous other diseases took forward strides. Schering Corp. synthesized metacortandracin and metacortandralone, which are three to five times more active against rheumatoid arthritis than cortisone and hydrocortisone, and they were made commercially available during the year. American Cyanamid Co. researchers determined the structure of ACTH (adrenocorticotrophic hormone), paving the way toward learning how ACTH, cortisone and similar hormones work and also toward synthesizing the biologically active portions thereof.

Aldosterone, the chief adrenal hormone, was totally synthesized by scientists of the Swiss firm Ciba Ltd. The 30-step method might prove to be the best way to obtain the compound, which is particularly useful in treating Addison's disease.

A cortisone derivative, 9- α -fluorohydrocortisone, appeared to be too toxic for use against rheumatoid arthritis, but extremely small doses were found effective against Addison's disease.

Potentially significant was the discovery at the University of Wisconsin of a compound named kinetin which causes mature cells to divide like young cells. Elucidation of the mechanism might permit the development of kinetin antagonists that would prevent cells from dividing. The significance of this, of course, is that cancers grow as a result of undisciplined division of body cells.

Agricultural Chemicals.—Systemic insecticides received a great deal of attention from the U.S. department of agriculture as well as from many industrial firms. These are materials that are taken up by plant or animal tissue, rendering the organism toxic to insect pests.

One of the latest products, O,O-diethyl S-ethyl mercaptomethyl dithiophosphate, gave cotton plants four to nine weeks'

protection against boll weevil, cotton leaf perforators, spider mites and cotton aphids. It was applied to the seeds as an adjuvant dust.

Other compounds were given orally or subcutaneously to cattle to evaluate their usefulness against cattle grubs, ticks and stable flies. Grubs are a particularly difficult problem since they live for months under the animal's hide, often escaping detection and ruining much of the meat and hide. Because of their high toxicity, these compounds were under close scrutiny by the U.S. department of agriculture and the Food and Drug administration. The latter agency would eventually have to set residue limits for crops or meat treated with these materials.

Nematodes are another kind of plant parasite, which cause more damage every year than insects. The U.S. department of agriculture estimated the annual toll at \$500,000. A nematocide introduced experimentally during the year by Stauffer Chemical Co. was Vapam, sodium N-methyldithiocarbamate dihydrate; it was expected to be commercially available before the next crop year. Other firms were readying other compounds for the market.

Ethyl Corp. evaluated a series of new agricultural fungicides. The products were *s*-triazine derivatives, of which the most effective member, 2,4-dichloro-6-(*o*-chloroanilino)-*s*-triazine, was well against early and late tomato blight, apple scab, celery early blight, muskmelon leaf spot, tomato anthracnose, potato late blight, dollar spot, turf diseases, onion foliar diseases and leaf diseases of ornamentals.

Plastics.—In polymer research, heretofore largely empirical, a trend was evident toward probing more deeply into fundamental molecular structure and using this new knowledge to design new polymers. Three paths were followed: (1) inserting definite chemical groups at specific places in the polymer chain; (2) attaching special branches to the chain; and (3) using energy (heat, radiation, etc.), chemical reagents and carefully controlled polymerization conditions to vary the spatial configuration of the chain.

Already resulting from this new, more scientific approach were a superior polystyrene (from Milan Polytechnic Institute, Italy), polyurethane rubber (Goodyear), heat-stable wire enamel (Westinghouse), fluoroacrylate rubber (Minnesota Mining & Mfg.) and a stronger and more heat-resistant polyethylene (from Institute for Coal Research, Germany).

This polyethylene, developed by Karl Ziegler, was one of many advances in making this fastest-growing plastic material. Phillips Chemical Co., by a different process, achieved a similar result, *i.e.*, a product that was more rigid, denser, softened at higher temperature, and had higher tensile strength and molecular weight than conventional polyethylenes. Also, General Electric brought on the market a new irradiated polyethylene designed for electrical insulation; incorporation of an oxidant inhibitor permits use of the film continuously at 125° C.

Polystyrene was faced with a potential competitor as Dow Chemical and American Cyanamid revealed test results with polymethylstyrene. The new plastic, somewhat costlier than the styrene product, appeared to be superior in resistance to impact and to high-temperature distortion, and to give better results in styrene-butadiene synthetic rubbers, latex and renated-alkyd paints.

Goodrich-Gulf researchers succeeded in making natural rubber synthetically, and late in the year the company decided to build a pilot plant in order that the synthetic "natural" rubber could be evaluated on a large scale.

The government-owned synthetic rubber facilities were sold during the year to private industry. Most of the plants were bought by the same firms that had operated them for the government.

Monsanto Chemical made a deal with Massachusetts Institute of Technology and published a booklet, *Plastics in Housing*, which presented a detailed analysis of each of the major plastics in terms of present and possible future applications in the construction industry. The aim of the plastics industry was to establish better communications with the construction industry, provide it with more engineering data, and endeavour to break down additional architectural constraints so that plastics might be more widely employed as structural materials.

Man-Made Fibres.—The year was marked by adaptation of existing man-made fibres to new uses rather than the development of new fibres. Union Carbide and Carbon's Dynel and du Pont's Orlon, for instance, began to find wide use in the manufacture of imitation

coats resembling sheared beaver, mouton and seal.

Two new fibres were Celanese Corp.'s Arnel, a cellulose triacetate that was said to excel conventional acetate rayon in resistance to heat, sunlight, saponification and wet stretching; and vinylon, an insolubilized polyvinyl alcohol fibre developed by Kurashiki Rayon Co. (Japan).

Industrial Products.—A host of new materials were designed to fill old and new needs in various segments of industry. American Cyanamid's AM-955, a mixture of acrylamide and N-methylene-bisacrylamide, for civil engineering applications, prevents moisture seepage in permeable soils. Possible uses were in dam construction, tunneling, oil well drilling and irrigation canals.

Stepan Chemical Co. introduced a new solvent, dimethyl, which had possible applications as an antifreeze, a paint remover, an ethylene solvent, in fibre spinning, in petrochemical and fatty acid purification, and as a reaction medium.

Westinghouse developed a series of silicone lubricants, as did General Electric, for use in jet aircraft as well as in industries requiring high temperatures—steel, glass, ceramics, etc. Southwest Research Institute, Victor Chemical Works, Monsanto, and Virac-Carolina Chemical were researching phosphate esters for similar applications; carboxylic diesters were being studied by Am & Haas, Emery Industries and the Texas Co.; and Monsanto was investigating silicate esters.

Consumer Products.—Few of the industry's products were sold directly by the general public, and fewer still were of noteworthy novelty. But there were some.

Antiseptic soaps now accounted for a fifth of all bars sold. Pampers-Palmolive during the year test-marketed a new Palmolive bar containing a bacteriostat.

Man-made fibres had gained popularity largely because they required little or no ironing. During 1955 textile mills were placing much emphasis on chemically treated cottons that had the same desirable characteristic. Among the leading chemical treatments were urea-formaldehyde resins (du Pont, Monsanto, Am & Haas) and melamine-formaldehyde resins (American Cyanamid), together with a water-repellent.



PLASTIC "BUBBLE," a stage in the manufacture of Saran Wrap, transparent household wrapping material developed by the Dow Chemical Co. The photograph was made at a production plant opened in 1955

Designed to give fluffier, easier-ironing laundry were cationic softeners which were added to the rinse water. Many smaller firms had marketed such products with limited success, but in 1955 two major firms introduced products—Corn Products Refining Co. and A. E. Staley Mfg. Co.

Aerosol-packed products—the familiar push-button cans—reached new record output in 1954: 185,000,000 units of \$190,000,000 retail value. The gain was 32% over 1953, and additional growth was indicated for 1955.

New Processes.—Of less immediate obvious significance was the development of new processes, which promised nevertheless to provide ultimately new or lower-cost products.

One of the more promising rocket fuels is dimethylhydrazine, and during the year four firms readied processes for making it—Olin Mathieson, Food Machinery & Chemical, Aerojet Engineering and Metaelectro Corp. The first three oxidize dimethylamine, each by a different method, but the latter oxidizes ammonia, urea or an alkylamine with a special oxidizing agent.

Itaconic acid is a potentially useful intermediate for a host of products, but it had been too expensive. Chas. Pfizer & Co. developed a fermentation process that promised a reasonable cost.

Zone melting, a technique wherein a moving molten zone of a material sweeps impurities along in its path, enabled General Electric to produce high-purity silicon for use in transistors, the small, simple devices that replace vacuum tubes in radios, television receivers, etc.

General Electric also captured newspaper headlines by making synthetic diamonds from carbon at extremely high pressures and temperatures. The real significance, however, was in the equipment, which could be used for potentially more promising research into the behaviour of materials under extreme heat and pressure conditions.

Utilization of hydrogen chloride as a chlorinating agent, in a process devised by Aaron Teller, held out hope for lower-cost chlorination—a step required in the manufacture of DDT,

paradichlorobenzene, and many other important commercial chemicals.

Ammonia is usually made from natural gas, but a plant being built in Alabama by Ketona Chemical Co. was to employ low-temperature fractionation—one of three possible methods—to obtain hydrogen from coke-oven gas.

A synthetic zeolite (a doubly hydrated silicate of aluminum and either calcium or sodium) was discovered by Linde Air Products to be a "molecular sieve," absorbing molecules of one size and letting larger ones go past. It can separate *n*-hexane from isohexane, *n*-heptane from methylcyclohexane, etc. Uses were foreseen in hydrocarbon fractionation, drying and purification of liquids, and many similar operations.

Titanium, "wonder metal" of the past few years, lost some of its luster. Military needs proved smaller than anticipated, and the government was re-examining subsidization of new plants. But if the short-term outlook was dubious, the long-range picture was still bright—brighter, in fact, as a result of newly developed processes: electrolytic titanium processes, in the research stage at a number of company laboratories; a new, direct fluid-bed process developed by du Pont to make titanium tetrachloride (which in the Kroll method is reduced with magnesium to produce titanium metal); and a new process developed by U.S. Industrial Chemicals Division of National Distillers Corp. to make high-purity sodium (used alternatively instead of magnesium to reduce the tetrachloride).

Experts predicted that titanium output, now only about 10,000 tons a year, might eventually reach 1,000,000 tons.

Nuclear Chemistry.—The most exciting area of chemical process operation during the year was nuclear chemistry. From the refining of uranium ore to the utilization of radiation and fission by-products, the chemical industry was intimately concerned with nuclear science.

Several firms—chemical as well as others—banded together to form Industrial Reactor Laboratories, which would carry out research for the member companies. Meanwhile, Upjohn Co. was already using a Van de Graaff electron accelerator for production-line sterilization of pharmaceutical products. Atlantic Refining Co. used a 1,000,000-electron-volt resonance transformer to accelerate electrons and throw them at petroleum fractions to "crack" them into high-octane components. This was still a research project.

A score of chemical firms were investigating radiation catalysis; *i.e.*, the use of radiation (from radioisotopes, fission products or particle accelerators) to promote and influence the course of such chemical reactions as polymerization, halogenation, oxidation, nitration, cyclization, etc. Russian scientists obtained high yields of phenol, for example, by a radiation-induced reaction of benzene with water; and Rumanian chemists reported a high yield of the desirable isomer of benzene hexachloride by chlorination of benzene in the presence of gamma radiation.

Many chemical firms were also interested in process heat from high-temperature nuclear reactors. It was estimated, for example, that use of atomic heat could slash 9 cents from the 15-20-cent cost per 1,000 cu.ft. of synthesis gas manufacture. (Synthesis gas is a mixture of carbon monoxide and hydrogen derived from coal and steam.)

Most intriguing, of course, was the imminent development of economical nuclear power, for that would extend manyfold the use of nuclear fission. And that, in turn, would intensify the challenge to the chemical processing industry of winning uranium (and perhaps thorium) from its ores, separating and purifying the isotopes, operating the reactors under optimum conditions and utilizing to the fullest efficiency the fission products, heat and radiation therefrom. This was probably the

greatest challenge of the ensuing decade. (See also BIOCHEMISTRY; CHEMOTHERAPY; FOREIGN INVESTMENTS; PHYSIOLOGICAL CHEMISTRY; PLASTICS; VITAMINS AND NUTRITION.) (H. C. E. J.)

Chemotherapy. The year 1955 saw continued interest in the development of antibiotic substances from the higher plants. It also witnessed the development of synthetic drugs useful in the treatment of mental disease.

Allium Oils.—Bulbs belonging to the allium (garlic) family yield oily substances with significant activity against the tubercle bacillus organism. An oil extracted from *Allium schoenoprasum* showed activity slightly less than that of an equal quantity of streptomycin. The oil of *Allium cepa* was but one-fifth as active as streptomycin.

Plant Extracts as Antiviral Compounds.—At the University of Texas (Austin) extracts obtained from 22 of 44 plants prolonged the life of chick embryos injected with one of the following viruses: vaccinia, influenza, meningopneumonitis and reovirus. These viruses had become egg-adapted strains by repeated inoculation into embryonated eggs through the yolk sac. Extracts from three plants, *Allium helleri*, *Ambrosia aptera* and Sensitive plant, successfully inhibited three of the four viruses.

Plant Extracts as Tumour Inhibitors.—The same workers reported that an extract of *Anemone decapetala* proved to be the most effective in inhibiting growth of a tumour cultured in the yolk sac. A relatively nontoxic extract of *Liatris punctata* was the most active inhibitor of tumour growth in mice and in tissue cultures.

Polylysine and Polyvinylamine.—Both of these basic polypeptides proved to be virus inhibitors in tests performed upon virus growths in the chick embryo. The viruses shown sensitive were influenza B virus and mumps virus. Polylysine was more effective compound and about one-fifth as toxic as polyvinylamine.

Mycostatin.—The antibiotic Mycostatin, known also as fungicidin, proved successful in the control of fungus diseases. It prevented death when inoculated into mice previously infected with *Coccidioides immitis*, *Sporotrichum schenckii* and *Cryptococcus neoformans*.

Fungichromatin and Fungichromin.—Fungichromatin and Fungichromin were isolated from a strain of *Streptomyces cellosae*. As their names indicate, these antibiotics are antifungal in character.

Spiramycin.—Spiramycin was isolated from a new species of molds, *Streptomyces ambofaciens*. Chemically and biologically it was found to be similar to the previously isolated antibiotics erythromycin and carbomycin. It has an antibiotic spectrum exhibiting activity chiefly against gram-positive bacteria.

Griseoviridin and Viridogrisein.—These antibiotics were recently isolated. They proved to have a broad spectrum against both gram-negative and gram-positive bacteria and rickettsiae. Tested in animals, the antibiotics were found to be tolerated well when applied locally or given orally or by injection in mice and dogs.

Pyrimidine Derivatives.—Three types of pyrimidine derivatives were shown to inhibit the growth of disease-causing bacteria in the test tube, but required testing in animals before use in human disease could be contemplated. They included 2,4-diamino-pyrimidine, aminoanthrapyrimidines and 5-phenylthiouracils. A fourth type, the tetrahydropyrimidines, showed ability to restrict the growth of fungi.

Oxamycin—Cycloserine, PA94.—This new antibiotic was isolated from a new species of actinomycetes, *Streptomyces garyphalus*. Its chemical structure was established as D-4-amino-3 isoxazolidone, a zwitter ionic, crystalline substance of

molecular weight. Oxamycin was demonstrated to be highly diffusible and to have a broad antibacterial spectrum. When tested experimentally induced bacterial infections of animals it proved capable of controlling gram-negative and gram-positive bacterial infections and rickettsial diseases. It did not show significant antituberculosis effect in mice. Apparently the antibiotic was more effective in living animals against infectious bacteria than was indicated by test tube experience, and despite the experience in mice it showed considerable promise in tests against tuberculosis infections of human beings.

Coliformin.—This new antibiotic was isolated from *Escherichia coli*, a common organism found in the human lower intestinal tract. Coliformin was found to be exclusively active against fungi causing plant, textile and leather damage as well as types causing animal and human disease. The human fungi which were found sensitive to the antibiotic included *Candida albicans*, *Candida krusei*, *Candida tropicalis*, *Hormodendrum pedrosoi*, *Microsporium gypseum*, *Sporotrichum schenckii*, *Torulopsis neoformans*, *Trichophyton mentagrophytes* and *Trichophyton tonsurans*.

Biallylamicol (Camoform).—Although synthesized several years earlier, Biallylamicol was demonstrated in 1955 to have amoebic properties. Chemically the substance was shown to have the formula 6,6'-diallyl- α,α' -bis(diethylamino)-4,4'-bi-*o*-resol, dihydrochloride. When the drug was given to animals experimentally infected with *Endamoeba histolytica*, the causative organism of human amoebiasis, it demonstrated slight effect against acute amoebiasis of rats, moderate effect against amoebic enteritis in dogs and good effect against liver amoebiasis of msters.

Gallic Acid.—In tests upon monkeys, aged gallic acid was found to protect all monkeys after experimental inoculation with poliomyelitis (type I) virus. Freshly prepared acid failed to demonstrate similar protective powers. The protective substance was believed to be a polymer or an oxidative product of gallic acid produced by aging. Experimental work was proceeding in an attempt to isolate the active principle.

Ataractic Agents.—This term had come to be applied to a new class of drugs developed during the previous two years. This group of therapeutic agents favourably altered the state of patients suffering from various forms of agitated, excited and hallucinatory mental disease. The term ataraxia was derived from the Greek, and it means freedom from confusion, peace of mind. The term was suggested by Alister Cameron, a classicist of Cincinnati (O.) to Howard Fabing, a neurologist.

The use of these drugs enabled psychiatrists to release mental patients considerably earlier than formerly and reduced the nursing and domiciliary care problems in mental institutions. Patients were made calmer, more amenable to psychiatric approach, ate better and were better able to attend to their personal needs as a result of treatment.

Agents of this type introduced into medicine during the year included Frenquel, alpha-(4-piperidyl)diphenyl carbinol hydrochloride, which is chiefly an antihallucinatory agent. It also demonstrated effectiveness in blocking the action of experimentally induced psychoses in normal persons caused by use of hallucinatory agents such as lysergic acid diethylamide (LSD), mephedrine and mescaline. Meproamate, known as Miltown and guanil, also was introduced for use in this field. It proved to be useful chiefly in the relief of anxiety syndromes and tension states, tension headaches and in the treatment of alcoholism. It was shown to have a structure similar to a muscle relaxant, mephedrine; chemically it was shown to have the formula, 2-ethyl-2-n-propyl-1,3-propanediol dicarbamate. (See also ALERGY; BACTERIOLOGY; CANCER; PSYCHIATRY; VITAMINS AND NUTRITION.)

Cherries: see FRUIT.

Chess. Nicholas Rossolimo of Paris, Fr., was named winner of the United States open championship after tying with Samuel Reshevsky of Spring Valley, N.Y., in the 1955 tournament at Long Beach, Calif., in August. Each finished the competition with a record of 10-2, but the tourney committee declared Rossolimo the victor on points, 62½-61½. The points consisted of a median of the sums of their opponents' scores. Both Reshevsky and Rossolimo were undefeated, their minus points coming from four draws each.

Gisela Kahn Gresser, New York city, and Nancy Roos, Los Angeles, Calif., finished in a tie in the U.S. women's tournament ended Sept. 5, at the Marshall Chess club in New York city. Each tallied 9-2 and the two were named co-holders of the title for 1955.

Clinton Parmalee of Newark, N.J., took top honours in the national amateur championship May 22, at Lake Mohegan, N.Y. He had a tally of 5½-½. A cup was awarded to Kathryn Slater, New York, for leading the women players. Awards for best scores also went to Victor Guala, New York, in Class A and Eugene Salome, New York, in Class B.

Among the features of 1955 was the interzone tournament that brought together many of the world's leading players at Göteborg, Swed., in September. As a result of the event, nine players qualified to compete in the challengers' tourney leading to the world championship in 1956. Five soviet stars, headed by David Bronstein who scored 15-5, were among those selected. Others chosen were Paul Keres, 13½-6½; Efim Geller, 12-8; Tigran Petrosian, 12½-7½; Boris Spassky, 11-9; Oscar Panno of Argentina, 13-7; Laszlo Szabo of Hungary, 12-8; H. Filip of Czechoslovakia, 11-9, and Herman Pilnik of Argentina, 11-9. Another master, Vassily Smyslov of Moscow, who was seeded, also was scheduled to compete in the tourney to determine a challenger for the crown held by Mikhail Botvinnik of Leningrad.

Spassky won the world junior title competition ending Aug. 8, at Antwerp, Belg., with Edmar Mednis (New York state champion of 1955) of the Marshall Chess club finishing as runner-up. Masters from seven countries took part in the annual congress at Hastings, Eng., early in the year with two soviet representatives sharing premier group laurels. Smyslov and Keres each scored 7-2, Smyslov having 5 triumphs and 4 draws while Keres won 6, drew 2 and lost one. Among the premier reserves, Istvan Bilek of Hungary was top man with a count of 7-2. Boris Ivkov of Yugoslavia, with 13-4, triumphed in the jubilee tourney at Buenos Aires, Arg., in May.

A team of U.S. masters visited Moscow in July for a series of matches with a Soviet union team and bowed, 25-7. However, the trip had a bright side for U.S. chess followers as the world champion, Mikhail Botvinnik, was defeated by Samuel Reshevsky, leading player of the U.S. (T. V. H.)

Chiang Kai-shek (1887-), president of the Republic of China with its capital in Taipei, Formosa, who had been, during three decades in a period of China's changing history, hailed first as conqueror of the Chinese warlords and symbol of the national revolution and resistance against Japanese aggression, and then driven out of the mainland and regarded as the arch enemy of the Central People's Republic—remained during 1955 the generally accepted Chinese Nationalist leader in fighting communism and a target of attack by those who wrote off the cause of the Chinese Nationalists. Chiang's position became increasingly difficult as the communists' campaign of peaceful co-existence won wider response and support. Nevertheless he looked to international

(P. L. W.)



"—AND MY POP CAN LICK YOUR POP," a cartoon of 1955 by Haynie of the *Greensboro Daily News* (N.C.)

action to prevent communist expansion and repeatedly warned the west to beware of the pitfalls of the communist peaceful gestures. While the fighting along the offshore islands opposite the mainland was intensified and the Chinese-American mutual defense treaty was about to be concluded, Chiang stated on Nov. 23, 1954, that the Chinese Communists would not try to invade the Nationalist held islands if the U.S. announced its participation in the joint defense of these islands. He also advocated extending the southeast Asia defense system to include Nationalist China, South Korea and Japan. In a message to Secretary of State John Foster Dulles in connection with the signing of the Sino-American defense treaty on Dec. 2, 1954, Chiang also called it "a necessary link in the Far Eastern defense." The interpretation and ratification of the treaty by the U.S. senate and the United States' position relative to the defense of Quemoy and Matsu Islands in the light of the communist threat brought a number of distinguished Americans including Secretary of State Dulles, Army Secretary Robert T. Stevens, and Adm. Arthur W. Radford to Formosa to consult with Chiang during 1955. Prior to the Geneva conference of the heads of the Big Four Powers Chiang declared again on July 17 that his government and people would never agree to any cease-fire arrangement with the Chinese Communists, nor relinquish the sacred duty of recovering the mainland and liberating the Chinese people from communist tyranny. (See also CHINA.)

(For his earlier career see *Encyclopaedia Britannica*.)

(H. T. CH.)

Chicago.

Second largest U.S. city, a port of entry and the county seat of Cook county, Ill., Chicago lies at the southwest corner of Lake Michigan. Its population in the 1950 census was 3,620,962, and for the six-county Chicago metropolitan area 5,495,364. It was estimated that the 1955 population was 3,876,000 in the city and 6,185,000 in the metropolitan area. The mayor, elected in 1955, was Richard J. Daley.

Employment in 1955 rose from the slump of 1954 by about

80,000 persons, and unemployment decreased by a nearly equal amount over the same period. Bank clearings in Chicago for the first nine months of 1955 increased 9.3% to \$39,091,674,000 from \$35,752,873,000 in the same period of 1954. New investment in industrial plants in the Chicago metropolitan area for the first nine months of 1955 amounted to \$258,970,000, an increase of 41% over the same period of 1954. The dollar volume of industrial production in 1955 was expected to exceed \$19,000,000,000, an all-time record, compared with a production volume of \$17,000,000,000 in 1954. Retail sales in 1954 were estimated at \$7,400,000,000 for the Chicago metropolitan area, approximately 6% more than in 1954.

Steel production in the Chicago metropolitan area in the first nine months of 1955 broke all previous records with 16,046,000 tons of steel produced. It was estimated that production would approximate 21,000,000 tons for 1955, as against the record of 20,628,100 tons produced in the record year of 1953.

O'Hare field, Chicago International airport, opened for commercial aviation late in the year, is the world's largest commercial airport, encompassing approximately 6,500 ac. of land. The total number of passengers carried by the Chicago Transit authority in the first eight months of 1955 was 412,820,225, a decline of 3.4% from the 427,217,493 carried in the first eight months of 1954.

All types of construction contracts awarded in the first eight months of 1955 increased spectacularly to \$882,449,000, from \$487,808,000 in the first eight months of 1954, an increase of 81%.

School enrolment in Chicago in the fall of 1955 amounted to approximately 315,000 public and 240,000 parochial elementary pupils, plus 91,000 public and 48,000 parochial high school students. The total public assistance expenditures in Cook county for the first eight months of 1955 approximated \$56,861,837, an increase of 15.8% over the same period of 1954. A monthly average of 149,796 persons were receiving relief during the first eight months of 1955, which compared with 131,581 persons in 1954. The average monthly allowance per person obtaining some form of assistance in Cook county was \$47.45 in this period of 1955, which may be compared with the \$46.73 average for the same period of 1954.

The 1954 total appropriations for current operations of the six governments that cover Chicago in whole or in part were: city of Chicago, \$475,725,000; Cook county, \$101,208,000; Cook county forest preserve district, \$6,358,000; Chicago board of education, \$181,853,000; Chicago sanitary district, \$45,097,000; and Chicago park district, \$48,695,000.

The total 1954 property tax rate (tax paid in 1955) for the combined six taxing authorities in the city of Chicago was \$3.768 per \$100 of assessed valuation for all of the city north of 87th street. The rate for the city south of 87th street was \$3.792, which includes the southern Cook county mosquito abatement district. Total assessed real property valuation for 1954 taxes was \$8,703,599,431 within the city limits.

Total bonded debt, applicable to the city of Chicago, for the general obligations of these same six governments, as of Jan. 1, 1955, amounted to \$403,769,073. In addition, these same six governments had \$184,665,000 in revenue bonds outstanding as of Jan. 1, 1955.

The 42-story Prudential Insurance Company building was completed late in the year. A new Inland Steel building, a 19-story structure, was started, as was a 14-story building for the America Fore Insurance group.

Notable among public works projects under way was the authorization of \$246,000,000 to accelerate the construction of the expressway system radiating from the central business district to outlying areas, and the construction of the last nine city



FLAMES POURING THROUGH WINDOWS in Barton hotel fire Feb. 12, 1955, in Chicago. Twenty-nine persons died

built public garages. Passage of enabling legislation by the state permitted completion of plans for construction of a \$30,000,000 lake-front convention hall. The legislation was also enacted for preliminary studies on the \$288,000,000 Fort Dearborn project, which was to be erected in an area north of the main Chicago river, replacing obsolete property with apartments, offices, governmental buildings and recreational plazas.

The Calumet-Sag channel project received an appropriation of \$4,000,000 from the federal congress, and work was started on the widening of the western three miles of the channel. This project, coupled with the development of a deepwater port in Lake Calumet and the St. Lawrence seaway project, was expected to revitalize Chicago's position in inland waterway shipping.

(L. LN.)

Child Labour. **United States.**—Employment among youth 14 through 17 years of age continued downward in the year ended June 1955, dropping to 2,100,000—nearly 150,000 below 1954. This decrease was entirely the result of the decline in the employment of out-of-school youth, especially those 16 and 17 years old. Figures compiled by the U.S. bureau of the census showed that nearly 1,000,000 boys and girls 16 and 17 years of age were out of school in 1954 and only half of them had jobs.

The increasing lack of employment opportunities for young people who had dropped out of school before completing high school was causing particular concern among education officials and others connected with the welfare of youth. The special problems of those dropouts led to the holding of hearings on youth employment by the U.S. senate committee on juvenile delinquency and to recommendations for improving the situation.

Progress was made in reducing child labour in agriculture and narrowing the gap in schooling between rural and urban children. Between 1951 and 1954 enrolment of children 10 through 15 years of age in rural farm areas rose from 94% to 97% while in urban areas the school enrolment figure of 99% remained the same. This gain for rural youth followed the strengthening of the child-labour provisions of the Fair Labor Standards act in 1950, prohibiting the employment of children under 16 years of

age in agriculture during school hours.

About one-third of the states amended their child-labour or school-attendance laws in 1955. Improvements included strengthening hazardous occupations provisions in Ohio, Maine, Nebraska and Tennessee. New York set a maximum 40-hr. week for minors under 16, instead of its former 44-hr. week. California provided that employment certificates could be revoked for minors of 16 and 17, as well as for those under 16, if the health or education of the minor was jeopardized. A minimum-wage provision was passed in Delaware for minors under 16; it set 75 cents an hour (60 cents if the children are attending school), but permitted a lower wage if the parent consented in writing. Illinois increased its minimum-school term, while South Dakota and Montana tightened the exemptions under which children under 16 may leave school to go to work.

On the other hand, a number of states lowered their child-labour or school-attendance standards. In Utah the basic minimum age for work in factories at any time or in most employments during school hours was reduced from 16 to 14, and the minimum age for work outside school hours in agriculture or as caddies or newsboys was lowered to 10. The night-work provisions were relaxed in Oklahoma for minors 15 and over employed in theatres, and in Delaware for minors under 16 in street trades. In Delaware also the night-work prohibition for girls 16 and over was repealed. The South Carolina school-attendance law was repealed.

New York and Massachusetts each extended for one year their acts authorizing relaxation of certain labour laws for minors 16 and over during emergencies.

Other Countries.—No conventions or recommendations dealing specifically with young workers were considered at the 1955 International Labour conference. However, the governing body of the International Labour organization, at its 128th session, decided to ask member governments whether they favoured the adoption of international instruments in the form of conventions or recommendations on various aspects of the conditions of employment of fishermen, including minimum age for employment and medical examination. During the year, various child-labour conventions were ratified: no. 5, 14-year minimum age for employment in industry, by Bolivia; no. 58, 15-year minimum age for employment at sea, by Argentina and Denmark; no. 59, 15-year minimum age for employment in industry (as revised in 1937), by Cuba; no. 60, 15-year minimum age for nonindustrial employment (as revised in 1937), by Cuba; no. 77, medical examination of young persons in industry, by Argentina; no. 78, medical examination of young persons in nonindustrial employment, by Argentina and Cuba; no. 79, night work of young persons in nonindustrial employment, by Argentina and Cuba; no. 90, night work of young persons in industry (as revised in 1948), by The Netherlands. (E. S. J.)

Great Britain.—Juvenile labour continued to be in keen demand, and consequently a wide range of work was available for school leavers. Between Jan. 1954 and Jan. 1955 the youth employment service placed 221,000 boys and 228,000 girls in employment, a slight decrease on the 1953 total. Of these, 240,000 were school leavers entering their first situation, 4,000 less than in the previous year. The ratio of young persons (aged 15–18) to the total of employees remained practically constant, the number of boys being 5% of the total of male employees, and the number of girls about 9½% of the total of female employees. The largest increase during the year was in distributive trades (+6,000 boys and +9,000 girls) and there was also a substantial increase in textile industries. The number of boys entering employment in mining and quarrying fell from 12,758 to 11,743. The comparative scarcity of young people between 15 and 18 underlined the importance of the vocational guidance,

placing and "follow-up of progress" carried out by the youth employment service, and of the encouragement given to industries and firms to develop systematic recruitment and training schemes for young workers. Ten new national schemes of recruitment and training were agreed by the industries concerned, bringing the total to more than 90. In placing juveniles, youth employment officers paid particular attention to the type of training and facilities for further education offered by employers. A survey of training arrangements in six selected industries, completed during 1954, showed that the local application of agreed schemes was uneven, and that much could still be done to improve the standard of training given to young workers. In regard to the release of young workers for part-time classes, the survey revealed that the local provision of such classes was generally adequate, but that there was still some reluctance on the part of employers to release their young workers as well as some failure on the part of young workers to realize the benefits of further education.

Under the special aptitudes scheme grants were awarded to 1,100 young persons to enable them to take up work suited to their abilities in other areas. (See also CHILD WELFARE; JUVENILE DELINQUENCY.) (W. O. L. S.)

Children's Books. A profusion of children's books were published in the United States during 1955. Informational material, attractively presented, predominated, with helicopters (*Helicopters: How They Work* by John Lewellen), electronics (*Electronics for Young People* by Jeanne Bendick) and atoms (*Atoms Today and Tomorrow* by Margaret O. Hyde) among the complex subjects made simple and appealing. Uniform editions continued strong, as established series added new titles and new series were launched.

Picture books were bold and original in design. Dr. Seuss's new fantasy, *On Beyond Zebra*, and Virginia Kahl's *The Duchess Bakes a Cake* evoked hearty laughter. *Poppy Seeds* (Clyde Bulla) pictured the heart-warming faith of a Mexican village boy. Louise Fatio presented another tale of her gentle adventurer in *The Happy Lion in Africa*. Forgetfulness rather than timidity troubled the engaging hero in *Theodore Turtle* by Ellen MacGregor. An elusive gentleness captivated little children who were read *Play With Me* by Marie Ets and a dreamlike quality pervaded Ruth Krauss's *Charlotte and the White Horse*. An old Scottish ballad provided material for a delightful picture book by John M. Langstaff, *Frog Went a-Courtin'*. German folk tales provided material for two others: *The Traveling Musicians* (J. L. K. and W. K. Grimm) and *Hinkeldinkl* (Frank Jupé).

Many rich collections distinguished the year's output of books for children. *The Illustrated Treasury of Children's Literature* by Margaret Martignoni made available in one volume classics suitable for children of preschool age to 12. *The Magic Listening Cap* (Yoshiko Uchida) retold 14 Japanese folk tales; *Welsh Legends and Folk-Tales* (Gwyn Jones) made days of magic and knighthood live again. *French Legends, Tales and Fairy Stories* (Barbara Picard) and *Fables of India* (Joseph Gaer) brought treasures from still other countries. Corydon Bell's *John Ratling-Gourd of Big Cove* was rich with stories and legends of the Cherokee Indians.

Fantasies had wide appeal. Parents and children chuckled together over Meindert DeJong's *The Little Cow and the Turtle*, Frances and Richard Lockridge's *The Cat Who Rode Cows*, Walter Edmonds' *Uncle Ben's Whale* and George Plimpton's *The Rabbit's Umbrella*. Hard luck changed to soft luck in Marjorie Rawlings' *Secret River* and Lee Kingman's Finnish story, *Mikko's Fortune*. A lively, suspenseful fairy tale was Margot Benary-Isbert's *The Wicked Enchantment*. A beautiful friendship between a boy and his grandmother was told in the English

fantasy, *Children of Green Knowe* by L. M. Boston. Strands from various folk tales combined in the fabric of *The Wonderful Lamp* by Max Voegeli. Imaginative children welcomed the distinguished fantasy, *The Borrowers Afield* by Mary Norton. Magical happenings appeared on every page of C. S. Lewis' *The Magician's Nephew*.

Family fun was shared in Pamela Brown's *The Windmills of My Family* (English), Adèle and Cateau De Leeuw's *The Expatriate Browns* and M. L. Chastain's *Fripsey Fun*.

Pet and animal books were favourites. Lois Lenski's *A Dog Came to School* delighted little children. An airedale reformer in his family in Anne H. White's *Junket*. A book of beauty, *The Littlest Mouse*, pleased Dorothy Lathrop's many readers. A otter escaped the hazards of the deep in *Amikuk*, a tale of sea life about the Aleutian Islands by Rutherford Montgomery.

Nature was treated in many fine volumes for young children: *The Pond Book* (Albro Gaul), *Seashores* (H. S. Zim and Lester Ingle) and *See Through the Sea* (Millicent Selsam and Betty Morrow) among them.

Science subjects were treated in a lively, understandable manner. Several new titles in the "First Book Series" were notable contributions. In *Men, Microscopes, and Living Things* Katherine Shippen showed the progress of man's understanding of living matter from Aristotle to the present, through lives and work of great biologists. Irving Adler's *Time in Your Life* vividly established the significance of rhythm in living things. The past concerned writers of informational books: *Nefertiti Lives Here* by Mary Chubb (Egyptology), *The Story of Our Ancestors* by May Edel (anthropology) and *Dinosaurs* by Marie H. Bloch.

Other lands provided the setting for many outstanding contributions of the year. From Mexico came the long-cherished story of a miracle in Helen Parish's *Our Lady of Guadalupe* and an on-stage story of a Mexican fiesta, *The Fabulous Fireworks Family* by James Flora. From Guatemala came the material for the distinguished character portrayal in A. N. Clark's *Santia*. There was a fairy-tale quality in *Philomena*, a story of an eight-year-old Bohemian girl by Kate Seredy. *The Twins in South Africa* (Daphne Rooke) was a captivating story for the child of eight to ten. The South Pacific provided its share of background material: William Lipkind's *Boy of the Islands* took readers into a Hawaiian boy's life and Denis Clark wrote beautifully of the Australian bush country in *Boomer*.

Adapting to new environments was a prevailing note in much of the fiction writing. Through reading *The Golden Name* by Jennie D. Lindquist, children saw American life enriched by the rich contributions of another country. A war-orphan cousin from Italy is absorbed into the New York Leoni family in *Big Little Island* by Valenti Angelo. In a cheerful story *Bronko*, Rosa Eichelberger told the adventures of a boy coming from the concentration camps of Europe to a new home with his mother on New York's east side.

The year saw the publication of several fine biographies for children's enjoyment. *Prairie-Town Boy* (Carl Sandburg) was a shortened version of his *Always the Young Strangers*, a story of his growing up. Explorers were subjects of several fine biographies. Two handsome picture books about Columbus were Aldagliesh's *The Columbus Story* and Ingri and Edgar Pap d'Aulaire's *Columbus*. Vivid biographies for the child of eight to ten were *Henry Hudson* by Ronald Syme and *Captain Cook Explores the South Seas* by Armstrong Sperry. *The Silver Swallow* was a sensitive story of Elizabeth Barrett Browning's romance by Constance Burnett. Elizabeth Ripley presented *Ripbrandt*, including excellent black and white reproductions of his work. An able contemporary English author, Geoffrey Trevelyan chose his subjects for *Seven Kings of England* for the dramatic quality of their lives. Hedvig Collin's *Young Hans Christ*

Andersen fittingly punctuated the 150th anniversary of the Danish author's birth.

Historical fiction provided engrossing reading for older boys and girls. *Triumph for Flavius* (Caroline Snedeker) was a story of a Roman conqueror's son and his friendship for a Greek slave. *The Great Axe Bretwalda* (Philip Ketchum) was an excellent story of ancient Britain, King Alfred, knights and ladies. Notable among works of fiction based on American history were *Stampede for Gold* (Pierre Berton), *A Spy in Williamsburg* (Isabelle Lawrence) and *The Mighty Soo* (Clara Judson).

Among adventure stories of the sea that enticed readers were *Ice to India* by Keith Robertson and *Captain Cook Explores the South Seas* by Armstrong Sperry. Nicholas Monsarrat's *The Boy's Book of the Sea* was a rich collection of sea episodes.

Mystery prevailed in *Crystal Mountain* (Belle Ruth), in which an American and an English boy were sleuths in Beirut, Lebanon. Modern Edinburgh with its legend-haunted alleys provided the backdrop for *The House of the Pelican* (Elisabeth Kyle).

New editions of old favourites included Frank Stockton's *Ting-a-Ling Tales*, F. H. Burnett's *Little Lord Fauntleroy* and S. M. Gruenberg's *Favorite Stories Old and New*. H. C. Andersen's *The Ugly Duckling* was presented separately in soft colour.

No discussion of the year's output of books for children would be complete without comment upon *The Art of Beatrix Potter*, a historical study of the work of the author-artist long loved on both sides of the Atlantic, with a foreword by Anne Carroll Moore. Annis Duff's *Longer Flight* delighted readers of *Bequest of Wings* for its sensitive, sound observations on introducing young people to the delights of reading. (See also BOOK PUBLISHING AND BOOK SALES; LITERARY PRIZES.) (S. Wr.)

Child Welfare. Evaluations of child welfare needs and resources during 1955 were far-reaching. World-wide or regional studies were begun or continued by specialized agencies of the United Nations or other international bodies. Conferences of professional workers directed attention to the problems of seriously handicapped children, especially the mentally retarded. There was a decrease in relief programs under international auspices but a marked increase in long-range planning toward a social climate conducive to child welfare.

International Services.—The tenth Pan American Child congress in Panamá, Feb. 6–12, 1955, dealt with education and social service but concentrated its attention in the field of health. Nutrition and related subjects, including the production of milk and protection of milk by pasteurization and manufacture of powdered milk, were considered in the light of various projects sponsored in recent years by the Pan American Sanitary bureau, which is the regional unit of WHO (World Health organization) for the Americas. The needs of crippled children were discussed, with emphasis upon rehabilitation. Juvenile delinquency was a matter of major concern in all of the 21 American republics. Those assembled considered measures for the prevention of delinquency, including the strengthening of family life, and for the improvement of the juvenile courts, institutions and other agencies serving juvenile delinquents. The need for adequate child welfare facilities and services in rural areas was recognized and recommendations included proposals for the special training of social workers for service in rural areas. Inadequacies of vital statistics were another concern and steps were urged toward developing uniform statistics, already begun by the American International Institute for the Protection of Childhood and co-operating organizations within the UN.

The World Child Welfare congress in Zagreb, Yugos., held late in 1954, emphasized the importance of helping children before their problems became acute and, toward this end, the

strengthening of family life. Findings of the conference included recommendations for the centring of social planning and social services upon the family, with children given preference over others within the family; supplementary wages which would allow employed mothers to work no more than half time outside the home; education for parenthood during the years of common-school education and military service; care for handicapped and sick children, wherever practical, in the home or in hospitals where the mother may be with her child; facilities in the home and community for treatment, education and vocational training of mentally deficient children; and special protection for the child born out of wedlock and children from broken homes. It was agreed that in case of war or other catastrophe children should be separated from their families only when physical survival requires, and that the family should be preserved as a unit, whatever its customary standards may be.

The sixth world congress of the International Society for the Welfare of Cripples, held in 1954 at The Hague, Neth., agreed that popular understanding of the purposes, methods and content of programs for rehabilitation of the crippled is essential to their development.

The United Nations Children's fund (formerly the United Nations International Children's Emergency fund and still officially designated as UNICEF) was expanded in 1955. Seven governments which contributed to the fund for the first time brought the total participating to more than 70, with probable pledges and receipts of about \$20,000,000 for 1955. For the fiscal year 1955 the United States congress appropriated \$12,500,000. About 90% of the fund's support had been from governments, the balance from voluntary organizations and individual contributors.

During 1955 UNICEF expected to exceed its goal of approximately 32,000,000 children and pregnant or nursing mothers as beneficiaries of its principal health and nutrition programs. The number to be vaccinated with BCG (*Bacillus-Calmette Guérin*) in the fund's antituberculosis campaign promised to be more than 15,000,000. Since the fund's campaign against tuberculosis began in 1948, about 140,000,000 persons had been tested to determine their susceptibility and about 60,000,000 treated with vaccine. Other objectives of UNICEF programs in 1955 were to protect approximately 7,000,000 from malaria with DDT; to give daily rations through maternal and child welfare centres and school lunch programs to 4,000,000; emergency feeding, 4,000,000; treatment for control of yaws, 1,200,000; treatment for control of trachoma, 900,000. Cumulative services in the control of yaws, including 1955 and the previous years, consisted of about 23,000,000 children and mothers examined and 5,000,000 treated.

United States.—The Salk vaccine for poliomyelitis, which became available during 1954 to a limited control group of children, was made available by the federal government during 1955 to all children under ten years of age. For several months the distribution of this vaccine was held up because the output from certain laboratories seemed to be related to the development of the disease in a number of cases. With supplies of vaccine tested under government supervision and the adequacy of remaining stocks assured, the campaign of inoculation was resumed and expanded. A similar campaign against polio was conducted in Canada.

Another important discovery in the field of child health tended to reduce blindness among infants. Reduction in the supply of oxygen administered to premature babies, in a study including several hundred infants, showed that less than half as many developed retrolental fibroplasia as were victims when the larger supply of oxygen in routine treatment was provided.

Other highly publicized child welfare developments pertained



INDOCHINESE ORPHANS, removed from communist-held Haiphong to Saigon by the Vietnamese government in collaboration with the U.S. Operations mission and French authorities, enjoy an improvised picnic aboard the U.S.S. "Marine Serpent" April 16, 1955

to mentally retarded children and delinquent youth. Councils of parents of mentally retarded children were operated in more than 40 states as affiliates of the National Association for Retarded Children. The efforts of such groups of parents and other interested citizens and professional workers were concentrated on services to the mentally retarded at home, at school and in training schools, with special emphasis upon the rehabilitation of those who previously received little or no training. Several states began studies of the facilities and services within their borders. In some, as in Massachusetts, laws were passed assuring more adequate provisions for children thus handicapped.

The number of children coming before juvenile court authorities on account of delinquency increased for the sixth year in succession, according to a report from the children's bureau of the department of health, education and welfare. The bureau's division of juvenile delinquency, established in 1954, continued studies begun in 1953 by a subcommittee of the U.S. senate. There was general agreement that a substantial reduction in juvenile delinquency could be expected if there were a general increase in the stability of families. As never before there was a tendency for schools, social agencies and law enforcing bodies to recognize that emotional disturbance must be detected more frequently and at earlier ages if steps for reducing delinquency were to be effective. This was one of the findings of a conference on health services and juvenile delinquency held in Washington, D.C., May 19-21, 1955.

Progress in the control of child labour was especially noticeable in its application to children of migrant labourers. State officials and local communities, assisted by national religious bodies, the National Child Labor committee and federal authorities, were obtaining co-operation as never before from industries which employed migrants. Educational, religious, recreational and health services were being provided. Another concern of child labour authorities was the need for additional controls in the employment of teen-age boys in bowling alleys, often at hours when they should be asleep and for periods long enough

to produce excessive fatigue.

Conferences contributing to the welfare of children included the National Conference on the Churches and Social Welfare, Cleveland, O., Nov. 1-4, 1955, and the White House Conference on Education, Washington, D.C., Nov. 28-Dec. 1, 1955.

A decline in the number of orphans in the United States was reflected in the U.S. census. The number of full orphans dropped from 750,000 in 1920 to 66,000 in 1953. In 1920 the proportion of children who had lost one or both parents was 1 in 6, in 1953 it was 1 in 20. Increasingly the children in need of foster care in family homes or institutions were from homes broken by desertion, divorce or separation. The U.S. census (1955) showed 260,429 persons under 21 years of age living in all types of institutions. The total in institutions for dependent and neglected children was 95,260.

Outstanding among publications was the pamphlet *Infant Care* produced by the federal children's bureau. In 1954 and 1955 more than 1,000,000 copies were sold. Since its original publication in 1914, 35,000,000 copies of this guide to child health have been sold or circulated without charge. (See also CHILD LABOUR; INFANT MORTALITY; JUVENILE DELINQUENCY; RED CROSS; SOCIAL SECURITY; TUBERCULOSIS; WORLD HEALTH ORGANIZATION.)

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Chile. A republic extending along the southern Pacific coast of South America for about 2,600 mi., Chile has an average width of 110 mi. It is bounded on the north by Peru on the south by the Antarctic ocean, on the east by Bolivia and Argentina and on the west by the Pacific ocean. It has an area of 286,396 sq.mi. and a population of (April 1952 census) 5,930,809; (1955 est.) 6,560,000. Santiago, the capital, including suburbs has 1,348,283 inhabitants (April 1952 census). Other leading cities of more than 50,000 are Valparaíso, 218,829 inhabitants; Viña del Mar, 85,281; Concepción, 119,887; Antofagasta, 62,272; Talca, 55,059; Temuco, 51,497; Chillán, 45,576; Talcahuano, 54,782. Religion: Christian, mainly Roman Catholic. President in 1955: Gen. Carlos Ibañez del Campo.

History.—President Ibañez and the Chilean congress failed to agree on a program to curb the inflation that threatened in 1955 to upset the national economy. The soaring cost of living (the June 1955 index was 78% above that of June 1954) activated a wave of strikes, most of which resulted in wage increases which sent prices higher.

Effective governmental action was inhibited by strife between the executive and legislative branches. The opposition-controlled congress refused to grant President Ibañez extraordinary powers to deal with the economic situation, and accused him of dictatorial ambitions. Cabinet shake-ups occurred frequently, and paralysis spread to the judiciary in October, when the supreme court endorsed the mass resignation of Santiago justices and court employees who were dissatisfied with their salaries.

The Central Labor organization (Confederación Unica de Trabajadores Chilenos) called a 24-hr. general strike on July 1 to emphasize the workers' demands for a 60% pay increase and other benefits. An estimated 1,000,000 persons took part in a nation-wide demonstration. The cabinet negotiated assiduously to prevent a threatened recurrence of the general strike,

ailed to stop 50,000 government employees from temporarily walking off the job in August at the instigation of Clotario Blest, head of the Central Labor organization. Many persons were arrested for violation of the controversial "Law for the Defense of Democracy," which prohibited strikes in the basic public services and outlawed the Communist party in Chile. President Ibañez declared a state of siege (martial law and suspension of civil liberties) in five provinces in September in order to halt a strike at the giant U.S.-owned Chuquicamata copper mine. He was empowered to issue such a decree because congress was in recess at the time of the emergency. Important labour conflicts also occurred in the transportation, communication and textile industries.

Export earnings rose in 1955, reflecting the demands of U.S., British and West German industry for Chilean copper. Copper production responded to a more favourable tax law adopted by the Chilean government in May, which provided for a basic tax (50%) on the operating income of the large U.S.-owned copper mines, plus a 25% surtax which would gradually be reduced as production increased. Previous assessments amounted to about 35% with no special incentive for higher output. More attractive export exchange rates were set for both copper and nitrate industries. Such concessions to foreign capital prompted the announcement of several substantial expansion programs. Production of nitrates was good and moderate advances were noted in the steel, paper, petroleum and cement industries.

Higher yields of major crops (including wheat, barley, oats, rice, corn, beans and potatoes) in the 1954-1955 season enabled Chile to reduce imports of some commodities. Considerable surplus wheat was nevertheless purchased from the United States.

International disagreements centring on questions of sovereignty occasionally diverted the attention of Chileans from domestic problems. Like Peru and Ecuador, Chile claimed jurisdiction over its coastal waters to the 200-mi. limit. A U.S. suggestion that the matter be submitted to the International Court of Justice for adjudication was rejected. Chile likewise rejected an offer by Great Britain to place conflicting claims to territory in the antarctic region before the International Court of Justice. (See FOREIGN INVESTMENTS.) (R. HN.)

Education.—In 1951, 5,064 primary schools had an enrolment of 721,179 pupils; 332 secondary schools (1952) had 86,652 pupils. University education was available at the state university of Chile (7,451 students in 1951), the Catholic university of Santiago (1,754 students), the University of Concepción (1,419 students) and the Catholic university of Valparaíso (637 students). Public education was scheduled to receive 1% of government expenditures in 1955.

Finance.—The monetary unit is the peso, valued at 0.91 cents U.S. currency, official rate, and at 0.49 cents, principal rate, during 1955 and at 0.15 cents, free market rate, on Sept. 16, 1955. The 1955 budget, as approved by congress in Dec. 1954, estimated revenue at 91,640,078,917 pesos and expenditure at 91,639,948,917 pesos; a supplemental budget of 12,000,000,000 pesos was submitted to congress in Aug. 1955. The 1956 budget, as submitted to congress in Aug. 1955, estimated revenue at 131,580,000,000 pesos and expenditure at 153,460,000,000 pesos. In 1954 ordinary revenue was 74,416,000,000 pesos; expenditure, 82,932,000,000 pesos. The funded external debt on Dec. 31, 1953, was £17,440,974, 1106,595,500 and 85,832,400 Swiss francs; the direct internal debt, 10,163,370,454 pesos. Currency in circulation (March 31, 1955) totalled 16,851,000,000 pesos; demand deposits (Nov. 30, 1954), 49,440,000,000 pesos. The U.S. department of commerce estimated U.S. direct investments in 1954 at \$633,000,000, of which mining and smelting investments accounted for \$407,000,000. The cost-of-living index (Santiago) stood at 199 in Aug. 1955 (1948=100). National income was estimated at 498,130,000,000 pesos in 1954.

Trade and Communications.—Exports in 1954 (excluding gold) amounted to \$403,100,000; imports, \$343,000,000. Leading exports were copper (59%), nitrate of soda (17%), metallurgical products (5%), timber and forest products (4%) and agricultural products (3%); leading imports, industrial oils, chemical products and paints (16%), machinery (15%), transport materials (12%), raw cotton (8%) and petroleum and products (7%). Chief customers were the U.S. (46%), the United Kingdom (14%), Argentina (9%), Germany (7%) and Italy (4%); chief suppliers, the U.S. (41%), Argentina (15%), Germany (8%), Peru (7%) and the U.K. (5%).

The railway system totalled 5,434 mi. in 1949, of which 3,859 mi. were owned by the government. In 1951 there were 31,215 mi. of highways. On Jan. 1, 1955, there were 45,882 automobiles, 38,565 trucks and 1,951 buses. According to *Lloyd's Register of Shipping*, the merchant

marine had 99 vessels (100 tons and over) aggregating 210,592 gross tons on June 30, 1954. Telephones (Jan. 1, 1954) numbered 145,139, 69% of which were automatic and 56% of which were located in Santiago.

Agriculture.—Production of the principal crops in the crop year 1954-55 was estimated as follows (in metric tons): wheat 1,078,000; barley 89,000; oats 108,000; rice 93,000; maize 102,000; potatoes 617,000. Livestock included (1954) cattle 2,363,700, (1951) 650,000 pigs, 6,500,000 sheep, 830,000 goats and 600,000 horses. Wool production in 1954 (clean basis) was 9,000 metric tons.

Manufactures.—Production estimates (1954) included steel 320,949 metric tons; pig iron 305,145 tons; wheat flour 619,200 tons; cement 775,200 tons; woven cotton fabrics, about 47,000,000 metres; caustic soda 4,000 tons; sulphuric acid 20,000 tons; tires 192,000 units; manufactured gas 151,200,000 cu.m.; electric energy 2,265,000,000 kw.hr. In 1954 there were about 198,000 cotton spindles and 8,026 looms and 81,100 wool spindles and 1,320 looms. The index for manufacturing industries averaged 148 in 1954 (1948=100).

Minerals.—Production in 1954 included copper 363,655 metric tons; nitrate of soda 1,574,309 tons; iodine 1,147 tons; iron ore 2,199,039 tons (exports 1,719,893 tons); coal 2,267,329 tons; silver 1,489,000 fine oz.; gold 125,000 oz. Petroleum production on Tierra del Fuego totalled 227,000 metric tons (about 1,740,000 bbl.).

See United Nations, *Economic Survey of Latin America 1954* (1955). (J. W. Mw.)

China. China borders Korea, the U.S.S.R., Outer Mongolia, Afghanistan, Nepal, Burma, Indochina and the Pacific ocean. The area is approximately 3,911,209 sq.mi. including Manchuria, Sinkiang, Tibet and Formosa. In Nov. 1954 the Peking government announced that as of June 30, 1953, the total population was 601,938,035 including more than 19,000,000 outside the mainland.¹ Politically the country remained divided in 1955 into two entities each claiming jurisdiction over the other: (1) the People's Republic of China on the mainland plus Hainan and other islands under the Central People's government in Peking with Mao Tse-tung (q.v.) as its chairman; (2) the Republic of China on Formosa and the Pescadores plus some off-shore islands under the National government in Taipei with Chiang Kai-shek (q.v.) as its president.

The People's Republic of China consisted of 26 provinces and the autonomies of Inner Mongolia, Tibet and Sinkiang-Uighur region, the establishment of the latter being announced in Sept. 1955. The three largest municipalities remained under the direct administration of the Central People's government: Peking, Tientsin and Shanghai with populations in 1954 estimated at 2,900,000; 2,700,000; and 6,200,000, respectively. Other cities with more than 1,000,000 population in 1952 were: Chungking, 2,000,000; Mukden, 1,790,000; Canton, 1,210,000; Wuhan (Hankow and Wuchang), 1,090,000; Nanking, 1,020,000; Port Arthur and Dairen, 1,010,000; Harbin, more than 1,000,000.

History.—The People's Republic of China celebrated its fifth anniversary on Oct. 1, 1954, with greater confidence and triumphant fanfare and significantly with the presence and participation of an important Soviet delegation including such Russian leaders as Nikita S. Khrushchev, Nikolai A. Bulganin and Anastas I. Mikoyan. Although the internal political, economic and social difficulties confronting the Republic found no easy solutions, its government showed greater determination and flexibility to win respectability and recognition as a great world power and the sole government for China. "Liberation of Taiwan" and peaceful coexistence with other countries continued to be a central theme in Peking's propaganda and an inseparable policy in Peking's military activities and diplomatic negotiations and manoeuvres. Early in 1955 Peking's move and threat to take the offshore islands and Formosa caused uncertainties and anxiety in many of the capitals of the world and particularly a storm of controversy in the United States that underscored the policy debate and division in the United States and the free world over the problem of China. Thus, in 1955 the tension in the Formosa straits sharpened fundamental questions relating to Formosa's legal status and the future of the Nation-

¹ The total population figure, which is more than 100,000,000 greater than any previous, is generally regarded with considerable reserve.

alist government.

In 1955 major political developments on the mainland of China included the intensified campaign against the counter-revolutionaries and the purge of the once all-powerful head of the northeastern provinces (Manchuria), Kao Kang, and of his alleged coconspirator Jao Shu-shih, former boss in east China and chairman of the Chinese Communist Party's Organization bureau. A national conference of the Chinese Communist party held in March 1955 adopted resolutions on the liquidation of the Kao-Jao group and on related questions. In early April the Seventh central committee of the party, which held the real power, approved these resolutions. The second session of the first National People's congress was held in July to approve the reports on Kao-Jao affairs and the final text of the five-year plan and to hear Premier Chou En-lai's report that in conformity with the principle of easing international tension and settling disputes through negotiations, Peking had taken a series of steps to improve relations with the United States.

The decision to re-examine the five-year plan and to tighten the food ration reflected economic conditions during 1955 in continental China. The plan launched in 1953 with Soviet economic aid and an emphasis on the development of heavy and defense industries and on socialization of agriculture apparently fell behind schedule, and on the basis of the discussion at the national conference of the Chinese Communist party the central committee was instructed to make revisions and submit the plan to the second session of the National People's congress for adoption. In outlining the plan to the congress Vice-Premier Li Fu-chun, head of the State Planning commission, concluded that it would still take another 15 years or more to carry out a "Socialist transformation" of China and about 50 years to achieve a "high degree of Socialist industrialization," and that despite the difficulties encountered in agricultural collectivization Peking would not change its course.

Food shortage on the mainland of China was reportedly acute partly because of floods and droughts. As an attempt to increase food production and reduce the number of urban mouths to feed, the government took effective steps in July to send large sections of the population in Shanghai and other large cities back to their native villages to take up farming.

Somewhat parallel with the "new look" in Moscow, Peking emphasized in 1955 a foreign policy of peaceful coexistence. While it continued to strengthen its ties with the Soviet Union and friendly Asian countries, Peking relaxed its anti-American campaign and aloofness from other western powers. Formal diplomatic relations had been established between the People's Republic of China and Denmark, Sweden, Finland and Switzerland before the 1954 Geneva conference.

Later Peking and London exchanged chargé d'affaires with diplomatic status and Peking agreed to formalize its relations with Norway and the Netherlands. Diplomatic relations between Peking and Belgrade were established in January 1955, five years after Yugoslavia had offered recognition to Peking. A series of agreements on greater trade and closer relations were concluded between the People's Republic of China and Asian countries friendly to Peking: Indonesia, Burma, Vietnam, North Korea and Outer Mongolia. In January and August 1955 Peking established formal diplomatic relations with Afghanistan and Nepal, respectively.

During his visit to Indonesia in April, Premier Chou and the Indonesian premier signed a treaty whereby persons with dual Chinese and Indonesian citizenship had to choose a single nationality within two years. By implication the treaty gave Indonesian support to Peking's claim to Formosa and control of overseas Chinese. For the purpose of strengthening trade and diplomatic relations, Premiers Nehru of India and U Nu of

Burma paid a return visit to Peking in October and November 1954, respectively, and Premier Ali Sastroamidjojo of Indonesia and Pres. Ho Chi-minh of Vietnam visited Peking in June and July 1955. As a result of their visits joint communiques were issued reaffirming the principles of peaceful coexistence and relaxing international tensions. Subsequently the spokesmen of India and Burma made special efforts to convince the United States of Peking's peaceful intention on the one hand and the other strongly supported Peking's claim to Formosa and seat in the United Nations in a number of international pronouncements.

Peking's active diplomatic efforts in 1955 were in line with a joint declaration of Oct. 11, 1954, issued in Peking containing seven agreements and statements of policy arrived at in negotiations between Peking and Moscow. Concerning China-Soviet future relations Moscow agreed to evacuate Port Arthur by May 31, 1955, to provide additional economic aid to speed up Chinese industrialization, and to dissolve four joint Soviet-Chinese stock companies. With regard to international situation the joint declaration condemned "United States occupation of Formosa," the continued partition of Korea and the creation of "an aggressive block" in southeast Asia; called on Japan to normalize its relations with Peking and Moscow; and pledged close co-operation on all the far eastern issues. It stressed the policy of peaceful coexistence and the need for international discussions among the great powers to settle differences, and considered the exclusion of the People's Republic of China from the United Nations as untenable.

Just three days before the opening of the southeast Asia security conference in Manila on Sept. 6, 1954, Peking stepped up its attack on the offshore islands held by the Nationalists. November fighting between the Communists and Nationalists in the Formosa straits was intensified and it was officially announced that negotiations between the United States and the Republic of China for a security treaty were soon to be concluded. On Dec. 2, 1954, the Chinese-American mutual defense treaty was signed in Washington, D.C., by Foreign Minister George Yeh and Secretary of State John Foster Dulles. While the treaty explicitly committed the United States to defend Formosa and the Pescadores, the exchange of notes clearly indicated that the United States would not support a Nationalist landing on the mainland unless the United States gave its prior consent and that the Nationalists could only attack the mainland in self-defense. On Jan. 15, 1955, the Legislative Yuan of Formosa ratified the Chinese-American defense treaty unanimously. On Jan. 29 Pres. Dwight D. Eisenhower signed a congressional resolution overwhelmingly endorsing his request and authority to defend Formosa and the Pescadores at the risk of war. The U.S. senate approved on Feb. 9 the treaty by a 64 to 6 votes.

While the debate and speculation over the position of the United States in relation to the offshore islands continued, Peking concentrated heavy air attacks on the Tachen group. The Nationalists finally agreed to evacuate Tachen but failed to receive a more definite public guarantee from the United States to defend Quemoy and Matsu. On Feb. 7 the U.S. 7th fleet arrived off Tachen to evacuate Nationalist civilians and troops totalling more than 30,000 persons. The withdrawal from Tachen group reduced the Nationalist outer ring defense to Quemoy and Matsu groups.

The detention of U.S. servicemen and civilians in China came an important issue between Peking and the U.S. On Nov. 23, 1954, when final negotiations on the Chinese-American defense treaty were under way, Peking radio announced that two airmen and two civilians from the United States had been sentenced to long prison terms as spies. President Eisenhower s



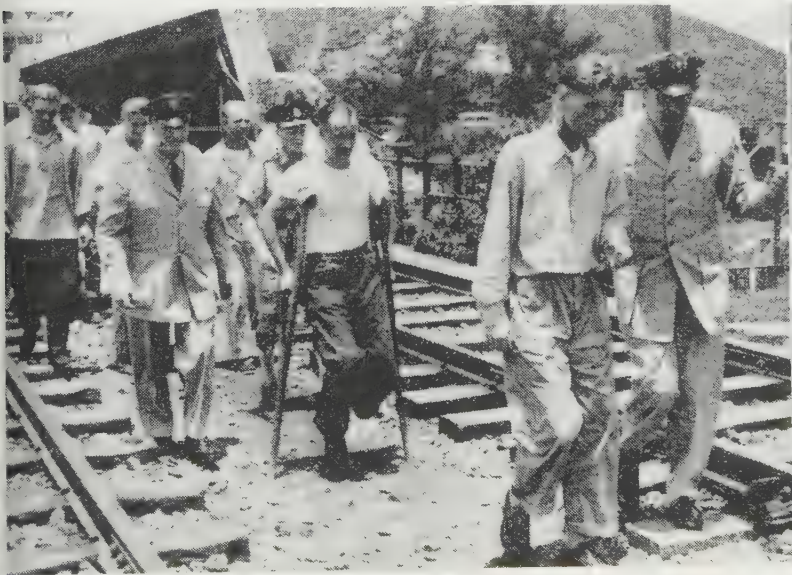
Above: PROPAGANDA PICTURE released by the Chinese communists early in 1955 to show the recreation facilities available to prisoners. Shown in the photograph are three U.S. jet pilots shot down during the Korean war; left to right: Lieut. L. W. Cameron, Capt. Harold E. Fischer, Jr., Lieut. Roland W. Parks



Right: LIEUTENANT PARKS and his mother in Honolulu, T.H., after his release in June 1955

Below: COL. JOHN K. ARNOLD, JR. (second from right) and other members of his B-29 crew being led across railroad bridge from China to Hong Kong after their release in Aug. 1955. With Col. Arnold is Col. O. W. D. Simpson, U.S. air attaché in Hong Kong

Below right: U.S. TURNCOATS, Korean war prisoners who chose to remain in communist China, being interviewed on the U.S.S. "Cleveland" in July 1955 after they changed their minds and returned to the U.S. Left to right: Otho Bell, William Cowart, Lewis Griggs



Below: DOMESTIC SCENES in communist China in 1955. Left, control room of a heat and power plant opened in Tai-yuan, north China, in January. Right,

delegates to a trade union congress in Canton in March signing an "appeal to the peoples of the world" against the use of atomic weapons



that the jail sentences just imposed on the 13 Americans were intended "to goad us into some impulsive action in the hope of dividing us from our allies." Consequently the United States in early December proposed that the United Nations general assembly act promptly and decisively to bring about the release of the prisoners of the Korean war. Following the adoption by the general assembly on Dec. 10, 1954, of a resolution condemning as contrary to the Korean armistice agreement the trial and conviction of prisoners of war illegally detained after Sept. 1953, Sec. Gen. Dag Hammarskjöld immediately proposed a meeting with Premier Chou in Peking. On Jan. 5, 1955, Hammarskjöld and his aides arrived at Peking. It was reported that during their talks Premier Chou voiced fear of invasion of the China mainland by the United States. Upon his return Hammarskjöld stated on Jan. 16 that he was planning to send a message to Peking clarifying the United States commitments to Nationalist China under the Chinese-American treaty and that the chances for the ultimate release of the U.S. airmen and other UN prisoners would be improved when Peking learned the exact meaning of that treaty.

A significant change of attitude by Peking toward the U.S. took place at the Asian-African conference opening on April 18, 1955, in Bandung, Indonesia, from which Nationalist China was excluded. By adopting a conciliatory attitude Peking created a tremendous impression at the Bandung conference. On April 23 after a luncheon with the leaders of Asian countries Chou En-lai released a statement indicating the willingness of his government to enter negotiations with the U.S. government to discuss the question of relaxing tension in the Formosa area. In a responsive statement the U.S. state department suggested that the Nationalists should participate as an equal in any discussions affecting the Formosa area. In his closing speech at the Bandung conference, April 24, Chou remarked that any negotiations with the United States should not affect his government's sovereign rights in "liberating Taiwan." In a resolution supporting Peking's position, the Bandung conference called for the withdrawal of U.S. forces from Formosa and the Pescadores and for a 10-power conference as previously suggested by Moscow to settle the Formosa question.

After the Bandung conference a *de facto* cease-fire existed insofar as Peking and the U.S. were concerned. At the Geneva conference of the heads of the Big Four Powers the Formosa issue was informally discussed. Shortly after that meeting Peking and the U.S. jointly announced on July 25 that "talks" on an ambassadorial level would be conducted to discuss: (1) the question of repatriation of civilians; (2) "certain other practical matters now at issue between both sides." In announcing the date and place for the meetings of Ambassadors U. Alexis Johnson and Wang Ping-nan, the state department declared that these talks did not involve diplomatic recognition.

Just before the talks began in Geneva on Aug. 1, Peking announced that the 11 airmen were being released. Negotiations on the release of civilians dragged on as Peking insisted on a proposal for having India screen Chinese nationals in the United States whom Peking believed had been detained from going back to the mainland. On Aug. 19 Nationalist Foreign Minister Yeh declared that the United States had no right to surrender Chinese residents in the United States to Peking or to any third nation as they were not prisoners of war but under legal protection of his government. Finally a compromise was reached on Sept. 10 when Peking agreed to set free all 41 U.S. civilians and the United States reaffirmed the right of any Chinese in the United States to return to mainland China and agreed to have India to assist any Chinese who might need such assistance. Although by Sept. 20 only 9 of the 41 civilians were free to return to the United States, it was announced that talks

would continue to take up both items on the agenda simultaneously. On the same day the 10th session of the general assembly by a vote of 42 to 12 with 6 abstentions adopted a United States proposal, which was introduced in reply to a Soviet resolution to seat Peking, deferring the consideration of China's representation in the United Nations for another year. (See also COMMUNISM; FORMOSA; UNION OF SOVIET SOCIALIST REPUBLICS.)

Education.—According to a Peking announcement there was a record enrollment of about 3,500,000 in secondary schools and 55,500,000 in primary schools on the mainland in Sept. 1955 as compared with 3,000,000 and 53,000,000 respectively, in 1953. In Sept. 1955 there were 289,000 college or university students, as against 220,000 in 1953.

Defense.—In order to further the building up of the Chinese People's Liberation army, Peking introduced stricter compulsory military service in 1955. Its regular army was estimated at 3,000,000 to 4,000,000 men supplemented by a few millions of home defense militia. Peking's air force was reported to consist of about 2,000 planes including 850 jets and 380 bombers, mostly of Russian origin.

The Nationalist army, estimated at 600,000, was being gradually fashioned into a modern fighting force with U.S. assistance, and by conscription of Formosan recruits the average age of the Nationalist army in 1955 was brought down to 25 years from nearly 30 in 1953. The combat strength of the Nationalist air force was estimated at less than 500 planes, including a good number of jets. Under the wing of the U.S. 7th fleet, the Nationalist navy of more than 100 small vessels became a defensive and harassing force in the Formosa straits.

Finance.—To improve the currency system on the China mainland a new Yuan was made of 10,000 old Yuan on March 1, 1955. All prices were adjusted according to this official rate, and foreign exchange remained unchanged in value (roughly U.S. \$1=2.4 Yuan and £1 sterling=6.8 Yuan). On the basis of the new currency and according to the official report, the 1954 revenue and expenditure were 30,745,830,000 and 24,632,440,000 Yuan respectively. About 69% of the 1954 revenue came from state and joint state-private enterprises. Economic construction counted for more than 50%, national defense 23.6% and education and culture 14% of the total expenditure in 1954. The 1955 budget estimates were: revenue, 31,192,520,000 Yuan; expenditure, 29,736,720,000 Yuan. More than 60% of the 1955 budget would go to construction and social services, while over 24% would be devoted to national defense.

Trade and Communications.—According to Peking's finance minister the total volume of foreign trade registered an increase of 4.5% in 1954 and imports and exports in the main balanced each other. In 1954 more than 80% of Peking's foreign trade was with the Soviet Union and People's Democracies compared with 75% for the previous year. Trade with India, Burma, Indochina, Ceylon, Pakistan, the United Kingdom and Japan was expected to increase. Peking signed an important trade agreement with Egypt in Aug. 1955.

During 1955 there were more than 16,000 mi. of railways in operation on the mainland. Nearly 500 mi. of railways were completed during 1955 and another 500 mi. were to be built by the end of 1955. The most important railway opened to traffic during 1955 was the Chinese section of the Tsining-Ulan Bator railway of about 200 mi. When the Mongolia section was finished, the direct rail route from Peking to Moscow would run through Ulan Bator, shortening the distance by about 600 mi. During 1955 there were about 86,000 mi. of highway in operation (66,700 mi. in 1953) including about 6,000 mi. of new roads built during 1949-54. Outstanding among the new roads were highways to Tibet.

Agricultural and Industrial Production.—According to official percentage figures, the combined total of industrial and agricultural output on the mainland in 1953 increased 14.4% over 1952, and the total value of industrial output for 1955 was expected to increase by 7.7% over 1954. Taking 1952 as 100, the 1954 production index figures for certain heavy industries, mostly state owned and operated, were: steel 165; pig iron 156; electricity 151; coal 126; oil 184; machinery 200; cement 161. The value light industry in 1954 produced three times that of 1949, and on the basis of 1949 production the 1954 output of cotton and flour industries increased by 300% and 200% respectively, and paper and sugar industries by 350% and 100% respectively. Under the five-year plan the target figures for major industrial products by 1957 as compared with 1952 were released in 1955 as follows: (1) steel, 4,120,000 tons against 1,350,000 tons; (2) electricity, 15,920,000 kw.hr. against 7,260,000 kw.hr.; (3) coal, 113,000,000 tons against 63,530,000 tons; (4) cement, 6,000,000 tons against 2,860,000 tons; (5) machine processed paper, 650,000 tons against 370,000 tons; (6) cotton piece goods, 163,720,000 bolts against 111,630,000 bolts; (7) machine processed sugar, 666,000 tons against 249,000 tons.

The 1954 agricultural production was said to be higher than that of 1953. The total value of agricultural output for 1955 was expected to increase 6.4% with grain output up 5.3%, cotton 20.6%, tobacco 38% and sugar cane 16%. The 1955 grain production was officially estimated at 180,000,000 tons. Under the five-year plan, grain production would reach 192,800,000 tons in 1972 or an increase of 17.6% as compared with 1952.

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Chiropractic. Chiropractic is a system of therapeutics based on the premise that most malfunction and disease result from lack of normal nerve function. The doctrine

of chiropractic, by general manipulation and specific adjustment of the structures of the body and the use of clinical nutrition, physiotherapy and psychotherapy, as indicated, seeks to restore normal nerve function, thereby enabling the protective and restorative powers of the body to function normally.

The 60th anniversary convention of the National Chiropractic association was held in Atlantic City, N.J., July 4-8, 1955. The convention agenda included a series of scientific symposia covering important developments in diagnostic procedure, adjusting technique, X-ray interpretation, poliomyelitis, physiotherapeutic practices and public health problems. National councils on roentgenology, public health, physiotherapy, hospitals and sanitariums, psychotherapy, research, education and military chiropractors met at the same time. Minimum standards of four academic years, totalling 4,000 hrs., are required in the eight nonprofit colleges accredited by the National Council on Education. The 1956 convention was to be held at the Morrison hotel in Chicago, July 1-6. The second annual Chiropractic Conference on Polio was held in Chicago Nov. 1-5, 1955.

Mexico in 1955 granted licensing regulation to doctors of chiropractic.

A new sound motion picture, in colour, titled *How Do You Stand?*, depicting the relationship of posture, health and spinal hygiene, was released by the association for showing on television.

A series of full-page advertisements designed to inform editors throughout the United States that chiropractic is the second largest healing profession and is officially classified as one of the four major healing professions by the executive office of the president of the United States was published in six leading communications mediums.

Official publications are *Healthways Magazine*; the *Journal of the National Chiropractic Association*; the *National News*; *Chiropractic—A Career*. Headquarters: National building, Webster City, Ia. (L. M. R.)

Chou En-lai (1898-), Chinese Communist leader, was born at Hwaiyin in Kiangsu province. He studied at Waseda university in Japan and at Nankai university in Tientsin. In 1919 he led a student rebellion at Tientsin which led to his arrest and imprisonment. In 1924 he joined Sun Yat-sen's republican movement and was named director of political training at Whampoa Military academy, Canton. During Chiang Kai-shek's anti-Communist campaign of 1927 Chou was captured but escaped. He went to Moscow where he stayed from 1928 to about 1931, and served as a delegate to the sixth congress of the Russian Comintern. In 1936 he and Chiang buried their differences to form a united front against the invading Japanese. Their truce barely survived the end of World War II, at which time the Communists began their drive for control of all China. By 1949 they had practically achieved this aim, and Chou became prime minister and foreign minister of the new Central People's Republic of China. He signed the Sino-Soviet treaty of alliance and mutual aid at Moscow on Feb. 14, 1950.

Following the end of the Korean war in 1953 and particularly the end of the Indochinese conflict in 1954, Chou emerged as a political figure of world importance. At the Geneva (Switz.) conference on far eastern problems in April-July 1954, he demanded the withdrawal of all non-Asiatic powers from Asia. Returning to Geneva in July, he approved the final terms of the Indochinese truce between France and the Communist Vietminh, signed at Geneva, July 21.

Early in Jan. 1955 Chou received Dag Hammarskjöld, secretary general of the UN who had been delegated to ask China to free 11 U.S. fliers sentenced to prison for "espionage." At the Bandung (Indonesia) conference of Asiatic-African nations in

April Chou adopted a more conciliatory attitude toward the western nations, declaring that China was "friendly to the American people" and proposing that direct talks be held on outstanding Chinese-U.S. disputes. These talks began in semisecrecy at Geneva, Switz., on Aug. 1, 1955, between the U.S. ambassador to Czechoslovakia and the Chinese ambassador to Poland. The same day China announced the release of the 11 fliers. Two days before, Chou had proposed a collective peace pact between the U.S. and nations of the Pacific-Eastern Asia region.

Christian Science. Expanded use of radio and television broadcasting was a notable feature of activities of the Mother Church, the First Church of Christ, Scientist, in Boston, Mass., during 1955.

The new filmed television series "How Christian Science Heals" featured documented accounts of spiritual healing. Two guests told of their own religious experiences on each 15-min. program. A moderator gave brief comments of an inspirational nature, designed to show how everyone can rely on God's help effectively in problems of daily life.

Healings of cancer, alcoholism, asthma, migraine headaches, brain tumour, broken bones, spinal meningitis and other ailments were recounted by those who claimed they had experienced them. They also gave actual examples of how many other types of human problems—relations with others, business difficulties, character problems, and so forth—could be solved through spiritual understanding of God.

The denomination's radio programs, which also carry the series titled "How Christian Science Heals," were heard over about 800 radio stations in the United States, Canada, South America, South Africa and continental Europe. Testifiers on both radio and television programs included men and women from all walks of life from many parts of the world. More widespread acceptance of divine healing was reported during 1955 by many departments of the Mother Church.

Hundreds of insurance companies recognized the services of Christian Science practitioners, nurses and sanatoriums, during the year, it was reported. A growing number of companies added special Christian Science riders to their automobile, medical expense, health and accident, and general liability insurance contracts.

Continued growth in church membership was reported. As of the annual meeting in June, the Mother Church had 3,161 branch churches and societies in 46 countries.

Thirty-one new branches were recognized during the year. Included were those in Salzburg, Aus.; Upper Hut, N.Z.; Freemantle, Austr.; Aarhus, Den.; Kyoto, Jap.; Heidelberg, Ger.; and Caracas, Venez.

New translations of certain of the writings of Mary Baker Eddy, the discoverer and founder of Christian Science, into French, Greek and seven other languages were announced.

Circulation of the Christian Science periodicals and publications continued to rise during the year. New advertising records for the *Christian Science Monitor*, the denomination's international daily newspaper, were also announced.

During the year 17 Christian Science chaplains were on active duty with the armed forces of the United States in Austria, Japan, Korea and at major bases in the United States and on board navy ships. (W. B. Ds.)

Christian Unity. The negotiations of the last few years for a union of three American Presbyterian bodies came to a conclusion in 1955. Two of the bodies, the Presbyterian Church in the U.S.A. and the United Presbyterian Church of North America, recorded themselves as overwhelmingly in favour of the proposal. The third, however, the

Presbyterian Church in the U.S. (south), decided at its general assembly in Richmond, Va., June 2-7, 1955, that, in view of the failure of three-quarters of the presbyteries to approve, no further efforts in behalf of the union should be made at this time. The project for the three-way merger was therefore dropped for the present. The general assembly of the United Presbyterian Church, meeting in Monmouth, Ill., voted on June 15 to work toward union with the Presbyterian Church in the U.S.A. but no draft of a plan was put forth.

In the Lutheran circle two different projects were being considered. The most immediate of these was the plan for the union of the American Lutheran Church, the Evangelical Lutheran Church, the United Evangelical Lutheran Church and the Lutheran Free Church. If consummated, the result would be a denomination of about 1,800,000 members. All of the bodies had accepted the plan except the Lutheran Free Church. Since the Lutheran Free Church is congregational in its form of government, final ratification waited on a referendum which was under way in the local churches in the latter part of 1955. An affirmative vote by three-fourths of the congregations was required. In voting to conduct the referendum the annual (1955) conference of the Lutheran Free Church stipulated, as a condition of joining the merger, that the Augsburg college and seminary (both in Minneapolis, Minn.) should continue under the control of its congregations.

A more inclusive proposal for Lutheran union registered progress when the Augustana Lutheran Church in its annual synod in St. Paul, Minn., June 14-19, voted to join with the United Lutheran Church in America in extending an invitation to all Lutheran bodies to enter into discussions concerning union. The synod also authorized its commission on ecumenical relations to begin negotiations with the United Lutheran Church and any other bodies that might accept the invitation. Another Lutheran body, the American Evangelical Lutheran Church (which is of Danish background), at its annual convention in Kimballton, Ia., in August voted to participate in these discussions. It took this action after rejecting an earlier proposal to become a constituent linguistic synod of the United Lutheran Church in America.

The proposed union between the Congregational Christian Churches and the Evangelical and Reformed Church moved a long step ahead. After a long delay resulting from legal action in the courts by opponents of the plan, official conversations between the two denominations were reopened. Decisions were made by both groups to consummate the merger on June 25, 1957. The name of the new body, which would have 2,000,000 members, was to be the United Church of Christ.

Two groups of Friends (Quakers) completed a union which had long been in process, the Religious Society of Friends of Philadelphia and Vicinity (Arch Street Meeting) and the Philadelphia Yearly Meeting of the Religious Society of Friends (Race Street Meeting). The name of the combined unit is the Philadelphia Yearly Meeting of the Religious Society of Friends.

The plans for eventual union of the Unitarians and the Universalists moved forward slowly. The American Unitarian association at its annual meeting in Boston in May voted to take "more time" to study the matter in the local churches. The two denominations formed a Council of Liberal Churches in 1953, which federated their departments of religious education and public relations and was expected to be a first step toward a fuller union.

A commission of 12 members, 6 from each denomination, was appointed at the meeting of the council in Aug. 1955 to propose concrete plans for a merger.

In Canada the discussions between the United Church of Canada (made up of Methodists, Congregationalists and Pres-

byterians) and the Anglican Church in Canada were somewhat revived, after a period of inaction, by a vote of the general synod of the latter body in September calling for "continuing conversations" with the United Church of Canada and other Christian groups in the dominion.

In Great Britain the chief development was the action of the Anglican church assembly, in London in July, in widening the degree of intercommunion between the Church of England and the Church of South India. The Church of South India, formed in 1947, represented the most advanced outpost of church unity thus far. Anglican, Methodist, Presbyterian, Reformed and Congregational groups joined in bringing it into being. The question of relations between the united body and the Church of England had been a matter of much debate, because the ministry of the Church of South India during its early years included men not episcopally ordained, though with an agreement that after the first generation all clergy should be episcopally ordained. The Anglican church assembly decided that any bishop or ordained presbyter of the Church of South India might celebrate Holy Communion in a parish of the Church of England at the invitation of the rector, with the permission of the bishop of the diocese. Communicants of the Church of South India were authorized to receive Communion, when they were in England, in the Church of England.

In addition to this step in relation to the Church of South India, the Anglican church assembly voted to seek closer relations with the Methodist Church, looking toward the possibility of eventual union. The resolution called specifically for the opening of conversations only with the Methodists, but the archbishop of Canterbury stated that the Church of England was ready to engage in similar discussion with any of the other free churches desiring it. The Anglican proposal was promptly welcomed by the Methodist general conference which was in session at the same time.

In north India and Pakistan, where hopeful negotiations for a united church which would include Anglicans, Baptists, Methodists, Presbyterians and Congregationalists had long been in process, a setback was experienced. The committee representing the five denominations voted to delay final decision for "five or six years."

Questions were raised (from the Anglican side) about proposed arrangements for unifying the various ministries. Other questions were raised (from the Baptist side) about the proposal to make infant baptism and believer's baptism alternative practices. Apparently the recommendation that these questions be studied further meant that there was no prospect of a consummation of the union before 1960 at the earliest.

In Ceylon a plan for union among Anglican, Methodist, Presbyterian and Baptist bodies was receiving favourable attention. It provided for optional modes of baptism and solved the problem of the ministry by proposing that the newly elected bishop would lay hands on all the ministers but without implying a denial of the validity of previous ordination.

In various areas several other projects of union were being considered with more or less seriousness but no early achievements were in sight.

The movements herein described all contemplate actual union of separated churches. In the wider fields of co-operation between churches much greater progress was evident. New councils of churches, both national and local, were formed. Existing councils found their support strengthened. The World Council of Churches, following its second assembly (held in Evanston, Ill., in Aug. 1954) reorganized its work in three divisions of operations: the division of interchurch aid and service to refugees, the division of studies and the division of ecumenical action.

(See also LUTHERANS; PRESBYTERIAN CHURCH; RELIGION; UNITARIAN CHURCH.) (S. McC. C.)

Chromium and Chromite: see MINERAL AND METAL PRODUCTION AND PRICES.

Chronology: see CALENDAR OF EVENTS, 1955, pages 1-16.

Churches of Christ. Churches of Christ continued to grow rapidly during 1955 with an estimated increase of 500 churches in the United States alone. Since these churches are strictly congregational in government, it is difficult to obtain exact figures on growth. The published estimates gave a United States membership of 1,600,000 in 15,000 churches. Contributions during the year were estimated at \$45,000,000 for all causes. These churches have no denominational organization or headquarters since they are composed of members who are pleading for undenominational Christianity.

In 1955 increased emphasis was placed on Sunday Bible study and approximately 10% more people began attending during the year. The year marked an increase in mission work in the United States and abroad. About 120 workers were being supported in 50 other nations by churches in America. A nationwide broadcast, *Herald of Truth*, was started in 1952 and grew to about 300 stations with an estimated 3,000,000 listeners weekly. This program was being produced by the Highland Church of Abilene, Tex., with other churches assisting voluntarily.

Individual members of the church organized a nonprofit corporation, Gospel Press, in Dallas, Tex., during 1955 and the first advertising in national magazines was scheduled to begin in Nov. 1955.

Fifteen orphanages and homes for the aged were supported by the churches during the year. The Broadway Church of Christ in Lubbock, Tex., began a new home for homeless children, the Children's Home of Lubbock, in 1953. In 1955 it completed its fourth cottage and was caring for 54 children.

Members were also supporting 18 Christian schools and colleges. Abilene Christian college at Abilene, Tex., celebrated its 50th anniversary in the 1955-56 school year. A new college was organized at York, Neb., to begin operations in 1956. Other new schools were being planned for Lubbock, Tex.; Philadelphia, Pa.; and Indiana. (M. N. Y.)

Churchill, Sir Winston Leonard Spencer

(1874-), British statesman, was born at Blenheim palace, Oxfordshire, Nov. 30. For his biography, see *Encyclopædia Britannica*. In April 1953 he was invested K.G. by Queen Elizabeth II. The following December he represented Great Britain at the three-power conference with the United States and France held at Bermuda. In an effort to ease world tension he flew to Washington, D.C., in June 1954 with Anthony Eden for talks with Pres. Dwight D. Eisenhower and John Foster Dulles which led to a joint declaration of principles, known as the Potomac statement. His 80th birthday celebrations in November included presentations to him by the queen, parliament and the public.

On Jan. 31, 1955, Sir Winston Churchill opened the commonwealth prime ministers' conference in London. Speculation about his retirement reached its peak on April 4 when he entertained Queen Elizabeth and the duke of Edinburgh at dinner at 10 Downing street. The following afternoon he tendered his resignation to the queen at Buckingham palace. He left for Chartwell on April 6 and was not present in parliament when tributes were paid to him by members as one of the greatest prime ministers and the last survivor of those who had served in the house under Queen Victoria. Sir Anthony Eden, his suc-

cessor, spoke of his outstanding faculty of seeing problems in terms of human values rather than as abstract concepts.

On April 12 Churchill arrived in Syracuse, Sicily, for his first holiday as a private person since he had assumed office in 1939. In the general election of May 26 he was re-elected M.P. for Woodford.

Several statues and paintings of Churchill were unveiled during the year. On May 4 a bust of him, purchased by national subscription, was unveiled in Copenhagen, Den., during Danish May day celebrations. A statue by Oscar Nemon commissioned by the court of common council was unveiled at Guildhall on June 21 in his presence, and on Sept. 7 he attended the meeting of the Court of Brotherhood and Guestling at Hastings, Sussex, at which he was presented with a portrait of himself as warden of the Cinque Ports. On Sept. 15, with Lady Churchill, he left London for a holiday in southern France, and he did not return to attend the Conservative party conference in October.

Church Membership. The latest information in 1955 concerning church membership in 255 religious bodies in continental United States, appearing in the *Yearbook of American Churches for 1956* (New York, 1955), indicated that there were 97,482,611 persons in 300,056 local churches or congregations. The figures were mainly for years ending in 1954. This compared with 94,842,845 members reported in the *Yearbook* a year earlier. There were 81 religious bodies reporting more than 50,000 members each (see Table I), and their total membership was 95,957,565, or more than 98% of all members of religious bodies.

The remaining 2% were found in about 175 smaller bodies of the nation.

Church membership, officially reported, had been increasing for many years, as had also the proportion of church membership in the total population. In 1954 church members were about 60.3% of the population. Since 1926, the date of the last adequate census of religious bodies made by the bureau of the census, church membership had increased more than 80%, while the estimated population increased about 40%.

However, nothing was known about church attendance or other participation, or the proportion of church members con-

Table I.—Church Membership in Continental United States, as Reported in 1955, for Religious Bodies With More Than 50,000 Members

Body	Members, 1955	Members, 1954
Adventists, Seventh-day	270,079	260,742
Apostolic Overcoming Holy Church of God	75,000	75,000
Assemblies of God	400,000	370,118
Baptist Bodies:		
American Baptist Convention	1,505,871	1,557,816
Southern Baptist Convention	8,163,562	7,883,708
National Baptist Convention, U.S.A., Inc.	4,557,416	4,526,847
National Baptist Convention of America	2,608,974	2,606,510
American Baptist Association	286,691	286,691
Baptist General Conference of America	52,485	49,981
Free Will Baptists	405,000	425,000
General Association of Regular Baptist Churches	113,878	*
General Baptists	51,368	52,382
National Baptist Evangelical Life and Soul Saving Assembly of U.S.A.	57,674	57,674
National Primitive Baptist Convention of the U.S.A.	80,000	80,000
North American Baptist Association	243,750	160,000
Primitive Baptists	72,000	72,000
United Baptists	60,525	43,782
United Free Will Baptist Church	100,000	100,000
Brethren (German Baptist):		
Church of the Brethren	193,547	190,263
Buddhist Churches of America	63,000	63,000
Christ Unity Science Church	1,581,286	1,581,286
Christian and Missionary Alliance	61,483	56,097
Churches of God:		
Church of God (Cleveland, Tenn.)	138,349	131,623
Church of God (Anderson, Ind.)	118,696	113,698
The Church of God	68,673	66,293
Church of God in Christ	328,304	338,304
Church of Our Lord Jesus Christ of the Apostolic Faith, Inc.	50,000	50,000

*Not reported in 1954.

Table I.—Church Membership in Continental United States, as Reported in 1955, for Religious Bodies With More Than 50,000 Members—Continued

Body	Members, 1955	Members, 1954
Church of the Nazarene	260,551	249,749
Churches of Christ	1,600,000	1,500,000
Congregational Christian Churches	1,298,205	1,283,754
Disciples of Christ, International Convention	1,181,911	1,847,954
Eastern Orthodox Churches:		
American Carpatho-Russian Orthodox Greek Catholic Church	75,100	75,000
Armenian Apostolic Orthodox Church of America	80,000	130,000
Greek Archdiocese of North and South America	1,000,000	1,000,000
Rumanian Orthodox Church	50,000	50,000
The Russian Orthodox Greek Catholic Church of North America	440,000	440,000
The Russian Orthodox Church Outside Russia	55,000	55,000
Serbian Eastern Orthodox Church	100,000	100,000
Syrian Antiochian Orthodox Church	75,000	100,000
Ukrainian Orthodox Church of U.S.A.	71,248	71,000
Evangelical and Reformed Church	761,842	761,335
Evangelical Mission Covenant Church of America	53,388	52,085
Evangelical United Brethren Church	746,206	727,549
Federated Churches†	88,411	88,411
Friends:		
The Five Years Meeting of Friends	69,560	69,419
Independent Fundamental Churches of America	65,000	65,000
International Church of the Foursquare Gospel	87,206	81,590
Jewish Congregations	5,500,000	5,000,000
Latter Day Saints:		
Church of Jesus Christ of Latter-Day Saints	1,179,887	1,077,285
Reorganized Church of Jesus Christ of Latter-Day Saints	134,705	131,781
Lutheran:		
American Lutheran Conference:		
American Lutheran Church	779,790	767,261
Augustana Evangelical Lutheran Church	510,116	493,085
Evangelical Lutheran Church	900,536	888,634
Lutheran Free Church	68,773	65,904
Lutheran Synodical Conference of N.A.:		
Lutheran Church, Missouri Synod	1,932,000	1,850,100
Evangelical Lutheran Joint Synod of Wisconsin and Other States	322,947	316,839
United Evangelical Lutheran Church	52,236	48,955
United Lutheran Church in America	2,113,779	2,061,004
Mennonite Church	63,998	63,016
Methodist Bodies:		
African Methodist Episcopal Church	1,166,301	1,166,301
African Methodist Episcopal Zion Church	760,158	760,158
Colored Methodist Episcopal Church	392,167	392,167
Free Methodist Church of N. A.	50,660	51,952
The Methodist Church	9,202,728	9,151,524
Moravian Church in America (Unitas Fratrum)	52,735	51,276
Old Catholic Churches:		
N.A. Old Roman Catholic Church	85,225	85,500
Pentecostal Assemblies:		
Pentecostal Assemblies of the World, Inc.	60,000	50,000
United Pentecostal Church	125,000	125,000
Polish National Catholic Church	265,879	265,879
Presbyterian Bodies:		
Cumberland Presbyterian Church	84,776	83,307
Presbyterian Church in the U.S.	780,837	756,866
Presbyterian Church in the U.S.A.	2,526,129	2,492,504
United Presbyterian Church of N.A.	237,233	228,718
Protestant Episcopal Church	2,660,699	2,550,831
Reformed Bodies:		
Christian Reformed Church	196,822	186,526
Reformed Church in America	203,230	197,616
Roman Catholic Church	32,403,332	31,476,616
Salvation Army	240,130	235,559
Spiritualists:		
International General Assembly of Spiritualists	157,000	157,000
Unitarian Churches	90,398	86,129
Universalist Church of America	71,020	73,194
Totals	95,957,565	93,334,793

†As of 1936.

Source: Yearbook of American Churches (1956 and 1955).

Table II.—Estimated Memberships of the Principal Religions of the World, 1955

Religion	North America	South America	Europe	Asia§	Africa	Oceania||	Total
Total Christians	153,182,970	109,046,366	457,471,814	45,911,918	28,096,862	10,596,930	804,306,860
Roman Catholic*	85,527,834†	106,619,000	231,452,000†	28,969,024	15,951,000	2,334,076	470,852,934
Eastern Orthodox	2,466,088	...	112,447,669	8,106,071	5,868,089	...	128,887,917
Protestant	65,189,048	2,427,366	113,572,145	8,836,823	6,277,773	8,262,854	204,566,009
Jewish¶	5,430,000	631,730	3,439,650	1,629,240	677,750	58,250	11,866,620
Moslem§	33,000	342,615	12,425,300	318,341,515	85,325,598	102,000	416,570,028
Zoroastrian . . . . .	...	...	...	140,000	...	...	140,000
Shinto . . . . .	...	...	...	30,000,000	...	...	30,000,000
Taoist	15,000	17,000	12,000	50,000,000	1,200	8,000	50,053,200
Confucian	86,000	95,000	50,000	300,000,000	7,500	52,000	300,290,500
Buddhist	165,000	135,000	10,000	150,000,000	...	...	150,310,000
Hindu	10,000	275,000	...	315,314,465	300,000	100,000	315,999,465
Primitive	50,000	1,000,000	...	45,000,000	75,000,000	100,000	121,150,000
Others or none	70,688,030	3,248,289	76,646,236	135,864,862	17,194,090	2,605,820	306,247,327
Grand total	229,660,000	114,791,000	550,055,000	1,392,202,000	206,603,000	13,623,000	2,506,934,000

*Roman Catholic statistics supplied by the Catholic Students Mission Crusade. Same as 1954 except for North America.

†Includes the West Indies.

‡Includes communist-controlled Eurasia.

§Includes Indonesia and the Philippines.

||Includes Australia and New Zealand.

¶Includes all Jews whether members of the synagogue or not.

§Moslem statistics are from a Moslem statistical survey published in *The Islamic Review*, London.

tributing money.

The Church of Christ, Scientist, does not report membership because of a regulation of that body which forbids the numbering of the people and the reporting of such statistics for publication.

In 1954 about 58% of church members in the U.S. were classified as Protestant, 33% Roman Catholic, 6% in Jewish congregations and 3% in all other bodies including Eastern Orthodox and Old Catholic. (B. Y. L.)

Principal Religions of the World.—Most religions, apart from Christianity, do not keep even approximate statistics for their membership. For the first time Table II has depended upon a Moslem estimate for their membership. Oriental religions generally are not exclusive in their demands upon their followers, so they sometimes give allegiance not to one only but to two, or even more. Obviously, therefore, these figures are for the most part only estimates.

Protestant Christianity is the only group that counts on those who "join" the church, as distinguished from Roman Catholicism which numbers all who have been baptized by the church. (C. S. B.)

Cigars and Cigarettes: see TOBACCO.

C.I.O.: see LABOUR UNIONS.

Circuses: see SHOWS.

City and Town Planning: see BUILDING AND CONSTRUCTION INDUSTRY; MUNICIPAL GOVERNMENT; TOWN AND REGIONAL PLANNING; URBAN TRANSPORTATION, U.S.

Civil Aeronautics Administration.

In the fiscal year ending June 30, 1955, commercial aviation in the United States showed marked gains over the previous fiscal year in almost all categories.

Scheduled Operations.—Revenue passenger-miles flown by domestic scheduled carriers increased 17%, from 15,600,000,000 in fiscal 1954 to 18,300,000,000 in 1955. Revenue passenger-miles flown by international scheduled carriers also increased 17% in this same period, from 3,500,000,000 in 1954 to 4,100,000,000 in 1955.

In 1955, the domestic scheduled carriers showed an increase of 16% in ton-miles of express carried, a decrease of 3% in ton-miles of freight carried, and an increase of almost 10% in ton-miles of U.S. mail, compared with 1954. In international operations, for the same period, express and freight ton-miles increased nearly 4%, while mail ton-miles increased 60%.

A total of 4,232 aircraft were manufactured in fiscal 1955 compared with 3,685 in fiscal 1954, an increase of nearly 15%. There was an increase in the dollar value of the aircraft manufactured, 57%, from \$35,326,000 in 1954 to \$55,686,000 in 1955. (S. AIRCRAFT MANUFACTURE.)

Airports.—During the fiscal year ending June 30, 1955, airports totalling \$22,245,200 were made to 192 airports under the Federal-Aid Airport program. The program announced for the year starting July 1, 1955, involved a total of 205 grants, amounting to an allocation of \$20,000,000, which would result in a total expenditure of approximately \$40,000,000 by the federal government and local communities.

An additional authorization of \$42,500,000 for the fiscal year was included in the

amendment to the Federal Airport act approved by the president on Aug. 3. Programming of this money was expected to be completed by the end of 1955. The new law further authorized a level of \$63,000,000 for federal grants for each of the following three fiscal years, which would enable sponsors to present long-range airport plans and permit earlier programming of each fiscal year's authorization.

Airways and Air Traffic Control.—During the year ending June 30, 1955, the length of "Victor" airways, those based on the use of very-high-frequency omnidirectional radio ranges (VOR or omniranges) was increased 12,000 mi. to 74,000 statute miles of primary airway, and alternate "Victor" airways were increased 2,800 mi. to 25,000 statute miles.

A total of 27 new omniranges, ten instrument landing systems, five airport surveillance radars, and 64 distance measuring equipment facilities were installed during the year. A long-range surveillance radar commissioned at New York covered a radius of about 100 mi.

The increased use of direct radio communications between pilots and controller personnel in air route traffic control centres, and of radar as a traffic control tool, further expedited the handling of arriving and departing aircraft. Two additional military/civil radar approach control centres were commissioned, making a total of 3 in a program of 18.

Aircraft Developments.—Expansion of the scheduled air carrier industry continued during the year. The Vickers Viscount, of British manufacture, was the first turboprop powered aircraft to be used in United States scheduled service. Viscounts began scheduled runs between Washington, D.C., and Chicago, Ill., and Washington, D.C., and Norfolk, Va., on July 26. New larger and faster aircraft such as the Douglas DC-7 and the Lockheed Super Constellation were delivered to replace older and obsolete equipment.

Important Court Decision.—Perhaps the most important legal decision during the year which affected aviation was in the Cedarhurst case, in which the validity of government regulations was upheld on the basis that congress pre-empted the airspace necessary for the flight of aircraft. An ordinance of the Village of Cedarhurst, N.Y., restricting low-altitude approaches to New York International airport, was voided as being in conflict with the paramount federal authority to regulate minimum flight altitudes.

Technical Developments.—The Cincinnati Air Route Traffic Control centre was moved to Indianapolis, Ind., to complete the installation phase of the Airways Operations Evaluation centre. This side-by-side arrangement of an operating and experimental centre permitted the evaluation and implementation of new air traffic control procedures and equipment on a more expeditious basis.

The centre's analyzer for determining the effectiveness of an aircraft fire extinguishing system in flight was applied to the B-36 aeroplane with satisfactory results. Facilities were erected at the centre for the conduct of full-scale fire tests on helicopters and for the investigation of explosion hazards associated with jet engine installations.

Publications.—Three important studies were published during the year. "The Airplane at Work for Business and Industry" presented statistical data on all civil flying except that performed by the scheduled airlines. "Federal Airways Air Traffic Activity Calendar Year 1954" gave basic statistics on the operations of the federal airways system. "Air Commerce Traffic Pattern Calendar Year 1954" covered the actual aircraft departures from each scheduled air carrier station in continental and territorial United States and the loads put aboard the aircraft at the station during the year.

International Technical Assistance.—During the 1955 fiscal

year, 20 Foreign Operations Administration/Civil Aeronautics Administration missions and groups with a total personnel of 56 specialists were operating or scheduled to begin operations in 19 countries. An average of 110 foreign nationals representing approximately 25 foreign countries receive specialized aeronautical training each year in the United States. The CAA had been authorized to purchase aeronautical ground facilities amounting to \$4,662,000 for eight countries in Europe, the near east and Asia, under the Foreign Operations administration (now the International Cooperation administration) program. (See also AVIATION, CIVIL.) (B. M. St.)

Civil Defense, U.S. The Federal Civil Defense administration has the responsibility "to provide an orderly and continuing means of assistance by the Federal Government to States and local governments in carrying out their responsibilities to alleviate suffering from major disasters" of any kind.

During 1955, in planning for 1956, the Federal Civil Defense administration (FCDA) assumed that: (1) potential enemies had and were capable of delivering on targets thermonuclear weapons with the destructive power of millions of tons of T.N.T.; (2) the most logical targets continued to be from 90 to 100 U.S. cities holding industrial and military concentrations in 70 critical target areas; (3) any or many of these targets could be largely destroyed with a single weapon; (4) ground bursts of multimillion-ton weapons, creating enormous clouds of radioactive material that would fall back to earth in lethal concentrations over thousands of square miles, would make the entire nation vulnerable; but (5) an effective defense to save millions of lives was possible.

Such a defense would require the efficient practice of these techniques: (1) evacuation of critical target cities, moving populations outside a circle 12 to 15 mi. from any presumed aiming point; (2) shelter for all those evacuated and for all who were embraced by the cigar-shaped area of radioactive fall-out down wind from a ground burst; (3) care and feeding for all dispersed individuals in predetermined reception areas; and (4) full rescue, support and recovery efforts by all areas remaining unaffected by bomb blast, fire and fall-out.

Tests conducted in many cities had shown that evacuation, first key to survival, was feasible even with the one-hour aerial attack warning time that was likely. Increased warning time of four to six hours, expected to be achieved with completion of the upper trans-Canada Distant Early Warning radar picket line, would greatly increase the percentage of the population that could be saved in any city.

Older and more familiar defense tactics could be employed against the chemical and biological warfare that might be expected to supplement atomic attack.

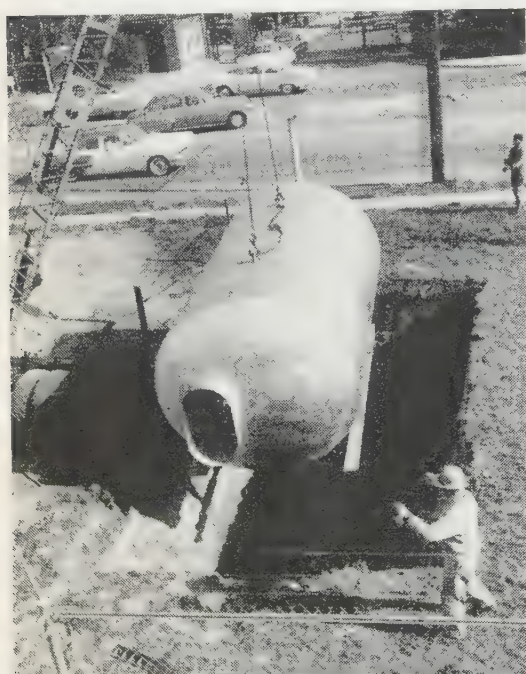
Civil Defense in 1955.—FCDA's release in 1954 of the film *Operation Ivy*, revealing the awesome power of the hydrogen bomb, was followed on Feb. 15, 1955, by the Atomic Energy commission's disclosure that fall-out from this detonation covered an area of 7,000 sq.mi. The defense problem of 70 critical target areas at once became a problem for the whole nation since the patterns of fall-out from high-yield ground bursts, determined solely by the direction and velocity of upper-air winds, are unpredictable.

During Operation "Alert 1955," the second continental defense exercise (June 15-17), when more than 50 mainland cities were presumed to have been hit by bombs ranging in power from 20,000 to 5,000,000 tons of T.N.T. equivalent, fall-out patterns were long fingers of disaster, probing far from the cities.

Operating cadres of 31 key government agencies moved to relocation sites from 30 to 300 mi. from Washington, D.C., at



Above: TWO ASPECTS of the nation-wide mock atomic alert, June 15, 1955. Left, Herald square, New York city, in the heart of the shopping district, virtually deserted after the alarm had sounded; right, Pres. Eisenhower (second from left, seated) and members of the cabinet in a secret retreat near Washington, D.C., after an "evacuation" of the nation's capital



Above: RADAR ISLAND being towed out of Boston, Mass., harbour to a point about 100 mi. off the New England coast where it was to be permanently anchored to serve as a station in the continental defense system

Left, and below: THREE VIEWS of a small bomb shelter manufactured by a U.S. manufacturing firm in 1955. Left, lowering shelter into hole prepared for it. A platform about 10 X 22 ft. was required for the shelter; below, left, a youngster being helped into entrance hatch; below, right, interior view. The shelter was designed to maintain a family for three to five days. The $\frac{3}{4}$ -in. steel would protect against both blast and radiation. Facilities included a gasoline generator, chemical toilet, air filter for removing radioactive particles, first aid supplies and food



the first "attack" warning. The government functioned. Some "target cities" held partial or theoretical evacuations. Exercise evaluations indicated that 8,500,000 persons would have died in such an attack, but 2,500,000 would have been saved from the few cities ordering evacuation. Another 8,000,000 would have been fatally stricken, many by radiation.

Congress subsequently appropriated \$10,000,000 to FCDA to begin survival studies of critical target cities and their environs. These were to determine evacuation feasibility, corrective construction necessary to speed evacuation, relocation sites, shelter availability and related subjects.

The first cities for study were selected in mid-September and in mid-October it was announced that evacuation of Washington, D.C., would be mandatory on warning of probable attack.

Natural Disasters, 1955.—Local civil defense volunteer organizations were increasingly called upon to deal with widely varied emergencies, and uncounted lives were saved. But property damage, public and private, was unusually heavy.

During 1953 and 1954, under 32 declarations of major disasters by the president, FCDA had allocated \$12,680,000 to 24 states and 1 territory from the president's emergency fund of \$25,000,000. Disasters were caused by hurricanes, tornadoes, floods, earthquakes, forest fires and a volcanic eruption. Drought and dust bowl relief, separately financed, required \$28,000,000 in 20 states and 1 territory. During 1955 this increased to \$35,000,000.

In the first half of 1955, for the emergency repair of public facilities, four states and a territory were allocated \$821,000 in disasters caused by tornado, flood and cloudburst.

In August two hurricanes lashed the middle Atlantic coast and New England, and resulting flood damage was expected to approximate \$500,000,000.

FCDA allotted \$6,500,000 of its dwindling funds and, under its natural disaster responsibilities, brought a score of federal agencies into an all-out relief and rehabilitation program, with total U.S. aid expenditures expected to approach \$100,000,000. Worst hurt states were Connecticut, Massachusetts, Rhode Island, Pennsylvania, New York, New Jersey and North Carolina.

With rehabilitation in progress, disastrous flooding was repeated in early October, nullifying much of the work that had been done and greatly increasing total damage to public facilities and private properties.

Administration.—FCDA's 1956 fiscal year appropriation, in addition to the special Survival Study fund, was divided: \$12,125,000 for operations, \$12,400,000 for contributions (matching funds with states), \$32,650,000 for stockpiling of emergency supplies and equipment and \$1,005,000 for financing delegations to other departments.

Val Peterson, former governor of Nebraska, was administrator of FCDA, which has its national headquarters in Battle Creek, Mich. (See also CIVIL AERONAUTICS ADMINISTRATION; MUNICIPAL GOVERNMENT.) (V. PN.)

Civil Rights: see LAW; NEGROES, AMERICAN.

Civil Service. **United States.**—When the administration of Pres. Dwight D. Eisenhower took office in Jan. 1953, there were approximately 2,600,000 federal employees. During the first year the number was reduced by about 180,000 and by June 30, 1954, the federal government employed 2,346,000 persons. On June 30, 1955, the total employment was 2,397,000.

A large number of bills were passed by the 84th congress which benefited federal employees. Late in June, President Eisenhower signed a pay raise bill for classified employees which

gave each an increase of at least 7.5%. Another bill gave an average pay increase of 8.1% to the nation's 500,000 postal employees. Federal departments were given discretion to raise the maximum travel allowance for employees from \$9 to \$12 per day. Approximately 300,000 civil service retirees and survivors were given increases on 12% of the first \$1,500 and 8% on the annuity in excess of \$1,500. A ceiling of \$4,104 was written into the bill so that no payment could be made to raise an annuity above that figure. Congress provided that the government pay all costs of surety bonds for employees required to be bonded. In 1954 congress passed a group-insurance plan for federal employees. In 1955 a bill authorized the government to take over an estimated 135,000 life insurance policies which were issued by nonprofit employee beneficial associations. The associations must go out of the life insurance business and the policyholders must continue to pay premiums, but to the government. On July 1, the civil service commission cancelled all maximum age requirements in examination announcements in accordance with a rider on the bill authorizing the commission's appropriation for 1956.

Two important court decisions were made in 1955 that involved the federal loyalty-security program. On June 6, the supreme court ruled 7 to 2 that the loyalty review board had exceeded its authority in reopening the case against John P. Peters after he had been cleared twice by agency loyalty boards. Peters was a part-time consultant with the public health service. The case was argued on the constitutionality of testimony by unnamed or secret informers and both sides urged the supreme court to rule on that point. The court, however, held in favour of Peters on other grounds. Because these and other unsettled problems continued to arise concerning the operation of the security system, the senate government operations committee on June 17 unanimously approved a resolution calling for a 12-member commission to investigate the security program. The commission was to report to congress by Dec. 31, 1956.

The U.S. court of appeals in Washington, D.C., upheld by a 2-to-1 decision a 1953 presidential order which extended the security program to all federal jobs. The order permits government agencies to dismiss summarily any employee when a security issue is involved. The court concluded that the basic law authorizing the security program makes no distinction between sensitive or policy-making jobs and other jobs.

The Commission on Organization of the Executive Branch of the Government, established in July 1953 (popularly known as the Second Hoover commission) transmitted its report with respect to federal personnel activities and policies in mid-February.

The report declared that the greatest weakness in government was the need for improved expert management. Some recommendations made to overcome this problem were: the establishment of a "senior civil service"; creation of more noncareer executives to take over political and partisan jobs; modification of layoff procedures to give more job retention rights to nonveteran career employees; limiting appeal rights of veterans after five years; establishment of comprehensive training programs; abolition of present performance rating system and substitution of once-a-year reports for only those employees who are doing exceptional work or unsatisfactory work; salary increases for top executives; more use of prevailing wages in setting pay; codification of laws and rules affecting personnel; development of new criteria for determining which jobs are policy making; review of "conflict of interest" regulations; extension of merit system to cover U.S. marshals and some other positions; and changes in classification of certain positions.

State and Local.—State and local governments had a total of 4,774,000 employees in April 1955, compared with 4,735,000

in April 1954. This increase, however, was not as great as the growth in all other years since World War II. For several years the increase had been at the rate of about 200,000 per year.

No significant civil service legislation was passed by U.S. cities in 1955, but two states revamped their personnel programs and three passed important amendments. The Illinois personnel code, which would become effective July 1, 1957, created a personnel department of cabinet rank headed by a personnel director appointed by the governor and confirmed by the senate. Assisting the personnel director would be a bi-partisan advisory board of nine members and a civil service commission of three members. An unusual feature of the Illinois law was that there would be three separate areas of jurisdiction, under which, for example, it would be possible for a position to be under the personnel department for purposes of classification, pay and working conditions but not for purposes of hiring or dismissal.

Florida provided a statutory basis for the existing merit system council which had been operating on the basis of a mutual agreement between the state departments participating in the grant-in-aid programs administered in co-operation with the federal government's department of health, education and welfare. The same act also gave the governor power to extend the jurisdiction of the merit system council to other state departments. It therefore became possible for a state-wide personnel system to be established at any time in the future.

In New York, the civil service commission was given the power to direct the reinstatement of an employee to his former position if it finds he was improperly dismissed. In Minnesota, the state personnel director would still be appointed by the civil service commission from a list of three to five names submitted by a special examining committee, but the appointment would be subject to confirmation by the senate and would be for a term of six years instead of providing permanent status. After that he might be reappointed by the commission and reaffirmed by the senate. California removed from the civil service law the provision that when the state personnel board is considering an appeal by an employee from a disciplinary action "it shall be a presumption that the statement of the causes (for the action) is true." Pressure was brought by employee organizations for this change on the ground that it violated the American attitude that a person is presumed innocent until proved guilty. (E. R. BN.)

Great Britain.—On Oct. 1, 1955, there were 636,098 non-industrial civil servants, as compared with 638,176 a year previously.

Negotiations on the National Whitley council, initiated with the approval of the chancellor of the exchequer, led to an agreed scheme for the gradual introduction of equal pay for nonindustrial staff. Women doing equal work under equal conditions with men would have their rates of pay brought up to the men's level by seven equal annual instalments. For typists and certain analogous grades the new common rates of pay, on which men would in the future be recruited and which women would ultimately obtain, were slightly lower than the men's present rates. The scheme was put into force on Jan. 1, 1955. Nonindustrial staff would therefore obtain full equal pay by Jan. 1, 1961. Arrangements for the recruitment of clerical staff were modified to include provision for the recruitment to permanent posts of men and women between 40 and 60 years of age. This was significant of the changes of recruitment policy called for by full employment and the changing age structure of the population. (See also GOVERNMENT DEPARTMENTS AND BUREAUS, U.S.)

(E. E. Bs.)

Civitan International: see SOCIETIES AND ASSOCIATIONS, U.S.

Cleveland. Cleveland, O., had a population of 914,808 in the federal census of 1950. Cuyahoga county which includes the city and most of its suburbs, had a population of 1,389,532. The county's estimated population 1954 was 1,509,000.

Mayor Anthony J. Celebrezze, first man of foreign birth to be elected to that office, clinched re-election in the Oct. 4, 1955 nonpartisan mayoralty and councilmanic primary when he polled more votes than all of the other four candidates combined. Under a city charter amendment adopted two years earlier when a mayoralty or councilmanic candidate obtains more than 50% of the total primary vote, only his name is printed on the ballot in the November election. Mayor Celebrezze, an independent Democrat, received 55.7% of the primary vote; State Senator Joseph W. Bartunek, the regular Democratic organization candidate, 20.1%; City Councilman Kermit K. Neely, Republican organization candidate, 13.1%; Alexander H. Marti Jr., an independent Democrat and first Negro candidate for mayor in the city's history, 8%; and former assistant Law Director Robert E. Sweeney, independent Democrat, 3.1%.

The city's \$8,000,000 port development bond issue, which would enable it to prepare for the additional maritime traffic expected with the opening of the St. Lawrence seaway, was approved by the voters in the November election. So was Cuyahoga county's \$10,000,000 highway issue which would open the way for a new county highway and elimination of four railroad grade crossings. Democrats won 22 seats in city council to the Republicans' 11. The city's long-planned rapid transit system came into being in 1955. The east side section was opened March 15 and the west side section began operations Aug. 1. Built at a cost of more than \$30,000,000, the electric transit line extends 13.3 mi. from Windermere station in East Cleveland to Madison Avenue and W. 117th street. A two-mile westerly extension to Lorain Avenue and W. 143d street was approved by the Cleveland Transit System board. Fare increases on other transit lines were increased July 23.

After voters disapproved an operating levy at the Nov. 1954 election, Cleveland's budget for 1955 was cut to \$42,997,270. Revenue in 1955 exceeded estimates by more than \$1,000,000. The city administration was able to increase its spending to little more than \$44,000,000. With city employees demanding wage and salary increases and other costs rising, Mayor Celebrezze in July appointed a 25-member committee headed by Birkett L. Williams to recommend a solution to the city's financial dilemma. This committee reported in November, recommending that a 1.5-mill real estate tax increase be submitted to the voters at a special election; that no city income tax be considered; that fees for various city inspections and services be raised; that relief payments be limited; and that the administrative management of certain city departments be reviewed to make sure that maximum efficiency is maintained.

A 10-year program for expansion of the size of the Cleveland Hopkins airport neared its end as the city council approved legislation to condemn 15 parcels of land, the last of 600 needed. Construction of an \$8,000,000 terminal building was nearing completion. (P. By.)

Climate: see METEOROLOGY.

Clothing Industry. The apparel industry in the United States maintained its relative importance in the country's economy during 1954 and 1955. Approximately 900,000 workers were employed (80% women) in factories located mostly east of the Mississippi river.

Men's and Boys' Apparel.—As a whole, production of men's apparel declined approximately 10% in 1954 as compared

with 1953. This decline was noticeable in all items of men's apparel, such as suits, coats, shirts and work clothes. Only in slacks (separate pants) was production maintained in 1954 at approximately the same level as in 1953.

In 1955, however, there was a sharp reversal in the trend, and production in all categories of men's apparel increased approximately 15% as compared with 1954.

Table I.—U.S. Apparel Industry Sales, 1954, at Wholesale Prices

Type of clothing	Number of Firms	Total sales
Men's and boys' tailored clothing	1,037	\$1,416,000,000
Men's furnishings and work clothes	980	1,572,000,000
Sports outerwear and rain outerwear	414	377,000,000
Women's wear		
Dresses	3,544	2,900,000,000
Coats and suits	1,350	1,250,000,000
Intimate apparel	1,144	1,100,000,000
Total	8,469	\$8,615,000,000

Because of the huge increase in the birth rate during the post-war years, the boys' apparel industry had shown a remarkable upsurge in demand (up to 30% in the smaller sizes), and it was expected that this increasing demand would grow to include students' sizes and finally to reach the college age.

Stylewise, at the end of 1954 there was a definite trend toward dark shades, particularly charcoal tones; in the first half of 1955 about 75% or more of the men's and boys' clothing sold was in the darker shades rather than light or medium colours. Toward the end of the year, however, there was some return to medium and light grays and tans. Conservative models were in greatest demand during 1955, the single-breasted suit being popular in both men's and boys' sizes.

Sportswear was conservative in type of garment and in colour. The tailored sport coat was being worn in preference to the loose leisure jacket. Slacks continued to grow in popularity, and it was estimated that approximately 55,000,000 separate trousers would be made in 1955.

There was growing use of the man-made fibres blended with other materials, such as Dacron and wool, Orlon and wool, Dacron and rayon. Suits and coats made of some of these combinations could be washed rather than dry cleaned; the number of "wash and wear" garments was small but increasing.

In 1955 dress shirts (long sleeves) represented approximately one-third of total shirt production, and sport shirts (short sleeves) constituted the balance. This was in accordance with the general trend throughout the apparel industry toward less formal garments.

Women's Wear.—In the women's wear industry, the same trend noted in the men's wear industry, namely, increased popularity of informal items of apparel, was noticeable during 1954 and the first half of 1955. Production of women's coats declined approximately 5% in 1954, as compared with 1953. Women's dresses of all types maintained approximately the same rate of production in 1954 as in 1953. Of particular interest, however, was the fact that cotton fabrics assumed increasing importance

Table II.—Women's Apparel—Value of Shipments in Selected Industries

Industry	First half 1955	First half 1954
Total, selected industries	\$1,527,000,000	\$1,419,000,000
Coat and suit industry	353,000,000	345,000,000
Unit-price dress industry	698,000,000	642,000,000
Dozen-price dress industry	202,000,000	196,000,000
Blouse industry	168,000,000	150,000,000
Skirt industry	106,000,000	86,000,000

in the women's dress field, and that dresses of man-made fibres declined in relative importance.

Skirts and blouses, especially blouses made of cotton fabrics, increased in popularity in 1954 as items of informal wear. Women's suits in wool and blended fibres were popular, but the suits made of all rayons declined in importance.



TOUAREGS OF THE SAHARA DESERT clutching at the dress of a fashion model in Paris, Fr. The tribesmen and their wives, given a trip to Paris after assisting in the filming of a motion picture in Africa, had never before been away from the desert

For the first half of 1955, as compared with the corresponding period of 1954, production of all categories of women's apparel except coats increased to higher levels. This was in accordance with the trend already noted that more informal garments, such as suits, dresses, blouses and skirts, were increasing in popularity.

Labour.—Labour relations between management and the two unions dominating the apparel industry in the United States continued on a satisfactory basis. Over a period of years, the employers in the women's wear field had established an amicable arrangement with the International Ladies' Garment Workers' union, and strikes had been almost nonexistent in this industry.

The Clothing Manufacturers Association of the U.S.A. (covering men's and boys' clothing) had a long-term labour agreement with the Amalgamated Clothing Workers of America, and both had conducted their labour negotiations on a national basis to their mutual satisfaction. (H. A. CN.)

Coal. The 19 countries producing about 98% of total world output in 1954 (as in 1953) are shown individually in Table I, compiled from data at the U.S. bureau of mines. Four of these countries supplied 54%. The 1954 output was 7,000,000 tons under that of 1953 but was still the highest of the rest of the decade.

United States.—Details of the coal industry in the United States, given in Table II and state totals in Table III, also are based on U.S. bureau of mines data. Outputs of both anthracite and bituminous coal declined further in 1954 from 1953. Open-pit mining in the anthracite field increased percentage-wise in 1954, but exact figures were not available by the close of 1955.

In the first nine months of 1955 output of anthracite declined about 7.9% and bituminous increased about 20%, compared

Table I.—Coal Production of the World

	(In millions of short tons—all grades)					
	1948	1949	1950	1951	1952	1953
Canada	18.45	19.12	19.14	18.59	17.58	15.90
United States	656.65	480.57	560.38	576.33	507.42	488.24
Belgium	29.41	30.70	30.12	32.69	33.49	33.14
Czechoslovakia	45.56	47.98	50.69	52.16	57.44	58.49
France	49.75	58.47	57.89	60.60	63.22	60.12
Germany	13.85	15.72	16.64	17.95	17.90	18.10
Hungary	294.34	335.18	361.83	403.26	424.16	440.82
Japan	11.68	13.04	14.70	16.81	20.64	23.45
Netherlands	39.98	44.15	43.81	49.29	49.49	52.93
Poland	12.47	13.13	13.71	14.01	14.07	13.83
Spain	83.01	86.75	91.32	96.88	99.88	105.26
United Kingdom	13.25	13.41	13.71	14.39	15.28	15.64
U.S.S.R.	234.52	240.95	242.28	249.61	253.67	251.11
Yugoslavia	226.6	260.9	287.8	310.9	332.9	356.9
China	11.82	13.35	14.13	13.27	13.34	12.40
India	20.9	18.9	40.79	47.68	57.9	63.8
South Africa	33.74	35.50	36.18	38.56	40.66	40.30
Australia	26.47	28.10	29.18	29.36	30.94	31.37
Total	24.05	24.05	26.74	28.50	30.81	29.87
	1,890	1,825	1,999	2,116	2,122	2,159

Table II.—Data of the Coal Industry in the United States

	(In thousands of short tons)					
	1949	1950	1951	1952	1953	1954
Production, total	480,570	560,388	576,335	507,420	488,239	419,118
Anthracite	42,702	44,077	42,670	40,583	30,949	27,118
Soft coals	437,868	516,311	533,665	466,841	457,290	392,000
Bituminous	434,776	512,941	530,373	463,824	454,439	389,197
Lignite	3,092	3,370	3,292	3,017	2,851	2,803
Anthracite						
Open-cut	10,377	11,834	11,135	10,697	8,606	?
Underground	32,325	32,243	31,534	29,886	22,343	?
Used locally	5,012	5,047	5,163	5,155	4,333	4,300
Shipped	37,690	39,030	37,507	35,428	26,617	22,818
Exports	4,943	3,892	5,956	4,592	2,724	2,851
Imports	?	1.8	27	29	31	6
Stocks	975	1,268	982	1,709	1,916	1,293
Consumption	37,700	39,900	37,000	35,300	28,000	24,900
Bituminous and lignite						
Open-cut	106,045	123,467	117,618	108,910	105,739	96,000
Underground	331,823	392,844	416,047	357,931	349,551	296,000
Used locally	11,651	13,217	15,162	12,953	12,408	?
Shipped	426,217	503,094	518,503	453,888	444,843	?
Exports	27,842	25,468	56,726	47,643	33,760	31,028
Imports	315	347	292	262	227	199
Stocks	48,373	72,516	76,636	76,745	80,614	69,201
Consumption	445,538	454,202	468,904	418,757	426,798	362,986
Railroads	68,123	60,969	54,005	37,962	27,735	17,370
Coke ovens	91,236	103,845	113,448	97,614	112,874	85,288
Power utilities	80,610	88,262	101,898	103,309	112,283	115,235
Steel mills	7,451	7,698	7,973	6,820	6,207	4,944
Cement mills	7,988	7,943	8,525	8,073	8,362	8,153
Other industrial	98,957	98,164	105,634	95,863	97,437	78,953
Retail dealers	90,299	86,604	76,531	68,393	61,295	52,616

Table III.—United States Production of Coal, by States

	(In millions of short tons)					
	1948	1949	1950	1951	1952	1953
Alabama	18.8	12.9	14.4	13.6	11.4	12.5
Colorado	5.6	4.6	4.3	4.1	3.6	3.6
Illinois	65.3	47.2	56.3	54.2	45.8	46.0
Indiana	23.8	16.6	20.0	19.5	16.4	15.8
Kentucky	82.1	62.6	78.5	75.0	66.1	65.0
Ohio	38.7	31.0	37.8	37.9	36.2	34.7
Pennsylvania	134.5	89.2	105.9	108.6	89.2	93.3
Tennessee	6.5	4.2	5.1	5.4	5.3	5.5
Utah	6.8	6.2	6.7	6.1	6.1	6.6
Virginia	18.0	14.6	17.7	21.4	21.6	19.1
West Virginia	168.9	122.6	149.1	163.3	141.7	134.1
Wyoming	6.4	6.0	6.4	6.4	6.1	5.2
Others	26.9	20.3	17.3	18.4	17.3	15.9
Total bituminous	599.5	437.9	516.3	533.7	466.8	457.3*
Anthracite	57.1	42.7	44.1	42.7	40.6	30.9
Grand total	656.6	480.6	560.4	576.3	507.4	488.2

*Revised. †Preliminary.

with the first nine months of 1954. One reason for the great difference in the bituminous outputs was that 1954 was so low compared with 1953 and earlier years—back to 1938, the lowest figure in years. Also steel strikes and other industrial strikes in 1954 pulled it down. Moreover, overseas exports (excluding Canada) were also down. In 1955, industrial activity picked up and this increased the demand for coal. Even 1955 overseas exports increased 15,000,000 tons in the first nine months of 1955 compared with the 1954 period.

In 1955, the state legislature of Pennsylvania and the U.S. congress passed bills appropriating \$8,500,000 each, or a total of \$17,000,000, to be used to alleviate serious water problems of the Pennsylvania anthracite industry. (F. E. H.; B. B. M.)

Coast and Geodetic Survey, U.S. During 1955 this bureau of the department of commerce continued its surveying and charting

program in the United States and Alaska for the promotion of marine and air commerce, for the development of the nation's natural resources and for the compilation of certain basic engineering and scientific data. The bureau is under the administrative direction of a director, an assistant director, and an assistant director for administration, with headquarters at Washington, D.C. District offices are maintained at a number of coastal ports and at several interior cities in order that close contact may be had with the needs of commerce and industry. Survey functions are performed by a field organization operating from ships and shore bases, under the direction of the Washington office where computation and analysis of field observations are made and the results compiled in the form of charts and other publications.

Seventeen ships and two shore-based parties were engaged along the coasts of the U.S. and Alaska during 1955, making basic hydrographic surveys and obtaining other information essential for the production of nautical charts. A new survey of the Gulf of Maine was begun. The application of electronics to hydrographic surveying had greatly increased the accuracy of the results and the efficiency of operations. A maximum distance of 550 statute miles from shore had been attained.

The photogrammetric mapping program of the bureau is designed to provide data for aeronautical charts, including charts of airports, and for the construction and maintenance of nautical charts. Basic photogrammetric mapping was continued in the U.S. and Alaska, and chart revision photography was taken in sections of the Atlantic coast, and of a number of harbors along the Gulf and Pacific coasts. As part of the airport obstruction plan program, 40 airports were photographed for compilation of new plans and for the revision of existing ones.

A chain of control tide stations was maintained at selected places along the coasts to provide the fundamental observations for tide predictions, for charting and mapping, and for other engineering uses, such as the study of long-period changes in sea level. Special reports on tide surveys of San Francisco bay, Delaware bay, and Puget sound were completed. Analysis of data and preparation of reports on surveys of currents at New London, Portsmouth harbour, Delaware bay, Key West harbour, Puget sound, and San Francisco bay were completed.

The geodetic networks of control in the U.S. and Alaska were expanded during 1955 to provide exact geographic positions and elevations for use in the national mapping program and for other engineering requirements. In the United States, an arc triangulation was established along the Gulf coast for use in connection with offshore oil operations. First-order leveling was done in various parts of the country to determine the extent and magnitude of subsidence due to gradual changes and to determine the changes brought about by recent earthquakes. Maximum settlement at Terminal Island, Long Beach, California had reached 20 ft. since 1928. In Alaska, a major accomplishment was the extension of the triangulation across the difficult Brooks range and along its northern slope.

Under the bureau's magnetic program to furnish the navigational and land surveyor with information on the deflection of the compass needle, observations were made at 32 field stations in the U.S. and Alaska (six were repeat stations) and at observatories. The bureau continued as the repository for magnetic information collected from world-wide sources.

As part of its seismological work, the bureau maintained eight stations for the detection of distant earthquakes, and operated with other federal and private agencies to maintain others. In addition, it operated 71 strong-motion seismographs in areas where strong earthquakes were most likely to occur. Approximately 1,100 earthquakes were located as a result of the co-operative program with several hundred world seismograph

stations. Of notable interest was a series of earthquakes in the Stillwater range in western Nevada. The strongest of the group occurred on Dec. 16, 1954, and produced vertical displacements of 6 to 20 ft. and horizontal shifts of 4 to 12 ft. Total displacements were the greatest in North America since the 1899 Yakutat bay earthquake.

More than 45,000,000 copies of nautical and aeronautical charts and related data were published. A total of 807 nautical charts and 1,550 aeronautical charts were available in different series to meet the needs of marine and air navigation. A new aircraft position chart covering the North Pacific air routes from Seattle to Tokyo was published. The program of printing Loran lines of position on selected nautical charts was completed. (See also OCEANOGRAPHY; SEISMOLOGY.) (H. A. Ko.)

Coast Guard, U.S.

The maintenance of safety and order on the high seas and navigable waters under the jurisdiction of the United States is the responsibility of the U.S. coast guard. The primary objective of most coast guard duties is to prevent avoidable loss of life and property resulting from unsafe or illegal practices. To accomplish this purpose, the coast guard enforces federal maritime laws, operates aids to navigation, promotes efficiency in the operation of merchant vessels and motorboats, and rescues and aids distressed persons, vessels and aircraft.

The maintenance of safety and order in maritime activity is not limited to the strict enforcement of laws, but includes a program of education for shipowners, merchant vessel crews and boatmen, and the enlistment of their co-operation and self-regulation in the prevention of marine casualties.

Administered by the commandant from headquarters in Washington, D.C., the coast guard is a military organization and a branch of the armed forces. It operates under the treasury department except in time of war or when the president so directs,

when it becomes a specialized service in the navy.

Operations of the U.S. coast guard in the fiscal year 1955 were directed primarily toward carrying out its traditional peacetime mission of the maintenance of safety and order on the high seas and navigable waters of the United States. Diminished requirements for search and rescue facilities in the U.S. resulted in the inactivation of 4 cutters in addition to the 12 previously inactivated. Funds available were reduced from \$226,870,872 to \$208,705,170. Military personnel strength remained at approximately the same level as the preceding year, 28,500, while authorized civilian personnel totalled 5,314 as compared with 5,128 during the previous year.

Throughout 1955, the coast guard continued to carry out its regular duties of maritime law enforcement. These functions included the promotion of safety and efficiency in the merchant marine; the inspection of merchant vessels and the enforcement of regulations for motorboats; the operation of aids to navigation, including lighthouses, buoys and electronic signals; the protection of life and property at sea; the rescue and aid of persons, vessels and aircraft in distress; the operation of ocean stations and the international ice patrol, and the maintenance of a state of military preparedness for national emergencies.

The following statistics indicate the volume of law-enforcement activity, but not of preventive activity, taken by the coast guard during the year: vessels and motorboats boarded, 83,323; reports of violations of the Motorboat act, 6,166; reports of violations of port security regulations, 2,695; permits to load or discharge explosives, 1,473; total tonnage of explosives covered by permits, 363,194; explosive loadings supervised, 1,469; regattas patrolled, 801; merchant mariners' documents issued bearing evidence of security clearance, 18,826; waterfront workers screened for security, 30,668; and total rejected as poor security risks, 52.

The coast guard also helped to enforce the Oil Pollution act, anchorage regulations, laws relating to internal revenue, customs, immigration, quarantine and the conservation and protection of wildlife and the fisheries.

Facilities used in assistance operations included a system of 143 lifeboat stations, together with communications centres, bases, vessels and aircraft at strategic points along the coasts and inland waterways. Assistance rendered during the year is summarized in the following statistics: assistance calls responded to, 19,045; value of vessels and aircraft assisted (including cargoes) \$194,404,230; lives saved or persons rescued from peril, 3,242; vessels towed, 7,881; vessels refloated, 1,215; miles disabled vessels towed, 83,358.

During the year 2,483 marine casualties were reported, of which 1,938 were closed with the final report. No inspected and certified U.S. passenger vessel was involved in a serious accident. However, marine casualties claimed 4 lives.

The coast guard worked closely with the American Boat and Yacht council in fiscal 1955. The purpose of the council was to foster self-regulation and to promote recommended practices and engineering standards for improving the design, construction, equipment and maintenance of small craft.

The coast guard completed 5,743 inspections of merchant vessels with a gross tonnage of 17,583,700 tons; made drydock examinations of 4,538 vessels, with a total tonnage of 16,794,052 tons; carried out 19,283 miscellaneous inspections; numbered 358,411 undocumented vessels, and reviewed plans for 11,728 merchant vessels.

A total of 38,389 aids to navigation was maintained in the United States, its territories, possessions, the Trust Territory of the Pacific Islands and at overseas military bases. These aids included 49 loran stations, 378 manned light stations and 53 lightships.



DIESEL UTILITY BOAT introduced by the U.S. coast guard in 1955 for light rescue work, port security and off-shore duty. The 30-ft. boat carries a two-man crew and is capable of 22 knots speed

The coast guard maintained four ocean stations in the North Atlantic ocean and two in the Pacific throughout the year. Ocean station vessels provided search and rescue, communications, air navigation facilities and meteorological services in the ocean areas regularly traversed by aircraft of the United States and other co-operating governments. During the year, coast guard vessels transmitted more than 30,000 weather reports, made approximately 30,000 radio contacts with aircraft, rendered assistance in 38 cases and cruised approximately 498,000 miles.

For the fifth consecutive year the international ice patrol was carried out by aerial reconnaissance so that continuous use of surface patrols was not required.

The coast guard's larger ships consisted of 179 cutters and buoy tenders of various types. The number of fixed and rotary-wing aircraft in operation was 126. Coast guard reserve strength was 3,499 officers and 20,492 enlisted personnel.

The coast guard auxiliary, a nonmilitary organization of volunteers, was active in 328 communities in the promotion of safety and efficiency in the operation of small boats. Its 12,747 members examined 25,245 motorboats, patrolled 297 regattas, and answered 2,535 calls for assistance.

Public health service personnel on duty with the coast guard included 37 dentists, 34 doctors, 9 nurses, one scientist and one sanitary engineer. (A. C. RD.)

Cobalt: see MINERAL AND METAL PRODUCTION AND PRICES.

Cocoa (CACAO). World production and consumption of cocoa beans in 1955 were indicated as in close balance at about 1,784,000,000 lb. Prices fluctuated erratically, partly as a result of uncertain monetary conditions in Brazil, but were generally much lower. Spot Accra, which sold at a record high of 72.9 cents per pound in Aug. 1954, was as low as 31.05 cents per pound in Aug. 1955. Nevertheless, consumption response lagged and grindings were off about one-fifth in the first half of the year after having decreased 17.5% in 1954 as compared with 1953. No rush to rebuild inventories appeared.

U.S. imports of cocoa continued a decline begun in 1951, reaching 516,000,000 lb. valued at \$252,000,000 in 1954 as compared with 659,000,000 lb. valued at \$167,000,000 in 1950.

High cocoa prices financed development projects in the Trust Territory of Togoland. Development was encouraged elsewhere. The Malayan cocoa development project appeared to be approaching an extensive commercial stage. The Philippines appropriated funds for a cocoa development program in which the International Cooperation administration of the U.S. was participating. A controversy over cocoa prices late in 1954 brought the Gold Coast its first major internal crisis under African government. A study by the Food and Agriculture organization indicated that the world market should require at least an additional 85,000 tons by 1960. (J. K. R.)

World Cocoa Production by Leading Areas
(In 000,000 lb.)

Area	Forecast 1955-56	1954-55	1953-54	Average, 1935-36 to 1939-40
Gold Coast	512	512	483	609
Brazil	348	372	271	264
Nigeria	202	182	218	216
Ivory Coast	145	145	117	110
French Cameroun	141	128	125	58
Other	436	406	389	324
Total	1,784	1,745	1,603	1,581

Coffee. A world total green coffee crop of 45,056,000 bags (of 132.3 lb. each) was forecast for 1955-56, 11% higher than the 40,593,000 bags of 1954-55 and 8% above the prewar average production of 41,586,000 bags. Exportable pro-

duction was forecast at 36,736,000 bags as compared with 32,297,000 bags in the previous year and an early postwar average (1946-47 through 1950-51) of 28,530,000 bags. Most producing countries showed an increase. Brazil and Colombia accounted for much of the total. French West Africa had a record crop. Frost again hit in Brazil where recuperation of trees damaged by the frost of July 1953 proceeded more rapidly than has been anticipated.

International trade in green coffee declined to 29,100,000 bags in 1954, 16% less than in 1953. Brazil suffered the brunt of the decline; a decrease of about 30% in exports and much lower prices were basic to recurring financial difficulties. Colombia exported 5,700,000 bags against a record 6,600,000 bags in 1953. Africa increased exports, as did Asia and Oceania. In 1954-55 U.S. imports were 20,744,780 bags valued at \$1,268,167,000, compared with 27,633,000 bags valued at \$1,670,598,000 in the previous year.

Prices fluctuated sharply during the year, but within a narrower range and at a lower level than in 1954; the range for most types was roughly between 65 cents and 35 cents per pound, much of the time between 42 cents and 56 cents.

The New York Coffee and Sugar exchange, under criticism from the Federal Trade commission, opened trading in two new futures contracts, "B" to cover several Brazilian grades, and "M" to cover those from Colombia and Central America.

Substantial stocks accumulated in the hands of major producers and more general plantings after the war suggested the

Coffee Production (Green) in the Principal Producing Countries
(In 000 bags, 132.3 lb. each)

Country	1955-56*	1954-55	1953-54	Average 1946-47 to 1950-51	1935-36 to 1939-40
Brazil	21,000	17,600	19,000	18,704	25,300
Colombia	7,200	6,500	6,800	5,840	4,200
Mexico	1,750	1,500	1,390	1,004	900
French West Africa	1,620	1,350	1,543	940	200
El Salvador	1,100	1,325	1,070	1,203	1,000
Guatemala	1,100	1,014	1,140	1,044	1,000
Indonesia	1,083	917	1,100	485	1,900
Angola	1,000	1,000	1,251	816	300
Madagascar	810	750	790	503	400
Venezuela	800	840	650	698	500
Uganda	700	720	671	494	200
Belgian Congo	565	600	569	538	300
Ethiopia	550	764	667	343	300

*Forecast.

Source: U.S. Department of Agriculture, *Foreign Crops and Markets*, vol. 71, no. 2, p. 1.

likelihood of further expansion in production over the next five or more years.

In an attempt to stabilize coffee prices an international coffee bureau with export quotas established for producing countries was proposed. Representatives of the Brazilian and Colombian governments suggested minimum prices based on 57 cents a pound (spot, New York) for Brazilian coffee and 60 cents a pound for Colombian, withdrawal of 7,000,000 bags of coffee from the 1954-55 crop (Brazil 5,000,000; Colombia 2,000,000) and inviting Central American producers to co-operate in withdrawal of 3,000,000 bags from the 1955-56 crop. Agreement was not achieved in 1955. Brazil exported 3,980,000 bags in the first quarter of 1955-56 as against only 1,982,000 bags in the same period of 1954-55. (J. K. R.)

Coinage.

The three U.S. coinage mints located in Philadelphia, Pa., San Francisco, Calif., and Denver, Colo., manufactured a total of 1,006,401,253 United States and foreign coins during the U.S. government fiscal year ended June 30, 1955. Details are shown in the tables.

The principal functions of the bureau of the mint, in addition to the manufacture of domestic and foreign coins, are the custody of the government's holdings of monetary metals, valued at many billions of dollars; the acquisition, assaying and re-

Table I.—U.S. Coins Manufactured, Fiscal Year 1955

Denomination	Number of pieces	Face value	Metallic composition
Half dollars	4,432,295	\$2,216,147.50	Silver
Quarter dollars	46,122,899	11,530,724.75	Silver
Dimes	95,390,277	9,539,027.70	Silver
Five-cent pieces	185,852,641	9,292,632.05	Cupronickel
One-cent pieces	605,073,141	6,050,731.41	Bronze
Total	936,871,253	\$38,629,263.41	

Table II.—Foreign Coins Manufactured by U.S. Mints, Fiscal Year 1955

Government	Number of pieces
Costa Rica	2,015,000
Dominican Republic	3,015,000
Venezuela	64,500,000
Total	69,530,000

ing of gold and silver bullion; administration of the issuance of treasury licences for the acquisition, ownership, possession, use and exportation of gold for industrial, professional and artistic purposes; and the production of historic medals and medals and decorations for the department of defense and other government agencies. The Seattle, Wash., assay office was closed in March 1955. Coinage operations were discontinued at the San Francisco mint at the close of March 1955, but the institution continued to operate as an assay office. Other institutions in operation were the gold bullion depository in Fort Knox, Ky., and the New York assay office in New York city with its adjunct, the West Point silver bullion depository. The office of the director of the mint in Washington, D.C., directs and supervises all operations of the bureau of the mint.

(L. Hd.)

Coke. In 1954 world output of oven and beehive coke continued the uptrend of the last half decade, as shown in Table I, for which the figures were provided by the U.S. bureau of mines. The principal coke producing countries are given.

Table I.—World Production of Coke*

	(Thousands of short tons)					
	1949	1950	1951	1952	1953	1954
Australia	1,287	1,325	1,698	1,833	2,081	2,295
Belgium	5,519	5,054	6,731	7,076	6,562	6,776
Canada	3,352	3,477	3,401	3,593	3,809	3,082
Czechoslovakia	5,165	5,375	5,595	6,151	6,518 [†]	6,600 [†]
France	7,609	7,755	8,906	10,159	9,514	10,153
Saar	3,667	3,557	4,151	4,285	3,956	3,978
Germany	28,015	30,459	37,464	41,521	41,139	39,062
Great Britain	17,350	17,295	18,027	19,143	19,579	19,995
Poland	6,339	6,587	6,984	8,111	8,678	8,800 [†]
India	2,247	2,481	2,406	2,289	2,252	2,643
Italy	1,666	1,670	2,404	2,723	2,689	2,883
Japan	2,844	2,989	4,259	4,405	5,258	4,841
Netherlands	2,728	3,091	3,277	3,558	3,532	3,699
U.S.S.R.	26,500 [†]	30,000 [†]	33,000 [†]	37,000 [†]	42,000 [†]	46,000 [†]
United States	63,637	72,718	79,331	68,254	78,837	59,662
Total	183,000	201,000	225,000	229,000	248,000	232,000

*Not including gashouse coke.

Table II.—Coke Production in U.S.

	(In thousands of short tons)					
	1949	1950	1951	1952	1953*	1954†
Production	63,637	72,718	79,331	68,254	78,244	59,662
By-product	60,222	66,891	71,987	63,850	73,010	59,061
Beehive	3,415	5,827	7,344	4,404	5,234	601
Breeze made	4,989	5,263	5,213	4,703	5,254	3,931
Coal charged	91,409	104,015	113,686	97,821	113,149	85,620
Consumption, total	63,191	73,417	78,093	67,356	77,881	59,393
By iron furnaces	51,515	61,039	67,441	58,183	69,729	51,973

*Revised. †Preliminary.

United States.—The 1953 level of production of coke in the U.S. was maintained in 1954 and well into 1955. Coke output follows closely activity in the iron and steel industry. In the first eight months of 1955 oven coke output was 47,767,293 tons and beehive coke was 950,521 tons, totalling 48,717,814 tons or 23% higher than in the first eight months of 1954. Steel operating rates rose steadily in 1955.

(F. E. H.; B. B. M.)

Coldwell, Major James (1888–), Canadian political leader, was born at Seaton, Eng., Dec. 2. He attended University college, Exeter. He emi-

grated to Canada in 1910 and for 20 years was an educationist in Regina, Sask., where he also served on the city council, 1922–32, and was provincial leader of the Saskatchewan Farmer-Labour party, 1932–35. In 1935 he was elected to the house of commons for Rosetown-Biggan, Sask., for the Co-operative Commonwealth federation, being re-elected since in each general election. In 1942 he was named president and party leader of the C.C.F. In 1945 he was a member of the Canadian delegation to the United Nations conference at San Francisco, and in 1953 he was named a parliamentary observer on the Canadian delegation to the UN. He was the author of *Left Turn, Canada*.

Following his re-election as national leader of the C.C.F. for his seventh two-year term at the national convention late in 1954, Coldwell made extensive tours of Great Britain and Israel, with the latter sponsored by the Israeli trade union organization, Histadrut, and he delivered a series of lectures on Canadian affairs at Hebrew University, Jerusalem.

During the 1955 session of the Canadian parliament, Coldwell supported a protocol approving entry of a re-armed western Germany into the North Atlantic Treaty organization, while on a free vote the majority of the C.C.F. members of parliament opposed it. Dealing with the Formosa situation, Coldwell was critical on occasions and urged that the government of Chiang Kai-shek should be exiled and a United Nations trusteeship established over the island. He also suggested that the Peking government be recognized and brought into the United Nations, as it was the effective government in China. He called for a conference of powers possessing atomic weapons to end "dangerous experiments" with their power. Later, he urged a moratorium on atomic and hydrogen bomb tests while the UN conducted a careful scientific investigation to determine whether or not the continuation of such tests endangered the future health of mankind.

(M. L. S.)

Colleges and Universities: see UNIVERSITIES AND COLLEGES.

Colombia. A republic situated in northwestern South America adjoining the Isthmus of Panamá, Colombia is the only South American country with both Caribbean and Pacific coast lines. Area 439,519 sq.mi.; pop. (1951 census) 11,548,172; (1955 est.) 12,657,000. Approximately 68% of the population is classified as mixed blood, 20% as white, 7% as Indian and 5% as Negro. Most Colombians live in the highlands and mountain valleys of the interior. The capital is Bogotá (1951 pop.) 638,562, (1954 est.) 765,360. Other major cities (with 1951 census, 1954 est. in parentheses) are Barranquilla, 276,199 (324,700); Bucaramanga, 102,877 (136,170); Cali, 241,357 (365,800); Cartagena, 111,291 (142,800); Cúcuta, 70,375 (107,820); Ibagué, 54,347 (110,900); Manizales, 88,893 (138,680); Medellín, 328,294 (431,380); Neiva, 33,040 (55,540); Pasto, 48,853 (91,520); Popayán, 31,866 (49,440); Santa Marta, 37,005 (51,660); and Tunja, 23,008. Language: Spanish. Religion: predominantly Roman Catholic. President in 1955: Lieut. Gen. Gustavo Rojas Pinilla.

History.—During 1955 Colombians were exposed to increasing evidence that the military intended to remain in power. President Rojas Pinilla preserved the state of siege, restricted radio news broadcasts to government releases, imposed regulations on newspaper reporting and editorializing tantamount to complete censorship, established an information directorate through which all official news (even on the national police court level) had to be cleared, suspended or closed about a dozen newspapers and manipulated newsprint imports so that sympathetic journals would not be throttled. Meanwhile, the government-backed National Action movement foundered in

February for lack of popular support. An official publication house was created to issue a government newspaper, and a government radio and television network was also under development.

Coffee prices and sales proved a substantial disappointment. Exchange earnings were generally below expenditures on imports, so the draft on gold and exchange reserves reduced holdings to well below 1954 levels. Import, exchange and credit controls designed to combat trade imbalance and inflation proved inadequate. Furthermore, the government was spending considerable sums on such unrewarding projects as the Paz del Río industrialization plan. The steel mill reportedly suffered a net operating loss of \$11,000,000 in its first eight months of operation. At the same time, Colombians had to pay unusually high duties on steel imported to cover the wide margin that existed between domestic production and consumption.

Related to economic policy was the visit in August of a mission from the International Bank for Reconstruction and Development. It was understood to have advised the government that expenditures on transportation and agricultural development offered more promising results than the contemplated development of automobile, arsenal and cement industries at Paz del Río. Meanwhile, the plans for a Cauca valley "TVA" progressed. The new Puerto Berrío-Medellín petroleum pipeline was functioning, the Medellín-Turbo highway was inaugurated and the national merchant fleet opened a new service from Ecuador and the west coast of Colombia to North and Central America.

(R. HN.)

Education.—In 1953 a total of 16,270 schools reported 1,236,728 students and 40,795 teachers. Reporting schools included 12,223 primary schools with 1,072,532 students and 25,992 teachers; 585 secondary schools, 65,618 students; 220 commercial schools, 17,340 students; 93 normal schools, 8,611 students. In 1954 there were 28 universities comprising 84 faculties and 22 institutes and schools of higher learning with a total of 11,996 students and 2,449 teachers.

Finance.—The monetary unit is the peso, valued at 39.84 cents U.S. currency, basic rate, during 1955 and at 25 cents, free rate, on Aug. 29, 1955. The national budget for 1955 totalled 1,269,446,546 pesos. Actual revenue in 1954 (including proceeds of loans) was 1,286,703,000 pesos; expenditure was 1,120,290,000 pesos. The internal debt on June 30, 1955, was 802,341,000 pesos and the external debt (excluding interest) the equivalent of 219,964,000 pesos. Currency in circulation (June 30, 1955) totalled 625,000,000 pesos; demand deposits (April 30, 1955), 1,124,000,000 pesos.

Trade and Communications.—Exports in 1954 (excluding gold) totalled 1,642,847,752 pesos; imports, 1,679,206,000 pesos. Leading exports were coffee (84%), petroleum (11%), bananas (2%), tobacco and wood. Leading customers were the U.S. (79%), Germany (5%), the Netherlands Antilles (5%), the Netherlands (2%) and Sweden (2%); leading suppliers, the U.S. (63%), Germany (8%), the U.K. (4%), France (4%) and the Netherlands Antilles (3%).

In 1951 there were 1,787 mi. of main-line railroad track, comprising 14 different systems; in 1954, they carried 12,012,428 passengers and 5,082,858 metric tons of freight. Highways (1951) totalled about 12,600 mi. Registered motor vehicles (Jan. 1, 1955) included 58,761 automobiles, 58,007 trucks and 10,542 buses. In 1954 national air lines carried 976,196 passengers and 129,097 metric tons of freight. In that year, 271,949 passengers and 1,909,627 tons of freight were carried on the Magdalena river. On Jan. 1, 1954, 128,970 telephones were in use.

Agriculture.—Coffee production in the 1954-55 season (preliminary figures) totalled 6,500,000 bags of 132 lb. each. Exports in 1954 were 5,753,819 bags, of which 4,961,027 bags went to the U.S. and 302,240 bags to Germany. Production estimates for other crops in 1954-55 included rice (rough) 620,000,000 lb.; cotton 122,000 bales of 480 lb. each; sugar (centrifugal) 245,000 metric tons; sugar (panela) 600,000 tons; tobacco (year 1954) 56,200,000 lb.; cacao 35,273,000 lb. Banana exports in 1954 were 7,924,913 stems, of which 4,043,323 went to the U.S. and 2,753,855 to Germany. In 1951 there were an estimated 15,512,000 cattle, 2,782,000 hogs, 1,298,000 horses, 1,339,000 sheep and 637,000 goats.

Manufactures.—According to the 1953 census of manufacturing industries Colombia had 8,217 manufacturing enterprises (5 or more workers) with 152,106 employees and annual gross production valued at 3,267,624,000 pesos. The most important industries by value of production were foodstuffs (42%), beverages (12%), textiles (11%), shoes and apparel (8%) and chemicals (5%). Production (1954) included cement 962,188 metric tons and electric energy 1,087,174,000 kw.hr.

Minerals.—Production in 1954 included gold 377,466 troy ounces; silver 112,533 oz.; platinum (exports) 28,105 oz.; terrestrial salt 172,420 metric tons. Crude petroleum production was 39,979,000 bbl.; exports were 30,408,535 bbl., of which 14,403,186 bbl. went to the Netherlands Antilles (for refining) and 12,281,634 bbl. to the U.S. Refined products included 2,752,486 bbl. of gasoline and 6,260,276 bbl. of fuel oil.

(J. W. Mw.)

Colorado. A Rocky mountain state in the west central part of the United States, Colorado has a mean elevation above sea level of 6,800 ft., the highest of any state in the nation. Admitted to the union in 1876 as the 38th state, it is generally known as the "Centennial state" in celebration of its 100th anniversary of the signing of the Declaration of Independence. The area of 104,247 sq.mi. includes 325 sq.mi. of water. The United States owns 34.5% of the total land area and 59.3% is privately owned. The remainder belongs to state, county and municipal governments.

The U.S. bureau of the census population estimate for Colorado as of July 1, 1955, was 1,508,000. The 1950 census figure was 1,325,089. Of the population 62.7% is urban; 37.3% rural. 93.4% native white; 4.5% foreign-born white; 1.5% Negro; 0.6% other. The capital, Denver, had a 1950 population of 417,786. Other cities (1950 census) are Pueblo, 63,685; Colorado Springs, 45,472; Greeley, 20,354.

History.—The 1955 regular session of the 40th general assembly convened at Denver Jan. 5, 1955, and adjourned April 1, 1955. There were 330 senate and house bills passed. Important among these was senate bill 313 which authorized anticipatory warrants to be issued by cities and counties for the purpose of defraying the cost of construction, erection or reconstruction or improvement of public projects; senate bill 273 which amended the existing law to provide that the location of mineral claims could be made upon state lands. (This bill was encouraged by tremendous activity in uranium exploration and discovery that took place in Colorado during the year.) Senate bill 67 presented an entirely new military code applicable to the state national guard and organized state militia; house bill 17 increased the number of state highway patrolmen from 140 to 200; house bill 111 provided equal pay for equal work regardless of sex; house bill 284 created the Colorado antidiscrimination commission for matters covering fair employment practices; and house bill 460 established a commission for the reorganization of state government. House bill 235 received much attention and publicity for establishing motor vehicle inspection stations on the public highways to effect the collection of fees, licenses or taxes imposed by law on motor carriers. Heretofore collection of motor vehicle taxes was next to impossible. The bill appropriated \$375,000 from the highway fund for construction of ports of entry, and \$250,000 for administering the same. The jurisdiction of these ports was transferred to the department of revenue. Important historically was the official opening and the enrolment of the first class of the Air Force academy at Lowry Field in Denver. Construction on the permanent site of the academy at Colorado Springs got under way during the year.

The principal state officers for the term Jan. 11, 1955, through Jan. 8, 1957, were: Edwin C. Johnson (Dem.), governor; Stephen L. R. McNichols (Dem.), lieutenant governor; George H. Baker (Dem.), secretary of state; Earl E. Ewing (Rep.), treasurer; Homer F. Bedford (Dem.), auditor; Duke W. Dunn (Rep.), attorney general.

Education.—The state appropriation for education in public schools for 1955-56 was \$14,000,000. The school population, including persons from 6 to 21 years of age, amounted to 358,728 as of April 1955. Registered students numbered 305,770. There were 12,676 teachers employed during the 1954-55 school year. The 132 county and municipal libraries of Colorado loaned 5,057,060 books, films, records and other library materials to their patrons. The total book stock of Colorado's libraries was 1,812,437 with a total operating expense of \$1,339,090.32 for fiscal year ending June 31, 1955. H. Grant Vest was state commissioner of education.

Social Insurance and Assistance, Public Welfare and Related Programs. Disbursements for welfare purposes within Colorado for assistance administration in 1954 amounted to \$69,277,220.73. Payments to, on behalf of, recipients amounted to \$65,964,861.36, exceeding the 1953 expenditure by .90%. The old-age pension used 78.02%. The remainder 21.98% was distributed among the other programs in the following order: aid to dependent children, 10.71%; general assistance, 4.70%; aid to

needy disabled, 4.69%; tuberculosis hospitalization .85%; aid to the blind, .49%; child care .54%.

From Jan. 1 until Aug. 1, 1955, there was an average of 54,009 old-age pension cases per month receiving an average payment of \$81.07 per case; aid to dependent children 5,954 cases, average payment \$104.95; aid to the blind, 322 award cases, average payment \$64.70; general assistance, 1,951 cases, average payment for subsistence \$41.18; aid to the needy disabled, 4,939 cases, average payment \$55.58 per case.

There were four correctional institutions with a total of 2,133 inmates as of Sept. 1, 1955. These were divided as follows: boys' industrial school, 221; girls' industrial school, 104; boys' reformatory, 356; and state penitentiary, 1,452. The 1955-56 budgets for these institutions were as follows: boys' industrial school, \$325,000; girls' industrial school, \$200,000; boys' reformatory \$430,000; state penitentiary, \$1,356,704. The total budget for all correctional institutions was \$2,311,704.

Communications.—Highways (county, state and federal) as of Jan. 1, 1955, totalled 74,282 mi.; 7,987 mi. were state highways, 62,241 mi. county highways and 4,054 mi. municipal. Total funds for all highway use for 1954 were \$32,050,463.33. There were 525 mi. of highway constructed during 1954 and 60 bridges were constructed. There were 14 railroads operating within the state with a total mileage of 3,995.04 and a valuation of \$134,396,940. Thirty-three telephone companies were in business with 1,085,376.71 mi. of wire and a total valuation of \$43,650,110. As of July 31, 1955, there was a total of 547,993 telephones in use that were serviced by the Bell system. There were 44 standard AM radio stations, 4 FM stations and 10 television stations.

Banking and Finance.—Colorado's 153 federal and state banks reached an all-time high of \$1,551,278,133 in deposits as of Jan. 1, 1955. This represented an increase of \$121,547,188 or 8.5% over the total deposits of \$1,429,732,945 on Jan. 1, 1954. The value of building permits for the area during 1954 amounted to nearly \$185,000,000, an increase of \$36,745,000 over 1953. As of June 30, 1955, there were 52 state and federal savings and loan associations with total resources amounting to \$378,792,000.

The cash balance in the state treasury as of June 30, 1955, was \$53,789,799.69. The total receipts in revenues for the fiscal year ending June 30, 1955, were \$238,549,617.84. The total cost for operating and non-operating expenditures for the 1954-55 period was \$232,035,801.29. As of June 30, 1955, Colorado had a general fund balance of \$20,789,826.52 which included a \$10,000,000 revolving fund reserved by statute for working capital.

Agriculture.—The cash income from farm marketings through 1954 aggregated \$426,866,000, of which \$278,359,000 resulted from the sale of livestock and livestock products and \$148,507,000 from the sale of crops. Government payments including rental and benefit, soil conservation, agricultural adjustment program, price parity and Sugar Act payments amounted to \$11,215,000. Cash farm income and government payments totalled \$438,081,000.

The number of cattle and calves on farms Jan. 1, 1955, was 2,054,000. The number of stock sheep totalled 1,702,000. Cattle in feed lots totalled 275,000. Hogs and pigs totalled 190,000 head.

Manufacturing and Industry.—The University of Colorado Bureau of Business Research estimate of value added to Colorado manufacturers in 1954 was \$438,500,000. There were an estimated 1,791 manufacturing plants operating full-time in Colorado. Wages and salaries for manufacturing were estimated at \$228,008,000 and gross sales of manufacturers, traders and jobbers were \$657,000,000.

From Jan. 1, 1955, through Aug. 1, 1955, the monthly employment figures averaged 478,900 employed in nonfarming occupations and 90,400 in farming for a total employment of 569,300 for both farming and nonfarming occupations. The unemployment monthly average for this same period was 20,100.

Tourist travel in Colorado is the fourth largest industry in the state. In 1954 the income derived from 3,883,000 vacationists was \$298,408,000 or an increase of 12.5% over 1953. The 1955 estimate as of Sept. 22, 1955, was 3,966,000 tourists spending \$326,719,000. (H. L. Hy.)

Mineral Production.—Table III shows the tonnage and value of Colorado minerals for 1953 (preliminary) compared with 1952. It includes only those items whose value was \$100,000 or more. Colorado was first among the states in production of molybdenum, second in fluorspar and pumice, third in feldspar and fourth in lead. In 1953 it ranked 17th in value of its mineral output, with 1.47% of the U.S. total.

Table I.—Principal Crops of Colorado

Crop	Indicated 1955	1954	Average, 1944-53
Corn, bu.	11,798,000	9,325,000	13,807,000
Wheat, all, bu.	14,425,000	16,500,000	42,430,000
Oats, bu.	4,309,000	3,614,000	6,051,000
Barley, bu.	6,400,000	7,020,000	14,215,000
Rye, bu.	156,000	276,000	374,000
Hay crops, tons.	2,214,000	1,986,000	2,226,000
Hay crops, tons.	2,062,000	1,991,000	1,978,000
Dry beans, 100-lb. bags..	18,585,000	17,600,000	18,126,000
Potatoes, bu.	1,522,000	1,654,000	1,897,000
Sugar beets, short tons. .	3,894,000	2,210,000	2,666,000
Sorghum grain, bu.	8,000	4,000	10,620
Broomcorn, tons.	1,180,000	1,600,000	1,316,000
Apples, commercial, bu. .	2,110,000	2,230,000	1,751,000
Peaches, bu.	165,000	270,000	180,000
Pears, bu.			

Source: U.S. Department of Agriculture.

Table II.—Principal Industries of Colorado

	All employees, 1953	Salaries and wages, 1953	Value added by manufacture, 1954
Food and kindred products . .	14,581	\$52,207,000	\$100,765,000
Primary metal industries. . .	7,938	33,704,000	76,284,000
All industry (including above). .	60,220	237,137,000	438,466,000

Source: U.S. Department of Commerce.

Table III.—Mineral Production of Colorado

(In short tons, except as noted)

Mineral	Quantity	Value	Quantity	Value
	1952		1953	
Clays	569,000	\$1,087,000	778,000	\$ 1,430,000
Coal.	3,623,000	19,216,000	3,575,000	19,198,000
Coke	996,000	†	967,000	†
Copper	4,000	1,745,000	3,000	1,688,000
Feldspar	38,000	224,000	44,000	268,000
Fluorspar	29,000	1,506,000	53,000	2,872,000
Gold (oz.)	125,000	4,361,000	119,000	4,173,000
Lead.	30,000	9,681,000	22,000	5,700,000
Molybdenum	24,557,000	†	33,851,000	†
Natural gas (thousand cu.ft.)	34,260,000	1,884,000	28,509,000	1,654,000
Petroleum (bbl.)	30,381,000	77,470,000	36,402,000	98,650,000
Sand and gravel.	8,461,000	6,268,000	12,439,000	8,609,000
Silver (oz.)	2,814,000	2,546,000	2,200,000	1,991,000
Stone	1,709,000	2,566,000	884,000	1,742,000
Tungsten concentrates . . .	600	2,355,000	800	2,902,000
(60% W ₆₀)				
Zinc	53,000	17,663,000	38,000	8,696,000
Other minerals. . . . .	...	39,017,000	...	52,013,000
Total.		\$187,589,000		\$211,586,000

*Values for processed materials are not included in the totals.

†Value included with other minerals.

Columbia, District of: see WASHINGTON, D.C.

Comets: see ASTRONOMY.

Commerce: see BUSINESS REVIEW; INTERNATIONAL TRADE; TARIFFS.

Commerce, U.S. Department of: see GOVERNMENT DEPARTMENTS AND BUREAUS, U.S.

Commission on Organization of the Executive Branch of the Government: see HOOVER COMMISSION.

Commodity Credit Corporation: see AGRICULTURE.

Commodity Prices: see BUSINESS REVIEW; PRICES.

Commonwealth Fund: see SOCIETIES AND ASSOCIATIONS, U.S.

Commonwealth of Nations. This is a community of independent nations and dependent or semidependent territories bound together by allegiance to the British crown or by recognition of the British sovereign as head of the Commonwealth.

The communiqué issued at the close of the Commonwealth prime ministers' conference (Jan. 31-Feb. 8, 1955) declared the Commonwealth's wish to promote conditions of peace; its NATO (North Atlantic Treaty organization) members hoped for early ratification of the Paris agreements and the acceptance of the Federal German republic into the western community. It urged continued close association with the United States and took note, without comment, of Pakistan's intention to become a republic but to remain a full Commonwealth member.

The then United Kingdom foreign secretary, Sir Anthony Eden, met the Indian prime minister, Jawaharlal Nehru, in New Delhi (March 2), and Nehru visited Great Britain (July 8); Pakistan's governor-general, Ghulam Mohammed, and prime minister, Mohammed Ali, visited Nehru. The Colombo powers (U.K., India, Pakistan, Ceylon, Indonesia) convened at Bogor, Indonesia (Dec. 28, 1954), at Simla, India (May 9), and in Singapore (Oct. 17). A conference of the southeast Asia defense treaty powers at Bangkok, Thailand, brought together the U.K., Australian, New Zealand and Pakistan representatives (Feb. 23). Nehru received Yugoslavia's president, Marshal Tito, in New Delhi, and much was heard of Nehru's five principles of independence, nonaggression, equality, noninterference and co-existence. India continued to deplore the southeast Asia treaty's existence, while its Commonwealth colleagues, Australia and New Zealand, implementing decisions taken at Bangkok, sent air squadrons to Malaya, to be followed by two Australian army divisions. Nehru objected strongly to Pakistan's adherence to the Turco-Iraqi defense treaty (Sept. 25). Relations with Pakistan seemed to be improving when an Indian statement (July 8) that a plebiscite was inadmissible in Kashmir—because times had changed and had for one thing brought a Pakistan-U.S. military

alliance—caused Pakistan to lodge an official protest. Pakistan quarrelled with Afghanistan on the "Pakhtunistan" question. But both India and Pakistan, with Ceylon, played a big part in the Asian-African conference (q.v.) held at Bandung, Indon. (April 18-21). At Bandung Ceylon's prime minister, Sir John

Kotelawala, called on members assembled to mediate between the giants of communism and anticommunism, and drew attention to the existence of Soviet colonialism. Ceylon was also aware of another pressure: "the day we dispense with Englishmen entirely," remarked Kotelawala on May 25, "the island

Table I.—Realms and Member-Nations of the Commonwealth, with their Dependencies*

Country	Area (sq.mi.)	Population (1951 census)	Capital	Status	Governors-general, etc., and prime ministers
Great Britain and Northern Ireland, United Kingdom of . . .	93,895†	50,383,213†	London	Kingdom	Prime Minister, Sir Anthony Eden
Australia, Commonwealth of . . .	2,974,581	8,986,873‡	Canberra	Kingdom; federation of states	Governor-general, Field Marshal Sir William Slim; prime minister, Robert Gordon Menzies
Dependencies					
Papua-New Guinea	183,540	1,715,000§	Port Moresby	External territory (Papua) and trust territory (New Guinea)	Administrator, D. M. Cleland
Norfolk Island	13	942||	—	External territory	Administrator, Brig. H. B. Norman
Nauru	8	3,473||	—	Trust territory	Administrator, R. S. Leydin
Cocos (Keeling) Islands	5	624§	—	External territory	—
Other islands	159	—	—	External territories	—
Antarctic territory	c.2,472,000	—	—	External territory	—
Canada	3,845,774	14,009,429	Ottawa	Kingdom; federation of provinces	Governor-general, Vincent Massey; prime minister, Louis Stephen St. Laurent
Ceylon	25,332	8,098,637¶	Colombo	Kingdom	Governor-general, Sir Oliver Goonetilleke; prime minister, Sir John Kotelawala
India**	1,269,640	356,829,485	New Delhi	Republic; union of states	President, Rajendra Prasad; prime minister, Jawaharlal Nehru
New Zealand	103,740	1,939,472	Wellington	Kingdom	Governor-general, Lieut.-Gen. Sir Willoughby Norrie; prime minister, Sidney George Holland
Dependencies					
Western Samoa	1,131	84,909	Apia	Trust territory	High commissioner, G. R. Powles
Other islands	193	21,205	—	External territories	—
Ross (Antarctic) Dependency	c.175,000	—	—	External territory	—
Pakistan	364,737	75,842,165	Karachi	Federation of two provinces	Governor-general, Maj. Gen. Iskander Mirza; prime minister, Chaudhry Mohammed Ali
South Africa, Union of	472,733	12,667,759	Pretoria Cape Town (Bloemfontein)	Kingdom	Governor-general, Ernest George Jansen; prime minister, J. G. Strijdom
Dependency					
South-West Africa	317,725	414,601	Windhoek	Mandate	Administrator, D. T. du P. Viljoen
Prince Edward and Marion islands	103	—	—	External territories	—

*Excluding U.K. dependencies; see Table II; sheikhdoms in the Persian gulf (see ARABIA) protected through the U.K. foreign office, and Himalayan protectorate of India (q.v.), are not regarded as parts of the Commonwealth. †Incl. for census purposes Isle of Man and Channel Islands, not part of legislative area of U.K.; see also Table II. ‡1954 preliminary census. §1954 est. ||1954 census. ¶1953 census. **Including Pondicherry state and former French territories ceded to India in 1954.

Table II.—United Kingdom Dependencies

Country	Area (sq.mi.)	Population (1954 est. in '000s)	Capital	Status	Rulers, governors, prime ministers, etc.
EUROPE					
Channel Islands					
Jersey	45	57*	St. Helier	Crown dependency	Lt. Gov., Adm. Sir R. S. Gresham Nicholson
Guernsey and dependencies . .	30	45*	St. Peter Port	Crown dependency	Lt. Gov., Air Marshal Sir Thomas Elmhirst
Isle of Man	221	56‡	Douglas	Crown dependency	Lt. Gov., Sir Ambrose Dundas
Gibraltar	2	25	—	Colony	Gov., Lt. Gen. Sir Gordon MacMillan
Malta	122	315‡	Valletta	Self-governing colony	Governor, Sir Robert Laycock Prime minister, G. Borg Olivier
ASIA					
Aden (including dependencies) .	112,108	940‡	Aden	Colony and protectorate	Governor, Sir Tom Hickinbotham
British Borneo					
North Borneo	29,388	365	Jesselton	Colony	Governor, R. E. Turnbull
Brunei	2,226	55	—	Protected sultanate	Sultan, Omar Ali Saifuddin High commissioner, Sir Anthony Abell
Sarawak	47,069	605	Kuching	Colony	Governor, Field Marshal Sir John Harding
Cyprus	3,572	517	Nicosia	Colony	Governor, Sir Alexander Grantham
Hong Kong	391	2,277	Victoria	Colony	High commissioner, Sir Donald MacGillivray
Malaya, Federation of	50,690	5,889	Kuala Lumpur	Federation of 2 British settlements and 9 protected states	Chief minister, Tengku Abdurrahman
Maldives Islands (Maldivia) . .	115	88	Male	Protected sultanate	Sultan, Mohamed Farid Didi Prime minister, Ibrahim Ali Didi
Singapore (including dependencies)	287	1,167	Singapore	Colony	Governor, B. R. Black Chief minister D. Marshall
AFRICA					
Anglo-Egyptian Sudan	967,500	8,764‡	Khartoum	Condominium	Governor-general, Sir Alexander-Knox Helms Prime minister, Ismail el-Azhari
British South African Territories (High Commission Territories)					
Basutoland	11,716	588	Maseru	Colony	High commissioner, Sir John Le Rougetel
Bechuanaland Protectorate . .	c. 275,000	295	—	Protectorate	Resident commissioner, E. P. Arrowsmith
Swaziland	6,705	212	Mbabane	Protectorate	Resident commissioner, W. F. Mackenzie
Gambia	4,003	290‡	Bathurst	Colony and protectorate	Resident commissioner, D. L. Morgan
Gold Coast (including Togoland trust) . .	91,843	4,619‡	Accra	Colonies, protectorate and trust	Governor, Sir Charles Arden-Clarke; prime minister, Kwame Nkrumah
Kenya	223,478	5,947	Nairobi	Colony and protectorate	Governor, Sir Evelyn Baring
Mauritius (including dependencies)	805	545‡	Port Louis	Colony	Governor, Sir Robert Scott
Nigeria, Federation of (incl. Cameroons trust)	373,250	31,700	Lagos	Federation of 3 regions and 2 federal territories	Governor-general, Sir James Robertson
Rhodesia and Nyasaland, Federation of	489,854	7,072‡	Salisbury	Federation of 2 protectorates and a self-governing colony	Governor general, Lord Llewellyn; prime minister, Viscount Malvern
Northern Rhodesia	290,323	2,128‡	Lusaka	Protectorate	Governor, Sir Arthur Benson
Nyasaland	49,177	2,545‡	Zomba	Protectorate	Governor, Sir Geoffrey Colby
Southern Rhodesia	150,354	2,399‡	Salisbury	Self-governing colony	Governor, Vice-Adm. Sir Peveril William-Pollard; prime minister, R. S. G. Todd
St. Helena (including dependencies)	119	5	Jamestown	Colony	Governor, J. D. Harford
Seychelles	156	37	Victoria	Colony	Governor, W. Addis
Sierra Leone	27,926	2,040	Freestown	Colony and protectorate	Governor, Sir Robert de Zouche Hall
Somaliland Protectorate	67,997	640	Hargeisa	Protectorate	Chief minister, M. A. S. Margai
Tanganyika	362,688	8,196	Dar-es Salaam	Trust	Governor, T. O. Pike
Uganda	93,981	5,425	Entebbe	Protectorate	Governor, Sir Edward Twining
Zanzibar (including Pemba) . .	1,020	276	Zanzibar	Protected sultanate	Governor, Sir Andrew Cohen Sultan, Khalif bin Harub Resident, H. S. Potter
AMERICA					
Bahama Islands	4,404	85§	Nassau	Colony	Governor, Earl of Ranfurly
Barbados	166	223	Bridgetown	Colony	Governor, Brig. Sir Robert Arundell Premier, G. Adams

(Table II continued on page 18)

Table II.—United Kingdom Dependencies (Continued)

Country	Area (sq. mi.)	Population (1954 est. in '000)	Capital	Status	Rulers, governors, prime ministers, etc.
AMERICA (Continued)					
Bermuda	21	40	Hamilton	Colony	Governor, Lieut. Gen. Sir John Woodall
British Guiana	82,997	465†	Georgetown	Colony	Governor, Sir Patrick Renison
British Honduras	8,867	78	Belize	Colony	Governor, Sir Colin Thornley
Falkland Islands (excluding dependencies). . .	8,238	4||	Stanley	Colony	Governor, O. R. Arthur
Jamaica (including dependencies)	4,708	1,518†	Kingston	Colony	Governor, Sir Hugh Foot; chief minister, Norman Manley
Leeward Islands	422	126	St. John's	Colony	Governor, Sir Kenneth Blackburne
Trinidad and Tobago	1,980	710	Port of Spain	Colony	Governor, Maj. Gen. Sir Hubert Rance
Windward Islands	821	297	St. George's	Colony	Governor, Sir E. B. Beetham
AUSTRALASIA					
Fiji (incl. Pitcairn and dependencies)	7,059	333	Suva	Colony	Governor, Sir Ronald Garvey
Tonga (Friendly Island)	270	52	Nukualofa	Protected kingdom	Ruler, Queen Salote Tupou; premier, Crown Prince Tungi
Pacific Islands (W. Pacific High Commission excl. New Hebrides)	11,869	137	Honiara	Colony and protectorate	High commissioner, John Gutch
New Hebrides	c.5,700	52	Vila	Anglo-French condominium	British resident commissioner, H. J. M. Flaxman
*1951 census. †1953 est. ‡1955 est. §1954 census. ||1953 census.					

will go under India." Pakistan, as befitted a southeast Asia defense treaty member, stood out for a nation's right to arrange for its collective defense, while Nehru saw NATO as yet another shield for colonialism. China, in the Indian view, should be allowed a seat at the United Nations.

The Union of South Africa's prime minister, J. G. Strijdom, declared—and in "English" Cape province, be it noted—that the Union Jack was "a foreign flag" (May 7), later remarking, however (Sept. 13), that it was unwise as yet to set a date on the dawn of the republic to come. The union left UNESCO (the United Nations Educational, Scientific and Cultural organization) (April 5), because it was "futile" and because it sought to interfere with racial problems, and continued to pursue to logical conclusions the *apartheid* policy.

Australia, besides prohibiting any hydrogen bomb tests on its territory (Feb. 18), absorbed itself in the fascinating aftermath of the Petrov defection: the royal commission on espionage published its findings on Sept. 14. Linked to this was a history of fissures in the federal and state Labour parties, and the indiscretions of the Labour leader, H. V. Evatt (which included a correspondence with the U.S.S.R. foreign minister, V. M. Molotov, wherein the latter not surprisingly discredited Petrov's revelations) gave the prime minister, Robert Menzies, confidence to call for a general election. As a "gentlemen's agreement" (Feb. 3) that the U.K. would buy more antipodean primary produce "in the spirit of Ottawa, 1932" was apparently not honoured, both Australia and New Zealand clapped on tariffs on imports (Oct. 13).

The main task of Canada, as the U.S. population soared to 164,000,000, was to insist on its Canadianism, and Canada's external minister, Lester Pearson, was heard to disagree with any "tough" U.S. policy toward Formosa while welcoming U.S. secretary of state, John Foster Dulles, to Ottawa, Ont. (March 17).

(A. P. T.)

The visit of Princess Margaret to the West Indies in February was outstandingly successful and showed how strong loyalties are. The ministers of the colonial office spent an increasing time in the colonies. The colonial secretary, A. T. Lennox-Boyd, visited Nigeria, Hong Kong, North Borneo, Brunei, Sarawak, Singapore, Malaya, Cyprus, Malta and Gibraltar; the minister of state, Henry Hopkinson, visited Aden; and the parliamentary undersecretary, Lord Lloyd, went to the West Indies.

One of the most striking tendencies in colonial affairs in the United Kingdom was the large and continuing increase in immigrants from the West Indies resulting from overpopulation and under-employment in some islands, principally Jamaica, the lowering of the West Indian quota into the United States and full employment in the United Kingdom.

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Communism. The year 1955 brought important tactical changes in the party line pursued by the world-wide communist movement under Moscow's leadership. The "new look" of communist policy under Georgi M. Malenkov stressed the possibility of "peaceful co-existence" of countries with different ideologies and economic systems and emphasized the need for raising the low standards of living of the people in communist-dominated lands.

The "new look" of communist policy expressed itself also in the ideological field. But there it became entirely clear that the changes were in no way fundamental changes of ideology or final goal but purely changes in emphasis in the flexible adaptation of the unchangeable Marxist-Leninist doctrine to the exigencies of a changing domestic and world situation.

Literature and science in communist lands are directed instruments of party policy. In 1954 two novels, *The Seasons* by Vera Panova and *The Thaw* by Ilya Ehrenburg, for the first time dared to criticize shortcomings of Soviet society, not only the terror and poor living conditions but also the cynicism and careerism of artists and writers. The novels were rejected by Soviet critics, but the second All-Union Congress of Writers, the first held in 20 years, which met from Dec. 15 to Dec. 26, 1954, in the Kremlin, admitted several important writers who had been purged during the last decade of Stalin's regime and proclaimed that the Soviet writer must not be afraid to present conflicts and contradictions that still existed in Soviet Russia. Yet at the same time the subordination of art to politics was stressed and the writers continued to be obliged to fight in their works for the building of communism and to expose the dangers of capitalism. It was difficult to see how the professed aim of an unwavering loyalty to party dogma and the desired avoidance of a boring oversimplification and moralism in Soviet literature could both be achieved. Though the congress pleaded for the translation of the best works of modern writers of all countries, it emphasized that these writers must be "progressive" and "writers of good will." In this spirit of cultural exchange, though with old ideological limitations maintained, the U.S.S.R. ended its eight-year-old boycott of UNESCO and was represented at its conference in Montevideo, Urug., in Nov.-Dec. 1954.

Return to Stalinism?—The "new look" policy, which was identified with Malenkov and his stress on the need of supplying consumer goods as against the ruthless promotion of heavy industry under Stalin, seemed on the point of abandonment when *Pravda*, the official communist newspaper, published an article on Jan. 24, 1955, signed by its editor, Dmitri Shepilov—an unusual procedure—in which he denounced the "bourgeois" stress on consumer goods and declared it to be the party's policy to give first priority to the production of industrial machines and tools. The chief spokesman for the priority of heavy industry over consumer goods production, contrary to the policy

initiated by Premier Malenkov in Aug. 1953, was Nikita S. Khrushchev, the party's first secretary. This change in the economic line preceded the unparalleled way in which Malenkov resigned as premier on Feb. 8, 1955, before the supreme soviet. Khrushchev had called those who did not regard the growth of heavy industry as the main task, "confused" and "pitiful theoreticians." Malenkov himself confessed to his incompetency and theoretical confusion, and he was replaced as premier by Marshal Nikolai A. Bulganin. Some pro-Soviet observers in the west saw in this change of leadership a resurgence of Stalin's strong antiwestern line and pretended that the reason for it was the west's insufficient response to Malenkov's "peace offensive." In reality the new regime under Khrushchev and Bulganin soon started a new "peace offensive" which far outbid Malenkov's "new look."

End of the Cold War?—Beginning in April 1955, the "iron curtain" was lifted to a considerable degree. Western visitors and journalists were granted visas to visit the U.S.S.R. Delegations of Soviet scientists participated in various international scholarly congresses. Soviet agricultural delegations visited the United States and Britain and a U.S. agricultural delegation went to Moscow and acquainted itself with the state of Russian agriculture. The International Parliamentary union at its meeting at Helsinki, Fin., accepted Soviet "parliamentarians" into membership. A top-level exchange visit between church leaders of the National Council of the Churches of Christ in the U.S.A. and Soviet church leaders was suggested by the Soviet Union for early 1956 and accepted by the National council at a meeting of the council's general board on Oct. 5, 1955. The Soviet pianist Emil Gilels was the first important Soviet musical performer to visit the United States since 1921 and the Soviet violinist David Oistrakh and the ballerina Galina Ulanova were to follow.

More important, however, were a number of actions in the field of foreign policy which clearly revealed the new line of replacing the former bitter vituperations by a more civilized and co-operative approach. The state treaty with Austria which the Soviet Union had obstructed for many years was finally quickly concluded and in July 1955 the independence of Austria was restored and the evacuation of all occupying forces begun. On July 18 the Geneva conference of the heads of the Big Four Powers, which Sir Winston Churchill had demanded more than a year before, started in Geneva, Switz., between the leading statesmen of the Soviet Union and of the three western democracies, the United States, Britain and France. Though the talks did not solve any of the outstanding problems between the communist and the free world, or even bring any of these problems nearer to solution, they nevertheless created a friendlier atmosphere in international relations than had existed at any time during the last ten years.

The chancellor of the German Federal Republic was invited to Moscow and his visit there in Sept. 1955 brought the promise of the establishment of diplomatic relations between the two countries. Later in the month, during the visit of the leading Finnish statesmen in Moscow, the Soviet government promised to restore to Finland the military base of Porkkala in the vicinity of Helsinki, Finland's capital. The most important and unexpected single step undertaken by the new Soviet government to lessen tensions was the visit of the Soviet leaders to Belgrade, Yugos., at the end of May.

The Problem of Titoism.—From 1948 Titoism had been the strongest word of condemnation hurled against dissident communists in the Soviet Union and in the communist-dominated central European countries. Many communist leaders were executed or imprisoned as Titoists. The forces of the Cominform (Communist Information Bureau) were largely mobilized against Titoism and Tito's Yugoslavia. After Stalin's death a slow

process of *rapprochement* began. In May 1955, during his visit to Belgrade, Khrushchev, not mentioning Stalin, stressed the common Marxist-Leninist foundation of the two brands of communism represented by the Soviet Union and by Tito's Yugoslavia, and recognized the Yugoslav claim that "socialism" could be realized in different ways. He seemed thereby to abandon the Kremlin's claim of being the only infallible guide on the road to socialism. Tito's Yugoslavia, though frankly communist did not become a Moscow satellite but retained its independence and preserved the ties with the west.

Communist Goals.—In spite of this "new look," fundamental communist policy had not changed. It remained firmly anchored on the basis of an uncompromising Marxism-Leninism. All political, economic and cultural activities remained strictly subordinated to the goal of spreading communism throughout the world. The communist leaders were convinced that history was on their side and that the capitalistic world would disintegrate. This disintegration seemed to be the very purpose of the "peace offensive." It not only tried to obtain a respite by reducing international tension in order to overcome internal crises of the Soviet system, but it wished above all to retard any increase in the political unity and military strength of the free world and even to undo them as far as possible. In that process the United States and through it the free world should be deprived of its main military advantage over the communist bloc, its atomic weapons, and the United States forces should be withdrawn from Europe and Asia. Communism was unable by the aggressive methods which it employed under Stalin's leadership to weaken or destroy democracy. On the contrary, under communist pressure the democratic nations co-operated more closely than ever before and thus created through their unity a defensive military and ideological strength. It was this western strength, as expressed in the North Atlantic Treaty organization which forced the Communist leaders to adopt the "new policy." The lessening of the tension was therefore the result of western unity and strength.

Communism Outside the U.S.S.R.—Communist policy in the satellite countries followed closely the Moscow-directed line. Tension with the west was lessened. The Soviet leaders on their return from Belgrade visited the principal satellite countries to acquaint them with the new policy line. To balance the recognition of the German Federal Republic, the Moscow government proclaimed the sovereignty of the German Democratic Republic, as the Soviet-occupied zone of Germany was called. After the neutralization of Austria and Yugoslavia, the Soviet

Membership of the Communist Parties

1. Countries of the communist bloc

U.S.S.R. (Oct. 1952)	6,983,145*	Hungary (May 1954)	864,607
China (1951 est.)	5,800,000	Rumania (1952 est.)	720,000
Czechoslovakia (June 1954)	1,489,234†	Bulgaria (Feb. 1954)	455,251
Poland (March 1954)	1,296,938	Albania (Nov. 1952)	45,382
German Democratic Republic (1953 est.)	1,230,000	Mongolia (1954 est.)	30,000
		North Vietnam (1955 est.)	120,000

2. Yugoslavia

League of Communists of Yugoslavia or Savez Komunista Jugoslavije	Nov. 1952	779,382
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3. Some noncommunist countries

Europe		Iran (1954)	20,000
Italy (June 1954)	2,130,095	Philippines (1953)	15,000
France (May 1954)	506,250	Lebanon (1951)	12,000
Austria (1953)	150,000	Syria (1951)	10,000
German Fed. Rep. (1953)	80,000	North America	
Finland (1953)	50,000	United States (1950)	54,171
Great Britain (Oct. 1954)	38,500	Cuba (1954)	30,000
Greece (1952)	30,000	Canada (1950)	15,000
Sweden (1953)	28,000	South America	
Belgium (1953)	25,000	Brazil (1954)	60,000
Netherlands (1953)	25,000	Argentina (1954)	40,000
Denmark (1953)	21,000	Chile (1954)	40,000
Asia		Venezuela (1954)	20,000
Indonesia (1954)	500,000	Uruguay (1954)	15,000
Japan (1954)	100,000	Peru (1954)	10,000
India (1953)	95,000	Australasia	
Malaya (1953)	30,000	Australia (1953)	10,000

*Including 969,886 candidates. †Including 103,624 candidates.

‡Including 54,380 candidates. §Including 87,109 candidates.

||The Communist party is banned.

government aimed at the creation of a neutral Germany. It played upon the desires of German nationalism and its inclination to prefer national unity and power to the strengthening of German democracy through close union with the west. But communism itself had lost the appeal which it apparently exercised in some European countries in the critical years after World War II. The economic consolidation of Europe, achieved to a large extent with U.S. help, decreased Europe's vulnerability to communism. Even in Italy the communist-dominated Confederazione Generale Italiana del Lavoro lost its control over the workers. In the elections of shop stewards in the Fiat automobile works, the country's largest industrial enterprise, in March 1955, only 39% voted for the communist-dominated trade union as against 63% in 1954, 65% in 1953 and 69% in 1950.

More propitious than in Europe was the field for communism in Asia and Africa. Yet even there the communists did not do as well as could be expected. They had hoped to set up a political beachhead in India by taking over the government in the newly formed state of Andhra, but the elections there at the end of February gave them less than one-third of the votes and only 15 seats out of 196 in the new legislature. The "conference for relieving tension in international relations" held in Delhi from April 6 to April 10, 1955, in which about 200 delegates of different political shades from more than a dozen Asian countries and the Soviet Union participated, was organized with the special purpose of utilizing anticolonial revolutionary forces for communist goals. The appeal to the Asian and African peoples for a common fight against western capitalism was from the beginning one of the main planks in Lenin's program. At the Delhi conference the principal Chinese delegate, Kuo Mo-jo, president of the Chinese Academy of Sciences, attacked the United States for striving to "conquer Asia and create there a new colonial policy."

Communist propaganda in Asia and Africa was attempting to direct the energies of nationalism in the former colonial areas against the west. But at the Asian-African conference at Bandung, Indonesia, which was held at the end of April 1955 and in which 29 countries participated, a number of them, notably Turkey, Iraq, Lebanon, Pakistan, Ceylon, Thailand, the Philippines, the Sudan and Liberia, vigorously opposed communism. Chinese communist Premier Chou En-lai followed in Bandung the new official communist policy of friendliness and moderation, thereby trying to strengthen the friendship with the Asian and African neutralist nations, of which India was the leader.

Communist strength appeared to be growing during 1955 in Indonesia, where Pres. Achmed Sukarno often referred to China and the Soviet Union as countries where great construction based upon "progressive" mass appeal was going ahead. The first elections held in Indonesia since the achievement of the independence of the country six years before took place at the end of Sept. 1955. Though the complete results were not known by mid-October, the communists seemed certain of second place and the Nationalists, whose cabinet received communist support during its two years in office, took the lead. Communist influence was also very strong in Singapore with its overwhelmingly Chinese population which in 1955 received far-reaching democratic self-government from the British administration. (See also ASIAN-AFRICAN CONFERENCE; DEMOCRACY; EDUCATION; GENEVA BIG FOUR CONFERENCES OF 1955; SOCIALISM; and articles on the various countries.)

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BRITISH COMMUNISTS staging a demonstration in Hyde Park, London, during the general elections of 1955

Alvin H. Scaff, *The Philippine Answer to Communism* (Stanford, 1955); Sidney Hook, *The Ambiguous Legacy, Marx and the Marxists* (1955); E. H., "Towards a Soviet Bourgeoisie," *The World Today* (London, July 1955). (H. Ko.)

Community Chest. Community chest is the name given to a local federation of health, welfare and recreation agencies which are supported by voluntary contributions. Its purpose is to raise annually, through a single, united community campaign, funds for the support of its member agencies. Associated with or a part of the chest in many cities is the community welfare council, the purpose of which is to co-ordinate the services of its member agencies and to provide a channel for community-wide planning for health and welfare.

In about 700 U.S. cities the community chest has been expanded into a broader type of fund-raising organization which includes in the annual campaign not only local agencies but one or more of the national health agencies. In some cities this change has been accomplished without a change of name; in others a new organization has been formed, often called the united fund. The common characteristic of all these campaigns is that they represent the united way of giving to many causes through one annual campaign. National promotion on behalf of local campaigns is carried on under the name of United Community Campaigns of America.

The national association of local chests, united funds and councils is Community Chests and Councils of America, Inc., which was established in 1918.

Of the 2,456 community chests, united funds and welfare councils in operation in July 1955 (1,997 chests and funds and 459 councils), 1,929 chests and funds and 434 councils were in the U.S., 68 chests and 25 councils in Canada. The chest and council idea has also been adopted in the British West Indies, Japan, the Philippines, the Canal Zone, Cuba, Greece, Australia and Mexico.

Today almost every city in the U.S. has a community chest, united fund or similar plan of federated financing for its voluntary social services. In 1,858 cities in 1954, more than 25,000,000 contributions totalling \$302,023,059 were made through community chests and united funds to be used during 1955 for voluntary health and welfare services.

Officers of Community Chests and Councils of America, Inc., for 1955 included: honorary president, Gerard Swope (New York city); president, Albert J. Nesbitt (Philadelphia, Pa.); treasurer, H. L. R. Emmet (Erie, Pa.); secretary, Foster W.

Doty (Springfield, Mass.); vice-presidents, John A. Greene (Cleveland, O.); James A. Linen (Greenwich, Conn.); William G. Vollmer (Dallas, Tex.). Ralph H. Blanchard was executive director. Headquarters are at 345 East 46th street, New York city. (B. A.)

Community Planning: *see* BUILDING AND CONSTRUCTION INDUSTRY; MUNICIPAL GOVERNMENT; TOWN AND REGIONAL PLANNING; URBAN TRANSPORTATION, U.S.

Community Trusts. Aggregate assets of \$141,276,907 were reported by community trusts in the United States and Canada at Jan. 1, 1955. During 1954 these composite charitable foundations appropriated \$6,099,181 and received incoming resources totalling \$12,923,438.

The largest of these organizations was the New York Community trust, whose 105 funds were valued at \$24,508,837. The Cleveland (O.) foundation reported resources of \$18,309,356; Permanent Charity fund, Boston, Mass., \$13,638,839; Chicago (Ill.) Community trust, \$12,133,225; and California Community foundation, Los Angeles, \$9,521,235.

The New York Community trust disbursed \$1,140,977 in 1954; Cleveland foundation, \$746,490; Chicago Community trust, \$639,753, and Permanent Charity fund (Boston), \$598,863.

Funds newly created in that year included \$3,070,140 accruing to the Indianapolis (Ind.) foundation; \$2,098,997 added to the New Haven (Conn.) foundation; \$1,821,676 reaching the Hartford (Conn.) foundation, and \$1,127,673 coming into the Winston-Salem (N.C.) foundation.

Of 73 community trusts surveyed in 1954, 71 were administering principal resources and 65 were making current distributions out of 1,256 funds on hand. Their cumulative disbursements in the 20 years from 1935 through 1954 stood at \$56,450,086.

A community trust consists, usually, of a series of trust funds of varied sizes, held by any one of a number of corporate trustees and applied for any of diverse charitable uses under the central supervision of a joint distributing committee. The trustee of a given fund is ordinarily chosen by its founder. The custody and investment of any given fund are the responsibilities of its trustee. The distributing committee authorizes all disbursements by the trustee and, in doing so, customarily undertakes to give expression to any specific charitable desires of a founder—stated either when the trust is created or perhaps (in cases of living trusts) subsequently—but it is also empowered to take appropriate remedial action if originally expressed preferences later become impossible or impractical of execution. (R. Hs.)

Comoro Islands: *see* FRENCH UNION.

Compensation, Veterans': *see* VETERANS ADMINISTRATION (U.S.).

Confectionery: *see* CANDY.

Congo, Belgian: *see* BELGIAN COLONIAL EMPIRE.

Congregational Christian Churches. Membership of the Congregational Christian Churches in the United States increased by 26,818 and Sunday school enrolment by 49,044 in 1954. The gross increase in church membership was 110,709, the largest such increase the denomination had ever enjoyed. The net increase was 2.2%. Of the new members admitted during 1954, 53,894 never before had made public confession of the Christian faith. This was the largest number of additions "by confession" for any year during the more than three centuries of Congre-

gational history in the country.

The first Congregational church in America was founded by the Pilgrims in 1620. By 1955 the denomination had 1,310,577 members in 5,536 Congregational Christian Churches. The Sunday school enrolment was 743,532.

During 1954, 56,815 persons entered Congregational Christian Churches from other Christian churches and 29,499 left the former for the latter. At the beginning of 1955 there were 133,707 persons who had moved from the neighbourhood of the churches where they were members without becoming affiliated with any church in the neighbourhood to which they had gone.

Giving to benevolences in 1954 increased \$1,538,713 over 1953 to \$9,525,437; and the expenditures by local churches on their own programs went up \$3,293,061, totalling \$43,024,531. The denomination spent \$20,343,044 on new church buildings, an increase of \$3,999,379. The value of church property rose \$30,662,193 to \$437,888,284.

Twenty-five new Congregational Christian church buildings were completed and dedicated in the United States during 1954. The number of churches with memberships of 250 to 499 rose from 899 to 930; nine churches grew to memberships of from 500 to 999 and 196 churches were recorded with memberships of more than 1,000—seven more than the previous year. Fifty-two churches, with less than 50 members, were closed during the year. This continued the movement, noticeable for more than a generation, toward fewer but stronger churches.

At the beginning of 1955 there were only 408 congregations without regular ministers. The pulpits were therefore better supplied than in any previous year in the entire history of the denomination.

Among regional groups the greatest membership gain was made by the Massachusetts conference, 4,334 members being added to the rolls of the conference's 587 churches. Two new church buildings were completed and dedicated during 1954. The Massachusetts conference also led in benevolence giving with increases from \$1,342,623 in 1953 to \$1,400,259 in 1954. Local church budgets rose \$683,877 to \$6,750,966.

The Congregational Christian Churches were planning to unite with the Evangelical and Reformed Church in 1957 to form the United Church of Christ, with a total of more than 2,000,000 members. This union, if consummated, would be according to Basis of Union and Interpretations as drawn up by the two denominations and approved by them in 1947-49. These documents outlined a procedure for consummating the union and beginning the work of the United Church of Christ, as the new denomination would be called. (*See also* CHURCH MEMBERSHIP.) (D. Ht.)

Congress, U.S.: *see* UNITED STATES CONGRESS.

Congress of Industrial Organizations: *see* LABOR UNIONS.

Connecticut. One of the New England states of the United States and also one of the original 13 states. Connecticut is known as the "Nutmeg state," "Land of Steady Habits" or "Constitution state." With an area of 5,009 sq.m. of which 110 sq.mi. are water, it is bounded on the north by Massachusetts, on the east by Rhode Island, on the south by Long Island sound and on the west by New York. According to the revised estimate by the bureau of the census, the population July 1, 1955, was 2,233,000 as compared with the 1950 census of 2,007,280. Largest cities and population (1950) were Hartford (the capital), 177,397; New Haven, 164,443; Bridgeport, 158,709; Waterbury, 104,477; Stamford, 74,293; and New Britain, 73,726.

History.—The regular biennial session of the general assembly met on Jan. 5, 1955, and adjourned on June 9, without co-

pleting action on important fiscal matters. The governor, therefore, called a special session for June 22 which quickly finished its business and adjourned June 24. A general fund appropriation of \$332,900,000 for the biennium was approved, the largest on record. To balance the budget, the 3% sales and use tax was continued and also the corporation business tax at 3½%. The gasoline tax was increased from four cents to six cents per gallon. A bill legalizing bazaars and raffles, with rigid controls, including local option, was passed after much debate and signed by the governor. The financial responsibility of relatives for persons in state hospitals was limited to a maximum of \$18.75 per week. Because of the tremendous losses of taxable property to towns caused by the floods a second special session of the legislature was called for Nov. 9. As of Dec. 1 no agreement had been reached as to the amount of relief needed, but it was probably between \$30,000,000 and \$35,000,000.

On Aug. 19 Connecticut was hit by the worst flood in the history of eastern United States. The state had received 6 in. of rain from Hurricane "Connie" on Aug. 13 and then in 30 hours between Aug. 18 and 19 Hurricane "Diane" deposited 14 more inches of water on the already saturated ground and full rivers. The devastation caused by these usually placid streams, which became raging torrents, was tremendous. The governor requested Pres. Dwight D. Eisenhower to declare Connecticut a disaster area so that the state could qualify for federal relief funds, and the president at once complied. Less than two months later, on Oct. 16, the state was struck by a second flood, this time mostly in the shore towns in New Haven and Fairfield counties, although 39 towns were struck for a second time. Total damage from the first flood was estimated to be more than \$202,000,000 and from the second flood between 10% and 15% of this.

State officers for 1955 were: governor, Abraham A. Ribicoff (Dem.); lieutenant governor, Charles W. Jewett (Rep.); secretary of the state, Mildred P. Allen (Rep.); treasurer, John Ottaviano, Jr. (Rep.); comptroller, Fred R. Zeller (Rep.); attorney general, John J. Bracken (Rep.).

Education.—For the school year 1954-55 there were 736 public elementary schools with 9,477 teachers and 283,074 pupils; 42 junior high schools having 1,118 teachers and 21,432 pupils; 99 high schools having 3,417 teachers with 68,069 pupils; 126 parochial and other ecclesiastical schools having 1,360 teachers and 54,897 pupils; 85 private schools with 1,608 teachers and 19,255 pupils. There were 3 junior colleges with 1,107 students and 22 colleges and professional schools and 30,036 students. The state operates 4 teachers colleges (not included in the above) with an enrolment of 4,855 students. In addition there are 19 state vocational-technical or state-aided schools having 411 teachers and 16,020 students. Finis E. Engleman was commissioner of education.

Social Insurance and Assistance, Public Welfare and Related Programs.—During June 1955 a total of 16,826 persons received old-age assistance amounting to \$1,429,000; 16,915 dependent children received \$712,180; 333 blind persons received \$29,520; 1,923 disabled and infirm persons received \$206,565. There are in the state 2 U.S. veterans hospitals and one state hospital; 3 state hospitals for the mentally ill; 2 state institutions for mental defectives; and 4 state tuberculosis sanatoria.

Communications.—During the fiscal year July 1, 1954, to June 30, 1955, there were registered 963,838 motor vehicles of all classes and 1,090,234 drivers licensed. Motor vehicle fees amounted to \$16,073,433 and the gasoline tax was \$25,801,137. Telephone outlets increased to 968,114. Standard broadcasting stations numbered 25 and television stations 3. Railroad mileage was unchanged at 830.85 mi. There were 26 daily newspapers, 7 Sunday and 67 weeklies published in the state.

Banking and Finance.—The following is the financial condition of the state as reported by the treasurer: cash balance July 1, 1954, \$24,382,819.73; receipts \$1,024,257,682.99; payments, \$1,024,115,802.65; cash balance, June 30, 1955, \$24,524,700.07. Bonded debt, general obligations, \$80,920,000; self-liquidating obligations, \$207,545,000. Unemployment compensation fund, \$227,385,241.

The state bank commissioner reported that at the end of the fiscal year 53 state banks and trust companies had assets of \$1,090,000,000; 72 savings banks had assets of \$1,990,000,000; 47 trust departments of state banks and trust companies had assets of \$897,000,000; 30 building or loan associations had assets of \$127,000,000 and 7 industrial banks assets of \$10,000,000.

Agriculture.—The total cash receipts from farm marketings for 1954 as reported by the department of agriculture were \$168,233,000, as compared with \$182,436,000 the previous year. Income from livestock and livestock products was \$111,009,000, and from crops \$57,224,000.

Manufacturing.—Nonagricultural employment was at its highest point in two years on Oct. 15, 1955, according to the labour department. On

Table I.—Principal Crops of Connecticut

Crop	Indicated 1955	1954	Average, 1944-53
Corn, bu.	1,845,000	1,880,000	1,871,000
Oats, bu.	128,000	144,000	146,000
Hay, all, tons	415,000	425,000	436,000
Tobacco, lb.	21,248,000	22,674,000	25,446,000
Apples, bu.	1,780,000	1,500,000	1,232,000
Peaches, bu.	145,000	134,000	141,000
Pears, bu.	60,000	42,000	48,000
Potatoes, bu.	2,162,000	3,140,000	2,957,000

Source: U.S. Department of Agriculture.

that date \$75,620 persons were employed, or 8,670 more than in September. Manufacturing industries accounted for 80% of the increase although some plants had not resumed production because of the floods. Employment in business and industry increased more than 20,000 during the year. Nonmanufacturing employment in October was 454,830, its highest for the year. Weekly earnings of factory production workers were \$81.37 as compared with \$73.57 in 1954. Weekly hours worked increased from 41.8 to 42.6, making the hourly rate \$1.91 as compared with \$1.82 the previous year.

(J. Br.)

Table II.—Principal Industries of Connecticut

Industry	All employees 1953	Salaries and wages 1953	Value added by manufacture 1953	Value added by manufacture 1952
			(In thousands)	
Food and kindred products	*	*	*	\$56,481
Textile mill products	34,464	\$122,511	\$186,063	168,703
Apparel and related products	17,632	49,625	75,063	
Paper and allied products	7,612	32,405	51,054	40,596
Printing and publishing				82,511
Chemicals and allied products	9,140	42,534	107,873	80,325
Rubber products	14,029	55,225	88,624	74,509
Stone, clay and glass products	4,521	19,983	32,688	34,119
Primary metal industries	29,706	136,945	274,378	258,788
Fabricated metal products	51,098	207,213	372,300	333,615
Machinery (except electrical)	81,744	380,782	629,858	597,704
Electrical machinery	36,170	141,858	266,787	
Transportation equipment	62,597	294,790	458,709	318,150
Instruments and related products	17,261	68,946	117,031	100,008
Miscellaneous manufactures	53,806	209,445	324,352	253,642

*Withheld because the estimate did not meet publication standards, either on the basis of the associated standard error of estimate or on the basis of a consistency review.
Source: U.S. Department of Commerce, Annual Survey of Manufactures, 1953.

Mineral Production.—Table III shows the tonnage and value of those minerals produced in Connecticut valued at \$100,000 or more for 1952

Table III.—Mineral Production of Connecticut

Mineral	Quantity 1953	Value 1953	Quantity 1952	Value 1952
	(In short tons)			
Clays	438,000	\$448,000	158,000	\$ 158,000
Feldspar	11,000	63,000	12,000	87,000
Quartz	?	*	?	*
Sand and gravel	3,026,000	2,348,000	2,581,000	1,933,000
Stone	2,827,000	4,235,000	2,837,000	4,101,000
Other minerals	—	823,000	...	846,000
Total		\$7,917,000		\$7,125,000

*Value included with other minerals.

and 1953 (preliminary). In 1953, Connecticut ranked 45th among the states in the value of mineral output, with 0.06% of the U.S. total.

Conservation, Soil: see SOIL CONSERVATION.

Conservative Party, Great Britain: see POLITICAL PARTIES, BRITISH.

Construction Industry: see BUILDING AND CONSTRUCTION INDUSTRY.

Consumer Co-operatives: see CO-OPERATIVES.

Consumer Credit. During 1955, consumer credit developments in the United States were dominated by a strong upsurge in instalment credit extensions, particularly for the purpose of financing automobile purchases. Consumer credit extension contributed importantly to consumer buying power and to the record level of business activity. At the same time, however, questions were raised as to the later effect on business activity of the record rate of growth in instalment credit.

After reaching a peak of \$30,125,000,000 at the end of Dec. 1954, total consumer credit in the United States dropped seasonally for two months and then rose sharply to a new record of \$34,293,000,000 on Sept. 30, 1955. Total instalment credit,

which is by far the largest component of consumer credit, reached a peak of \$22,467,000,000 on Dec. 31, 1954, and by the end of Sept. 1955 reached a new high of \$26,700,000,000. The increase in consumer credit during the year ending Sept. 30, 1955, was \$5,440,000,000, of which \$4,760,000,000 was in instalment credit.

Instalment credit extended, seasonally adjusted, rose from an annual rate of \$27,800,000,000 in the second quarter of 1954 to an annual rate of \$38,400,000,000 in the third quarter of 1955, an increase of almost 40%. Instalment credit extensions on automobile paper constituted about half of the total extensions late in 1955 and gave rise to about two-thirds of the increase in the rate of instalment credit extensions. Meanwhile the annual rate of instalment credit repayments, seasonally adjusted, rose from \$28,700,000,000 in the second quarter of 1954 to \$32,100,000,000 in the third quarter of 1955, an increase of almost 20%.

The rise in the rate of instalment credit extended from 1954 to 1955 reflected largely rising sales of new automobiles, a higher ratio of new cars bought on time payments, and some easing of terms at least in the first half of the year. The rise in instalment credit repayments lags behind such an increase in extensions and easing of terms.

The importance of consumer credit to the business boom in 1955 may be seen in its relation to the automobile industry. The production and sale of 8,000,000 passenger automobiles would not have been accomplished without substantial expansion of consumer credit. In terms of consumer buying power, the importance of consumer credit may be seen in the fact that the excess of instalment credit extensions over repayments, both seasonally adjusted and at annual rates, amounted to \$6,300,000,000 in the third quarter of 1955. By comparison, the increase in total disposable personal income, in terms of seasonally adjusted annual rates, from the second to the third quarter of 1955 was \$4,900,000,000.

Yet these same considerations led to some concern about the future. Without further easing of terms to dangerous levels or without a further rise in credit extended, instalment credit repayments would inevitably catch up with instalment credit extensions and this impetus to consumer buying would be removed. Any drop in instalment credit extensions would hasten this process. The question was raised increasingly as to whether the increase in consumer credit, and in personal indebtedness generally, was at a sustainable rate. It was pointed out that in the three-year period from 1953 through 1955 total personal indebtedness, comprising both consumer credit and mortgage debt, rose about 46%, as compared with a rise in disposable income of around 13%.

While total consumer credit as measured in dollars rose sharply in 1955, so did the income of the people. The ratio of total consumer credit to total disposable personal income for the 12 months reached a new high of almost 13% at the end of Sept. 1955. While this was above the previous high ratios of 11.9% in Dec. 1954, 11.8% at the end of 1953, and 11% in Dec. 1940, the trend toward more use of instalment credit and greater importance of consumer durable goods over the years perhaps lessened the value of previous ratios as standards. Collection experiences of lending institutions were good and delinquencies were very low. Since midyear, finance companies and commercial banks had been resisting pressures for easier terms on automobiles. Federal reserve studies indicated that early in 1955 somewhat more than half the spending units owed some short-term consumer debt while the rest had no such debt. Liquid asset holdings exceeded the short-term debts of nearly one-third of the indebted consumers.

Of consumer spending units with instalment debt in early 1955, two-thirds had scheduled repayments equal to less than

one-fifth of their disposable income. Most of the remaining one-third had to make repayments amounting to between one-fifth and two-fifths of their disposable income. (See also FEDERAL RESERVE SYSTEM.) (J. K. L.)

Canada.—By midyear 1955 total consumer credit outstanding in Canada reached \$2,098,000,000. This was an increase from June 30, 1954, of \$208,000,000, or 11%.

Personal cash loans extended by the banks, small loan companies, etc., accounted for \$763,000,000 and showed the sharpest increase (\$92,000,000). Total instalment credit grew by only \$37,000,000 to \$844,000,000. The recession in the automobile business throughout the fall and winter of 1954-55 was responsible for the small growth in the credit extended by finance companies by \$17,000,000 to \$532,000,000. In fact, debt repayment to finance companies substantially exceeded new loans until the vigorous spring upturn of car sales boosted credit by \$59,000,000 in the March-June quarter.

Instalment credit on the books of retailers gained by \$200,000,000 to \$321,000,000, while the outstanding receivable on retailers' charge accounts increased by \$26,000,000 to \$491,000,000 over the 12-month period.

While estimated retail cash sales in the second quarter of 1955 of \$2,184,000,000 showed an increase of 5½% over the same 1954 period (and charge account sales at \$721,000,000, an increase of 4%), instalment sales of \$525,000,000 increased by 26%.

Expert opinion contended that the growth of consumer credit over the past few years had remained consistent with the growth of disposable and discretionary income, which enabled more Canadians to purchase more durable goods, notably cars, television sets and electrical home appliances on time payment.

The raising of the Bank of Canada's rediscount rate from 1½% to 2% in August and to 2¼% in October gave, however, the signal for a return from the easy money policies prevailing since early 1954 to more normal or tighter credit conditions. This policy change was expected to act as a brake against too rapid further expansion of consumer credit in the instalment sector. (R. R.R.)

Contract Bridge.

England won the world team championship in the match played in New York city in Jan. 1955. The English team was composed of Terence Reese, Adam Meredith, Boris Schapiro, Kenneth Konstam, Leslie Dodds and Jordanis Pavlides. The U.S. team, most of whose members had been on the championship team of 1954, were William Rosen and Milton Ellenby of Chicago, Ill., Lew Mathe and John Moran of Los Angeles, Calif., Clifford Bish of Detroit, Mich., and Alvin Roth of Washington, D.C.

At the conclusion of this match the English team was generally rated the best in the world, but in the annual European championships, played in Amsterdam in July with 13 national teams competing, France won and England was seventh. The teams and standings in the European tournament were: France, 19 victory points; Italy, 18; the Netherlands, 16; Switzerland, 15; Belgium, 14; Sweden, 13; Great Britain, 13; Austria, 12; Denmark, 9; Ireland, 8; Germany, 7; Norway, 7; Finland, 6.

The United States team championship was won by Lee Hazen, Samuel M. Stayman, Richard Kahn and Myron Field of New York city and Charles J. Solomon of Philadelphia, who with Charles Goren of Philadelphia were designated to meet the French team in the next world championship match, in Paris, Jan. 1956.

An invited team from the Regency club of New York city comprising Wingate Bixby, Constantin Plotz, Peter Leventhal and Ivan Wichfeld, played in the annual South American championships, held at Punta del Este, Uruguay, in March 1955, and took first place. Uruguay, Chile and Argentina were the other

teams that reached the final round.

Winners of the principal United States championships, other than the masters' team championship, were:

Life masters' individual: Norman Kay, Merchantville, N.J.

Masters' pairs: Paul Hodge, Abilene, Tex., and Ben Fain, Houston, Tex.

Open team-of-four championship (Harold S. Vanderbilt cup): Howard Schenken, B. Jay Becker and George Rapée, New York city; John R. Crawford and Sidney Silodor, Philadelphia, Pa.

There was little discernible change in methods of bidding, most players continuing to use the point-count valuation that had been favoured for five or more years; but there was some increase in the use of artificial or special bidding conventions, to a greater extent than at any time since the mid-1930s. More new books on bridge were published during 1955 than in any year since before World War II, one estimate placing the number of new books at 200.

(A. H. MD.)

Co-operatives. Steady gains in membership and business volume were registered in 1955 by co-operatives in many parts of the world. Their membership totalled an estimated 80,000,000 families in free lands where voluntary co-operation was possible, ranging to as high as 80% of the population in some of the smaller nations.

Credit and Marketing.—With 80% of the world's peoples in farming, growing attention was given in 1955 by free governments and co-operatives to the wider use of self-help principles in solving credit and marketing problems of small farmers, fishermen and other primary producers.

In India, where 70% of the population lives in rural villages, the federal government authorized in 1955 a broad program to be financed in part through state governments, for long-term credit and aid in marketing and processing techniques to the millions of small holders and handicraft workers now largely dependent on moneylenders and traders. Similar programs already had been launched in other Asian countries.

In the Republic of Korea (South), plans were started in 1955 for a U.S.-Korean program of credit and technical aid to rural co-operatives, at the behest of U.S. co-operatives.

In the United States, congress authorized the full retirement of government capital in the Banks for Cooperatives by farm co-operative borrowers. These organizations already had retired more than \$20,000,000 of the \$177,000,000 of government capital in these banks.

The U.S. government in 1954-55 also loaned the largest amount in any single fiscal year in its history, \$167,000,000, for rural electrification, mainly because of growing power use by the 4,500,000 members of 1,000 rural electric co-operatives. This brought the total loaned for this purpose to about \$3,000,000,000, of which about \$600,000,000 had been repaid with interest.

Credit unions in the U.S. and Canada—co-operative thrift and lending institutions for groups of employees, church members, union members, etc.—enjoyed continued rapid growth in 1954. Their memberships swelled to nearly 9,000,000 in North America alone, with the increased importance of credit in the consumer economy. This growth paralleled the movement for self-help credit in most other parts of the world.

Marketing of farm products by co-operatives continued a steady growth in the U.S. and most other countries. In the United States, 7,200 marketing co-ops graded, packed, processed and shipped more than \$9,000,000,000 worth of grain, dairy products, livestock, cotton, fresh produce and other goods for their more than 4,000,000 members during 1955. A national fruit and vegetable packing and shipping co-operative was formed.

Farm Purchasing.—About 3,300 farmer co-operatives, through state-wide and regional wholesaling organizations which

they owned, plus their own retail trade, did a total gross business of nearly \$3,000,000,000 in farm supplies in 1955. Some of them also did grain and other marketing for their members.

About 45% of this business volume was in feed processed in several hundred farmer-owned plants and in a few larger ones. Another 25% was in petroleum products, produced in 19 refineries owned, together with many oil wells, transportation and distribution facilities, by the farmers themselves. A number of larger regional co-operatives invested a total of at least \$4,000,000 in expanded refining facilities.

Expansion also took place in the 120 co-operative fertilizer plants through which farmers supplied themselves with more than \$350,000,000 of plant food in 1955. A less amount of business was done by U.S. farmers in the processing and distribution of seed; the purchase of farm machinery, automotive supplies, hardware, groceries, paint, lumber, appliances and other supplies; and the manufacture of milking machine equipment and water heaters.

Farm supply purchasing on a less extensive scale was done by rural dwellers in Canada, western Europe, Great Britain, Australia, Latin America and in Asia.

Insurance.—Co-operative or mutual insurance societies in which policyholders participate, and by which investments are made with direct concern to the interests of the policyholders, enjoyed continued growth in 1955. One such society, the second largest insurance firm in Great Britain, set up a U.S. subsidiary on whose board were represented leaders of the Farm Bureau Insurance companies of Ohio (now Nationwide Insurance) with 3,000,000 U.S. members.

Another rapidly-growing co-operative type insurance firm was the CUNA (Credit Union National association) Mutual Insurance society, for credit unions and their members in the U.S. and Canada. Firms of this type in these two countries alone totalled about \$300,000,000 in assets in 1955, and served more than 8,000,000 policyholders, not counting the members of CUNA-insured credit unions. The majority of these firms were not large but were organized by farmers on a county-wide basis for protection against fire, storm, crop and other losses.

Health.—In 1955 there was a steady growth and considerable interest among members of unions and other citizen bodies in co-operative and group health plans owned and controlled by their members. Such plans were serving more than 1,500,000 U.S. and Canadian families in 1955 with a wide variety of either health insurance or direct medical or hospital service, or a combination of these. Through them, families prepaid the cost of both preventative and curative health care. Where the plan itself provided for direct service to families, teams of doctors were on hand to consult on members' needs. Nearly 500,000 New Yorkers owned the Health Insurance Plan of Greater New York, which contracted with 1,000 doctors working in teams in 29 centres.

Consumer Goods.—Continued recovery of western European economies in 1955 enabled consumer goods co-operatives to improve further their merchandising methods. Scandinavian consumer co-operatives continued as price and quality leaders, and British and Scottish societies were among the largest businesses in Great Britain. Rapid expansion of western German co-operatives continued, and French, Dutch, Belgian and Italian co-operatives did thriving business.

In the United States, most of the larger consumer goods societies expanded into branch stores and shopping centres, using mass merchandising methods more extensively than heretofore. Supermarkets and other co-operatives in the Washington, D.C., area did a \$15,000,000 business volume in 1955. In Akron, O., a co-operative owned largely by union members continued as the largest retail business, and a pattern of modern shopping

centres in the north central states was launched by Central Co-operative Wholesale, largest of the consumer organizations as well as the oldest. Total consumer goods business among U.S. co-operatives totalled well over \$125,000,000 in 1955.

Housing.—Great interest in co-operative methods of home ownership grew world-wide in 1955—in Asia, Latin America, Australia and Canada, as well as in the established co-operative housing programs in the Scandinavian countries, in Israel and in western Europe.

United States housing co-operatives were aided by congress' authorization of government loan funds, and by expansion and liberalization of federal mortgage guarantee provisions. More than 150 bona fide co-operative home and apartment ownership projects existed in 1955, housing about 50,000 families. Of these, a large majority were in New York city. A large union of garment workers, for example, financed with its members the construction of nearly 1,700 apartment units and a shopping centre on 12 ac. of former slum sites on New York's east side.

Other Service Co-operatives.—Co-operative techniques were used in 1955, as in past years, to reduce costs and expand quality of many services throughout the world—for recreation, for child care, even for burial at low cost for members of funeral co-operatives. On U.S. and Canadian college campuses, for example, more than 500 dormitory and eating co-operatives enabled about 60,000 students to reduce costs and gain knowledge of democratic methods in a friendly home atmosphere.

Exchange of Information.—Through visits, exchange of technical knowledge and personnel, often with the help of their various governments and the United Nations, as well as through the International Cooperative Alliance, co-operatives throughout the world expanded their exchange programs in 1955. The best-known co-operative in the world, CARE (Cooperative for American Remittances Everywhere), ended its program of U.S. citizens' aid to European recovery, but continued its European offices so CARE packages could flow from Europe elsewhere. It also expanded its raising of funds for technical aid (plows, books, tools) for needy families and community development in many parts of the world.

The International Cooperative Petroleum association showed continued growth as a medium through which oil co-operatives in a number of nations could exchange products and information. (See also FARM CREDIT SYSTEM.) (P. DE.)

Copper. World output of copper in 1954 was estimated at 3,100,000 short tons, according to the U.S. bureau of mines. World production of mine output by the 12 principal producers is given in Table I, and comparative data on mine and smelter copper is shown in the article on MINERAL AND METAL PRODUCTION AND PRICES.

United States.—Salient data on the copper industry in the U.S. are presented in Tables II and III, based on the U.S. bureau of mines reports. In 1954, copper output declined 10%, chiefly because of strikes. Four new large operations reached production stage in 1954—three open-pit mines in Arizona and

Table II.—Data of Copper Industry in the U.S.

	1949	1950	1951	1952	1953	1954
(Thousands of short tons)						
Mine output	752.7	909.3	928.3	925.3	926.4	836.3
Smelter output . . .	757.9	911.4	930.8	927.4	943.4	828.8
Refinery output . . .	927.9	1,239.8	1,207.0	1,177.7	1,293.1	1,209.2
Domestic ore	695.0	920.7	951.6	923.2	932.2	840.0
Foreign ore	232.9	319.1	255.4	254.5	360.9	369.2
Secondary recovery .	713.1	977.2	932.3	903.2	958.5	847.7
From old scrap . . .	383.5	485.2	458.1	414.6	429.4	422.0
From new scrap . . .	329.6	492.0	474.2	488.6	525.1	425.7
Imports	552.7	690.4	489.1	618.9	677.1	543.0
Refined	275.8	317.4	239.0	347.0	272.8	202.1
Exports	196.0	192.3	166.3	212.4	171.3	289.1
Available for use* .	1,391.2	1,850.1	1,737.8	1,726.9	1,826.0	1,543.0

*Available for use includes total refinery output, secondary from old scrap, and refinery imports less exports; secondary from new scrap is only a turnover of metal in process and does not add to the supply available for use, and other imports have been covered by refined output from foreign ores.

†First 11 months only.

Table III.—Mine Production of Copper in U.S.

	1949	1950	1951	1952	1953	1954
(Thousands of short tons)						
Arizona	359.0	403.3	415.9	395.7	393.5	378.0
California	0.6	0.1	0.1	0.8	0.3	0.4
Colorado	2.4	3.1	3.2	3.6	2.9	4.0
Idaho	1.4	2.1	2.2	3.2	3.1	4.0
Michigan	19.5	25.6	25.0	21.7	24.1	23.0
Missouri	3.7	3.0	2.4	2.6	2.4	2.0
Montana	56.6	54.5	57.4	61.9	77.6	59.0
Nevada	38.1	52.6	56.5	57.5	61.9	71.0
New Mexico	55.4	66.3	73.6	76.1	72.5	60.0
Utah	197.2	278.6	271.1	282.9	269.5	211.0
Washington	5.3	5.1	4.1	4.4	3.7	3.0
Others	13.5	15.0	17.1	14.9	14.9	16.0
Total	752.8	909.3	928.3	925.4	926.4	836.3

a large underground mine in Michigan. Consumption of refined copper continued large for a peacetime year but was about 20% below the high rate of 1953. Imports were at a lower rate in 1954 but exports of refined copper, the main type exported, were double those in 1953. Exports were made chiefly to Europe.

In the first eight months of 1955, output of mine copper was 630,000 short tons. Smelter output was 686,452 tons: 630,000 tons from domestic and 56,340 tons from foreign copper.

Canada.—Output from several new prospects explored and developed in 1954 was expected in 1955, notably Gaspe Copper mines and Campbell Chibougamau.

Peru.—In Jan. 1955, the American Smelting & Refining Co. announced completion of negotiations with three other companies for financing (with U.S. Export-Import bank aid) the Toquepala copper project in southern Peru, eventually expected to mine 30,000 tons of ore a day. During 1955 development went forward. (See also FOREIGN INVESTMENTS.)

(F. E. H.; B. B. M.)

Corn. Until August the U.S. 1955 corn crop promised 3,478,000,000 bu., second largest on record, nearly one-fifth larger than that of 1954 and the highest average per-acre yield on record. Then drought blasted the crop in the western half of the corn belt, resulting in a 10% decline to an indicated 3,182,870,000 bu. (fifth largest), but nevertheless larger than the 2,964,639,000 bu. of 1954 or the average for 1944-53 (3,080,000 bu.).

Table I.—U.S. Corn Crops

	1955*	1954	Average 1944-53
Total production (thousands of bu.)	3,182,870	2,964,639	3,080,100
Acreage harvested (thousands) . .	80,765	79,875	84,600
Yields (bu. per acre)	39.4	37.1	36.4

*Indicated.

Table II.—U.S. Corn Production by Leading States

	Indicated 1955	1954	Average 1944-53		Indicated 1955	1954	Average 1944-53
(in 000 bu.)							
State	1955	1954	1944-53	State	1955	1954	1944-53
Illinois	518,504	449,312	462,296	Tennessee	60,410	40,484	50,720
Iowa	492,062	540,015	540,971	Pennsylvania . . .	57,120	63,204	59,500
Minnesota	284,935	277,043	236,380	Texas	50,196	33,184	47,100
Indiana	270,760	256,104	226,523	Mississippi	46,620	27,234	40,000
Ohio	226,800	232,066	177,847	Virginia	34,827	30,063	37,300
Missouri	160,968	69,201	149,188	Kansas	32,598	39,558	67,200
Wisconsin	139,650	154,445	120,618	South Carolina . .	30,940	11,718	25,500
Nebraska	104,160	196,000	228,658	North Dakota . . .	29,182	25,704	25,500
Michigan	90,000	83,028	65,268	Maryland	18,320	18,778	19,500
South Dakota . . .	83,140	115,913	108,013	Louisiana	18,150	12,957	15,500
Kentucky	82,574	66,433	75,945	Arkansas	17,118	8,364	24,000
Georgia	66,690	29,642	46,217	California	14,168	7,680	22,000
North Carolina . .	65,696	50,784	62,641	Colorado	12,870	9,325	13,000
Alabama	63,626	28,808	44,921	Florida	10,952	9,200	7,000

Table I.—World Mine Production of Copper

	1947	1948	1949	1950	1951	1952	1953	1954
(Thousands of short tons)								
Belgian Congo . . .	166.3	171.4	155.9	193.9	211.6	226.8	236.1	243.4
Canada	230.1	245.3	263.5	264.2	270.0	258.6	253.3	302.7
Chile	470.3	490.5	409.1	400.1	419.6	450.4	400.3	400.9
Cyprus	14.0	17.3	26.4	25.7	25.1	29.6	23.9	30.1
Japan	23.7	28.4	36.2	43.5	47.1	59.0	64.9	71.9
Mexico	71.4	65.1	63.1	68.0	74.2	64.4	66.3	60.4
Peru	24.8	19.9	30.8	33.1	35.6	33.6	39.0	41.8
No. Rhodesia . . .	217.5	249.7	285.6	327.9	352.0	363.2	410.8	438.7
South Africa . . .	32.4	32.5	33.6	37.5	37.2	38.7	39.8	46.6
U.S.S.R.	182.9	198.7	220.9	240.9	280.9	325.9	334.9	352.9
United States . . .	847.6	834.8	752.8	909.3	928.3	925.4	926.4	836.3
Yugoslavia	35.7	40.6	37.9	44.2	35.3	36.2	34.4	33.4
Total	2,453	2,546	2,480	2,800	2,900	3,000	3,000	3,100.9

Table III.—Corn Production of the Principal Producing Countries
(in 000 bu.)

Country	Indicated 1955	1954	Average, 1945-49	Average, 1935-39
United States	3,182,870	2,964,639	3,056,861	2,315,554
Brazil . . . . .	...	240,000	224,400	215,153
Argentina . . . . .	...	105,000	155,012	301,986
Italy	129,000	116,300	90,980	113,000
Mexico	126,000	157,470	95,389	67,523
U.S.S.R. . . . .	...	...	113,000	170,000
China . . . . .	...	...	274,013	262,000
Manchuria . . . . .	...	...	130,000	86,585
Union of South Africa . . . . .	...	130,070	86,699	80,132
India . . . . .	...	117,760	79,836	67,240

115,000 bu.).

Acreage indicated in July for harvest was 80,765,000 ac. as compared with 79,875,000 ac. harvested in 1954 and an average of 84,675,000 ac. harvested 1944-53. Yields were indicated at 39.4 bu. per acre, slightly higher than the 37.1 bu. of 1954 and an average of 36.4 bu. per acre for the decade 1944-53.

Prices in 1955 remained well below the official average support price of \$1.62 per bushel (90% of parity) on the 1954 crop and \$1.58 per bushel (87% of parity) on the 1955 crop. The average price to farmers in mid-October was \$1.14 per bushel as compared with \$1.45 per bushel at the same date in 1954. The record carry-over on Oct. 1, 1955, was about 1,050,000,000 bu. as compared with 920,000,000 bu. in 1954. Of this reserve, 880,769,000 bu., valued at \$1,455,521,000, were under the price support program of the Commodity Credit corporation as of June 30, 1955; comparable data for the previous year were 775,268,000 bu. valued at \$1,235,991,000. Export of U.S. corn in 1954-55 was only 76,509,000 bu. valued at \$128,981,000, as compared with 108,251,000 bu. valued at \$186,255,000 in the previous year.

World corn exports in 1954-55, largely to Europe, were about 4,806,000 long tons as compared with 5,149,000 tons in 1953-54. Argentina's exports increased as a result of favourable production in 1954, but the Danube basin supplies did not return to their former markets, and world exports remained at about half the prewar average of 10,039,000 tons.

The Argentine crop, harvested in the spring of 1955, was estimated at only 110,000,000 bu. as compared with 175,000,000 bu. in 1954, giving a 1955-56 supply 36% less than that of 1954-55 and indicating exports, prior to May 1956, definitely smaller than the 79,000,000 bu. exported in 1954-55.

The preliminary outlook was for a 1955-56 record world corn crop of about 6,060,000,000 bu., about 10% larger than the 1954-55 crop. (J. K. R.)

Corporation Income Tax: see TAXATION.

Cosmic Rays: see PHYSICS.

Costa Rica.

A Central American republic, Costa Rica is located between Nicaragua and Panamá. Area, 51,965 sq.mi.; pop. (1950 census), 800,875; (1955 official est.), 1,042,000, classified as about 80% white, 16% mixed, 3% Negro and less than 1% Indian. The capital is San José (1950 pop.) 136,909; other principal cities are Alajuela, 13,903; Cartago, 22,944; Guadalupe, 8,452; Heredia, 11,967; Limón, 11,310; and Puntarenas, 13,272. Language: Spanish. Religion: predominantly Roman Catholic. President in 1955: José Figueres.

History.—Early in Jan. 1955, a group of rebels headed by former President Rafael Calderón-Guardia and the son of another former president, Teodoro Picado, moved south from the Nicaraguan border to take Villa Quesada, a small town on the Pan-American highway. In response to a Costa Rican request, the Organization of American States sent to Costa Rica a five-man investigating commission headed by Mexican diplomat Luis Quintanilla. The commission, reporting that "a substantial part of the rebel war material was introduced over the Nicaraguan

border," recommended that the United States sell four P-51 Mustangs to the Costa Rican government. The United States immediately sent the four fighters, reportedly selling them for a token sum.

As soon as the Organization of American States began investigating the charges, Nicaraguan President Anastasio Somoza ceased to aid the rebels who, shut off from supplies and from air support because of the action of the four fighters, fled to Nicaragua where they were interned. Bitter fighting occurred near the towns of Liberia, Santa Rosa, La Cruz and Puerto Soley, but the rebels were no match for the superior numbers of the popularly supported constitutional forces.

After meeting with United States Vice-President Richard M. Nixon during the course of Nixon's Central American tour, Figueres said that he was willing to go more than half way in resolving any differences with Nicaragua. Nixon also met with opposition leader Otilio Ulate Blanco.

Realizing that it was perhaps not strong enough to stand alone in its antidictator policy, Costa Rica moved to re-establish relations with the Dominican Republic and with Venezuela.

During the year the government-sponsored Federación de Trabajadores Bananeros joined the communist-dominated Federación de Obreros Bananeros in a strike against the United Fruit company for a 40% wage increase. The strike was terminated when the company agreed to moderate raises in a new three-year contract. The company also agreed to improve housing and not to discharge union leaders except for legal breach of contract.

A 21-kilometer link in the Pan-American highway was finished during the year, permitting automobile travel between Guatemala City and San José. In July the Export-Import Bank of Washington agreed to provide a loan of \$9,000,000 to pave the Costa Rican section of the Pan-American highway.

On the economic scene, Costa Rica, seeking eligibility for loans from the International Bank for Reconstruction and Development, reached an agreement with foreign bondholders to liquidate a \$3,560,000 debt outstanding since 1871. To be eligi-



"SI SENOR! WE'RE AT WAR!" a 1955 Cartoon by Dobbins of the Boston Post

ble. Costa Rica had still to clear up a defaulted French debt. Foreign exchange reserves rose by \$8,200,000 in 1955 to a total of \$28,180,000, largely because of a bumper coffee crop. (See also NICARAGUA; ORGANIZATION OF AMERICAN STATES.)

(R. HN.)

Education.—In 1951 there were 1,139 public and private primary schools with 4,821 teachers and 116,157 pupils. In 1950 there were 8 public secondary schools, 16 private schools and 7 technical schools. University education was available at the University of Costa Rica. According to the 1950 census, 21.2% of those 10 years of age and over were illiterate.

Finance.—The monetary unit is the colon, valued in 1955 at 17.64 cents U.S. currency, official rate, and at 15.04 cents, controlled free rate. The national budget for 1955 balanced revenue and expenditure initially at 229,963,100 colones. Actual revenue in 1954 was 233,467,081 colones; expenditure, 219,226,620 colones. The public debt on June 30, 1955, was 351,671,000 colones, of which 130,028,000 colones represented the external debt. Currency in circulation in July 1955 totalled 136,355,000 colones. The U.S. dept. of commerce estimated U.S. direct investments in 1950 at \$60,000,000. The cost-of-living index (San José) stood at 130 in Aug. 1955 (1948=100).

Trade and Communications.—Exports in 1954 amounted to \$80,960,669 (subject to adjustment for revaluation of banana exports; 1953 as adjusted: \$80,149,254). Imports in 1954 totalled \$80,653,614. Chief exports were coffee (43%), bananas (40%), cacao (10%) and abacá (2%). Leading customers were the U.S. (59%), Germany (18%), Canada (9%), the Netherlands (4%) and Panamá (2%); leading suppliers, the U.S. (58%), Germany (10%), the U.K. (7%), the Netherlands Antilles (4%) and Canada (3%).

Railway trackage (1954) included 416 mi. of public railway and 388 mi. of private railway. In 1951 there were 930 mi. of all-weather roads and 3,725 mi. of dirt roads; of the 413 mi. of the Inter-American highway in Costa Rica, 60 mi. were paved in mid-1954, 226 mi. were all-weather and 147 mi. impassable. Motor vehicle registration (Jan. 1, 1955) included 8,450 automobiles, 4,880 trucks and 947 buses. Telephones (Jan. 1, 1954) numbered 10,600, none automatic. In 1954 there were 55 airfields, 42 of which had daily scheduled service.

Agriculture.—Coffee production in the 1954-55 season totalled 564,000 bags of 132 lb. each; exports totalled 391,000 bags in 1954. Other exports in 1954 included bananas 10,115,975 stems (about 15,600,000 count bunches) and abacá 3,052 metric tons. Production in the 1953-54 season included cacao 13,448,000 lb.; maize 79,000 metric tons; rice 27,000 tons; beans 19,000 tons; sugar 64,000 tons. The 1950 census showed 592,402 cattle, 112,156 hogs and 77,335 horses.

Manufactures.—In 1950 there were 1,267 manufacturing establishments with annual production valued at \$78,251,000. Most important were food and kindred products (26.8%), printing and publishing (23.4%) and apparel and related products (22.2%). (J. W. Mw.)

Cost of Living: see BUSINESS REVIEW; PRICES.

Cotton. United States Cotton Production.—The U.S. cotton surplus increased in 1955 though rigid federal acreage allotments and marketing quotas were again applied. Allotted acreage was set at about 18,200,000 ac., or 15% below 1954; the 17,096,000 ac. in cultivation to cotton on July 1 were the least since records began in 1909, 6% less than the 1955 allotment, 14% less than the 19,791,000 ac. cultivated in July 1954 and well below the 1944-53 average of 22,763,000 ac. There was, however, a new record high per-acre yield of cotton

Table I.—U.S. Cotton Production by Leading States

State	(in 000 500-lb. bales)		Average, 1944-53
	Indicated 1955	1954	
Texas	4,250	3,940	3,388
Mississippi	2,000	1,571	1,693
Arkansas	1,160	1,351	1,386
California	1,250	1,487	1,048
Alabama	1,045	728	908
Georgia	700	612	695
Arizona	685	911	481
Tennessee	615	548	565
Louisiana	590	572	591
South Carolina	575	501	692
Oklahoma	450	293	390
Missouri	400	450	358
North Carolina	355	364	492
New Mexico	270	316	217
Other states	48	52	47

lint of 431 lb., 90 lb. more than the record set in 1954 and 152 lb. above average. The indicated 14,843,000 bales (fully 4,800,000 bales more than the official goal) was moderately larger than the 13,696,000 bales of 1954 and well in excess of the 1944-53 average of 12,952,000 bales. Per-acre yields of the long-staple American-Egyptian cotton were reduced to 540 lb. per acre as compared with 589 lb. in 1954; the 1944-53 average was only 357 lb. per acre. The indicated crop of 46,200 bales

was larger than the 42,100 bales of 1954 and much larger than the 29,600-bale average for 1944-53.

Prices remained close to the official support price average of 31.58 cents per pound on the 1954 crop and 31.70 cents per pound on the 1955 crop until late in the harvest period, then broke rather sharply 2 or 3 cents below the support. The average support price on 1955 crop extra long staple was 55.20 cents per pound as compared with 65.25 cents for the 1954 crop.

Contrary to earlier anticipation of a decrease, the cotton carry-over at the beginning of the 1955 harvest was 11,100,000 bales, 1,400,000 bales more than in 1954 and the largest since Aug. 1, 1945. Approximately 8,134,000 bales of this total carry-over were included in the price support operations of the Commodity Credit corporation, hence were not available to the free market unless the price should rise.

The export of U.S. cotton in 1954-55 was only 3,585,000 bales, an 8% decrease as compared with the previous year and far below the 4,500,000 bales officially estimated at the beginning of the season. Exports to Japan declined sharply in 1954-55, to 678,000 bales (1,005,000 in 1953-54); France (416,000 bales), Germany (350,000 bales) and Italy (249,000 bales) showed more moderate declines. Exports to Canada (307,000 bales) and to the Republic of Korea (170,000 bales) were sharply increased, whereas the U.K. continued at about 421,000 bales.

Lesser exports and decreased domestic consumption (8,800,000 bales against 9,200,000 bales estimated in Oct. 1954) resulted in the largest carry-over since 1945—11,100,000 bales on Aug. 1, 1955. The carry-over, added to the new crop, gave a supply of about 26,000,000 bales against which it appeared that disappearance might total 13,000,000 bales, leaving a new record carry-over probable in 1956.

Understandably, the cotton situation received much high level attention in 1955. After what was described as "protracted wrangle" it was announced that the government would make a move before Jan. 1, 1956, to cut prices on exports, but after that date as many as 1,000,000 bales of the surplus might be offered at competitive prices.

World Cotton Production and Trade.—World cotton production of 1955-56 was estimated at a new record high of 40,800,000 bales, or about 7% more than the 38,410,000 bales of 1954-55. (See Table II.) Egyptian farmers planted an estimate

Table II.—Cotton Production of the Principal Producing Countries
(in 000 500-lb. bales)

Country	1955*	1954	Average, 1945-49	Average, 1935-49
United States	14,843	13,696	12,104	13,140
India	4,200	4,250	2,304	5,340
China (including Manchuria)		3,100	1,939	2,850
Mexico	2,050	1,780	577	330
Brazil		1,630	1,352	1,950
Egypt	1,806	1,598	1,456	1,890
Pakistan	1,400	1,300	1,024	
Turkey	675	650	268	240
Argentina		530	427	280
Peru	495	510	308	370
Anglo-Egyptian Sudan		407	246	240
Uganda		250	227	280

*Indicated. †Includes Pakistan.

1,883,000 ac., about 15% more than in 1954 and 39% more than in 1953 but 10% less than the postwar peak planting of 2,050,000 ac. in 1951. Minimum guaranteed prices to Egyptian growers for the 1955 crop ranged from about 32 cents per pound for Ashmouni type to about 40 cents per pound for Karnak type. Egypt exported only 660,000 bales during the first seven months of the crop year 1954-55, as compared with 863,000 bales in the comparable period of the previous year.

The International Cotton Advisory committee met in Paris in June. It indicated that the world surplus of cotton had resulted from postwar economic development, technical advances in production and the continuing high level of cotton prices. It initiated a study to ascertain governmental policies affecting the consumption of cotton and competing fibres. Its next meet-

was to be in Washington, D.C., probably in May 1956.

Linters.—The 1955-56 U.S. supply of cotton linters, including a new crop of at least 1,700,000 bales and imports of 200,000 bales, was estimated at 3,400,000 bales, about the same as in 1954-55. Probable usage was estimated at 1,700,000 bales, leaving a probable carry-over of 1,700,000 bales at year's end. Exports, mostly to Germany, U.K., France and Japan, during 1954-55 amounted to 310,000 bales, against imports of 166,000 bales, mostly from Mexico, the U.S.S.R. and Brazil. Prices declined as much as one-fifth during 1954-55, to about 8.2 cents per pound for No. 2 grade and 9.75 cents per pound for purified linters.

Cottonseed.—Production of this oilseed was indicated at 3,119,000 tons as compared with 5,720,000 tons in 1954. Official price support on the 1955 crop was a loan of \$46 per ton as compared with \$54 per ton in 1954, or purchase at \$42 per ton (\$50 in 1954). (See also TEXTILE INDUSTRY.) (J. K. R.)

Cottonseed Oil: see VEGETABLE OILS AND ANIMAL FATS.

Council of Europe: see EUROPEAN UNITY.

Counterfeiting: see SECRET SERVICE, U.S.

Countries of the World, Areas and Populations of the: see AREAS AND POPULATIONS OF THE COUNTRIES OF THE WORLD.

Courts: see LAW.

Cranberries: see FRUIT.

Credit, Consumer: see CONSUMER CREDIT.

Credit Unions: see CO-OPERATIVES; FARM CREDIT SYSTEM.

Crime. **United States.**—Crime-reporting procedures in the U.S. distinguish between part i and part ii offenses. Categories of crimes that are most likely to be known to the police are included in the first group. Since most part ii crimes become known only when arrests are made, crime statistics for these offenses on a national basis are not available. The number of arrests cannot be taken as a measure of the amount of part ii crime. Neither is there assurance that the number of persons arrested for any part ii offense will remain in constant proportion to the total number of crimes in that category; in consequence, changes in arrest rates cannot be taken as evidence of similar changes in crime rates.

The first six months of 1955 experienced a reduction in the total number of part i crimes as compared with the same period in 1954, thus engendering hope that the upward crime trend of the past seven years had been checked if not reversed. The number of crimes reported was fewer than during the same period in 1954 in five classes (murder and nonnegligent manslaughter, manslaughter by negligence, robbery, burglary and auto theft) and greater in three (rape, aggravated assault and larceny). The significance of the reduction in the total number of these crimes is emphasized by the fact that it occurred during a period of steadily increasing population.

Per Cent Change in Estimated Number of Part i Crimes Known to Police in 1954 Compared With Number in 1953, and in First Six Months of 1955 Compared With First Half of 1954

Part i crimes	Per cent change	
	1953-54	First half 1954-55
Murder and nonnegligent manslaughter	-3.8	-3.8
Manslaughter by negligence	-4.9	-0.3
Rape	+0.7	+6.3
Robbery	+6.8	-15.1
Aggravated assault	+1.0	+1.1
Burglary (breaking or entering)	+8.4	-3.3
Larceny (theft)	+5.8	+0.9
Auto theft	-4.7	-0.2
Total	+5.0	-0.7

The changes in arrest rates in certain classes of crimes during the past 15 years challenge sociological explanation. For

example, while the frequency of crimes against property showed a disproportionate increase, the rate of arrests for buying, receiving and possessing stolen property decreased 19%. Other arrest rates also decreased: prostitution 55%, gambling 13% and vagrancy 10%. In vivid contrast, sharp increases in the relative frequency of arrests were noted in other categories: narcotic drug law violations, 368%; carrying and possessing weapons, 117%; driving while intoxicated, 85%; sex offenses (except rape and prostitution), 61%.

That crime frequency is intimately related to population concentration was once more revealed by 1955 statistics. The average city in each population group had higher part i crime rates, with almost no exceptions, than the average in any group of smaller communities. Homicides and rapes were twice, robberies were four times and aggravated assaults were nearly three times as frequent, per unit population, in cities of more than 100,000 population as in smaller cities. On the same basis, auto thefts were 124%, burglaries 65% and larcenies 12% more numerous in these large cities than in the smaller ones.

The crime frequency of cities varied greatly, influenced not only by their size but also by their geographical location. The New England states as a group enjoyed a lower urban rate in each category of part i crimes than any other geographical division. For example, the east south central states (Alabama, Kentucky, Mississippi and Tennessee) had a murder and non-negligent manslaughter rate and the south Atlantic states (West Virginia, District of Columbia and the states on the Atlantic south of Pennsylvania) had an aggravated assault rate both of which were 13 times greater than those of New England. The combined crime rates of the three Pacific states also exceeded those of New England. The relative frequency of robbery was five times, of larceny three times and of burglary and auto theft twice as great as in New England.

The value of property reported stolen in 1954 in 421 cities of more than 25,000 and having a total population of 56,300,000 by the census of 1950 amounted to \$221,800,000; \$114,500,000 of this sum represented stolen automobiles of which 93.3% were recovered. Average property losses were less in 1954 than in 1953: robbery \$219 compared with \$235; burglary \$176, a decrease of \$4; auto theft \$963 compared with \$1,060 in 1953.

Statutory rapes increased 8.9% in 1954, bringing the number to substantially the same as for forcible rape. The majority of robberies were on streets and highways; fewer than 0.3% were against banks although the number of bank robberies increased 12 to a total of 124. A total of 47% of residence burglaries were committed during the daytime. Only 1.2% of all thefts were accomplished by picking pockets; this offense decreased 3% from 1953.

While 94.5% of all part i crimes were against property (robbery, burglary, larceny, auto theft), only 64.3% of persons arrested for part i offenses were charged with property crimes. These figures emphasize the fact that crimes against the person (criminal homicide and felonious assault) are more frequently cleared by arrest than crimes against property (76.8% as compared with 24.6%). Robbery, being similar to personal crimes in that the victim is present, had a higher clearance rate than other property crimes (40.6%).

Eleven per cent of arrested persons were women. The most frequent charge lodged against both men and women was drunkenness—43.7% of all men and 29.6% of all women arrested.

News accounts of assaults by youths that tended to lead to the conclusion that youth had gone on a rampage were only partly substantiated by arrest statistics. The percentage of arrested persons in each age group charged with aggravated assault decreased from 1953 to 1954: under 18 by 7.06%; under 21 by 3.74%; under 25 by 2.40%; all ages by 1.70%. The per cent of

arrested persons in the youth age groups charged with other assaults increased in the face of a decline of 17.48% for all ages. The increases were: 3.35% for those under 18; 3.83% for those under 21; 2.74% for those under 25.

Cities of more than 25,000 population experienced a 2.8% increase in the arrests of persons under 18 years of age while the total arrests decreased 0.5%. Arrests of youngsters in this age group remained almost unchanged in smaller cities. This age group accounted for 9.7% of all arrests; for 57.6% of all arrests for auto thefts; for 49.0% of all burglary arrests; and for 43.6% of all larceny arrests. More than 51% of arrests for property crimes were of persons under 21 years of age, while for crimes against the person, this age group represented only 14% of the arrests. (See also FEDERAL BUREAU OF INVESTIGATION; JUVENILE DELINQUENCY; LAW; SECRET SERVICE, U.S.)

(O. W. W.)

International.—During the year two important international conferences were held. The first UN congress on the prevention of crime and the treatment of offenders took place in August at Geneva, Switz., and was concerned mainly with penal administration, including also a section on juvenile delinquency. The third conference of the International Society of Criminology was held in London, the central theme being the subject of recidivism. It was attended by experts in different disciplines from countries in Europe, Asia and America.

England and Wales.—A further decrease in the total of indictable offenses occurred in 1954. The total figure was now lower than in 1945 though still appreciably higher than in 1938. The decrease was particularly noticeable in offenses by children under 14.

	1954	1945	1938
Total of indictable offenses known to the police . . .	434,327	478,394	283,220
Larceny	285,199	323,310	199,951
Receiving	6,468	10,132	3,433
Sexual Offenses	16,096	8,546	5,018
Violence against the person	7,506	4,743	2,721

TENEMENT DWELLERS of New York city watching police in a two-hour gun battle with August Robles, suspected of murder, Feb. 20, 1955



Although the rise in fraud and false pretenses which had continued steadily since 1945 was checked, there was a further rise in sexual offenses and violence against the person. The proportion of offenses cleared up by the police was 49.2% and continued to approach the pre-World War II figure of 50.1%. Whereas there was a decrease of 8.1% in the number found guilty of indictable offenses, the corresponding figure for non-indictable offenses increased by 5.5%. Broken down into age groups, 19% were under 14; 14% between 14 and 17; 11% between 17 and 21; 21% between 21 and 30; and 35% were over 30.

As in 1953, larceny, breaking and entering and receiving accounted for 83% of people found guilty of indictable offenses. The total number of findings of guilt for 100 different persons found guilty had risen since 1950. The increase in the number of sex offenders took place mainly in the 17-21 age group, and in violence against the person in the age group 14 to 30. While there was a slight decrease in the number of murders from 19 in 1953 to 25 in 1954 (in 1938 the number was 23) the figure for attempted murder showed a marked increase from 25 to 15 in 1938).

The peak age for crime in 1954 was 14 in the case of both males and females. Though this represented little change from the prewar figure for males, in the case of females the peak had decreased from 19 which was the peak age in 1938. (See also POLICE; PRISONS.)

(J. C. SR.)

Crockett, Davy

U.S. historico-legendary figure whose prototype was the frontiersman David Crockett (1786-1836), of whom a biographical notice will be found in *Encyclopædia Britannica*.

He was the central figure of a national fad among children of the United States during 1955, which began with a series of colour television films by Walt Disney, starring Fess Parker as Davy, featuring a catchy song, "The Ballad of Davy Crockett" (Tenn. Blackburn and G. Bruns). Recorded by Bill Hayes, the son



THE BATTLE OF THE ALAMO re-enacted by young Davy Crocketts in 1955

became a national hit and gave further momentum to the Crockett craze. Soon articles of children's clothes—especially Crockett coonskin caps and leather jackets—appeared in the nation's stores, followed by dozens of other items ranging from soap to bedspreads and balloons to bicycles—all avidly purchased by children and their parents. By mid-May 1955 sales of Crockett merchandise had reached an estimated \$100,000,000 and were expected to total perhaps twice that amount by the end of the year. New editions of David Crockett's autobiography (1834) appeared, with advance sales in the millions. Sheet music sales of the "Ballad" passed the 500,000 mark, and Disney remade his series of TV films into a full-length motion picture that was viewed by capacity crowds. By the fall of 1955, however, the Crockett fad had waned.

Crude Oil: see PETROLEUM.

Cuba. The republic of Cuba occupies the entire island which lies between 20° and 25° N. lat. and 74° and 85° W. long. The main island and numerous small islands under Cuban sovereignty have an aggregate area of 44,217 sq.mi. The population (census, Jan. 28, 1953, revised figures of June 1954) was 5,823,187. Havana, with a population of 1,157,445 (1953 census), is the capital and largest city. Other large cities and their populations (1953) are Bayamo 143,617, Camagüey 204,154, Guantánamo 125,731, Holguín 226,571, Morón 105,131, Palma Soriano 100,157, Sancti Spíritus 115,484, Santiago de Cuba 166,189, and Victoria de las Tunas 131,183.

History.—Fulgencio Batista, elected president on Nov. 1, 1954, was inaugurated on Feb. 24, 1955, when congress began its first constitutional session of the year. A program of economic rehabilitation of the nation got under way, the problem of sugar policy being dealt with first. Cuba's economic life largely revolves around sugar; the purchasing power of the Cuban people as a whole rises and falls with the consumption of Cuba's primary product. During 1955 there were repeated threats to cut down Cuba's share in the growth of the market for sugar in the United States, even in advance of the expiration date of the sugar act under which all quotas are fixed (Dec. 31, 1956). These threats had a disquieting effect upon sugar production,

already drastically cut back by the Cuban government in 1954. Exportation of sugar was increased over that of 1954, largely by reason of unexpected underproduction in the U.S.S.R. and several Asiatic countries, which lie outside the jurisdiction of the World Sugar agreement, under which Cuba can count upon 42% of the sector of the world market subject to that agreement. Nearly 500,000 tons were sent to the Soviet Union, 138,000 tons to Japan and substantial tonnage to India and other areas not normally importing sugar. Because of this circumstance, a somewhat better tone developed in the business world during the second half of 1955.

On Jan. 27 there was promulgated law-decree 1589 of 1954, which set up the Bank of Economic and Social Development. This took the place of the Fund for Economic and Social Development, established in May 1954. The bank was to be autonomous, with a capital of \$15,000,000. It had a four-year program of furnishing \$350,000,000 in long-term, medium-term and short-term credit to Cuban producers of all categories, designed to encourage establishment of new industries and to accelerate diversification of the nation's economy. It was designed to relieve the national government of the necessity of dealing directly with every economic emergency which might arise.

The government felt strong enough to invite all political exiles and fugitives to return home, under full guarantees. Former Pres. Carlos Prío Socarrás returned quietly. Political tranquility enabled the president to get through the year with a minimum of friction in congress, and no retirements from his cabinet except one, that of Carlos Saladrigas, secretary of state for foreign relations, because of illness.

When the second session of congress began, on Sept. 19, the need for extra revenue was such as to result in a request for a tax on capital gains and a new stamp tax. The capital gains tax ranged from ½ of 1% on a gain of \$10,000 to a maximum of 18% on capital gains in excess of \$1,000,000.

A third oil refinery was begun in Santiago, destined by the end of the year to raise to 65,000 bbl. the aggregate daily production of all three refineries.

Severe damage was caused by a hurricane in eastern Cuba, around Baracoa, in September. (C. E. Mc.)

Education.—In the school year 1952-53 public primary schools had an enrolment of 634,924 and 23,163 teachers; private schools had 98,724 students. There were 21 institutes for secondary education with 26,413 students; 10 normal schools with 1,817 students; and 45 other schools with 11,545 students. University education was available at the University of Havana (18,379 students), Oriente university (Santiago de Cuba) (1,256), Santa Clara university (Santa Clara) (767) and the Catholic university of Villanova (Havana) (523).

Finance.—The monetary unit is the peso, officially pegged at par with the U.S. dollar. The budget for the fiscal year 1954-55 (July 1-June 30) was placed initially at \$311,414,817. Total revenues in the calendar year 1954 were \$292,883,120. On June 30, 1955, the consolidated national debt amounted to \$463,401,800. Currency in circulation (May 31, 1955) was \$395,000,000; demand deposits, \$491,000,000. The U.S. department of commerce estimated U.S. direct investments in 1954 at \$713,000,000, of which public utility investments accounted for \$303,000,000. The cost-of-living index (food, Havana) stood at 88 in May 1955 (1948=100). National income was estimated at \$1,715,000,000 in 1954.

Trade and Communications.—Exports in 1954 totalled \$539,047,690; imports (estimated), \$470,000,000 (1953: \$489,733,278). The chief exports in 1954 were sugar (80%), tobacco and products (8%), nickel (2%) and molasses (2%); leading customers, the U.S. (73%), India (4%), Japan (4%), the U.K. (4%) and French Morocco (2%). Leading imports in 1953 were foodstuffs and beverages (33%), machinery and apparatus (17%), stone, earth, ore, glass and clay products (11%) and metals and manufactures (9%); leading suppliers, the U.S. (76%), the Netherlands Antilles (3%) and India (3%).

Railways (1949) included 3,017 mi. of main line, 660 mi. of sidings and yards and 7,870 mi. of industrial trackage. Roads (1949) included 1,720 mi. of paved highways and 600 mi. of improved highways. On Jan. 1, 1955, there were 112,154 privately owned automobiles, 39,290 trucks and 4,735 buses. Telephones (Jan. 1, 1954) numbered 141,055, 89.8% of which were automatic and 74% of which were located in Havana.

Agriculture.—Production of sugar in the 1954-55 season, limited by government decree, was 4,924,200 short tons; that of blackstrap molasses, 197,752,073 gal.; high-test molasses, 231,482,809 gal. Production es-

timates for other crops in 1954-55 included rice (rough) 340,000,000 lb.; tobacco (1954) 110,700,000 lb.; coffee 643,000 bags of 132 lb. each; cacao 5,578,000 lb.; oranges 1,625,000 boxes of 70 lb. each; grapefruit 190,000 boxes of 80 lb. each; henequen (1954) 32,703,000 lb. In 1951-52 there were an estimated 4,033,000 cattle, 1,286,000 pigs and 194,000 sheep.

Manufactures.—Production in 1954 included cement 420,000 metric tons; rum 10,756,954 l.; beer 120,212,398 l.; alcohol 174,150,926 l. Sales of electric energy by the one large company (representing about 90% of total production) were 928,000,000 kw.hr.

Minerals.—Copper production totalled 16,773 short tons in 1954. Exports included nickel 19,318 metric tons; manganese ore 234,710 tons; iron ore 76,392 tons; chrome ore 8,945 tons. (J. W. Mw.)

Curaçao: see NETHERLANDS ANTILLES.

Curling. The Gordon International medal was returned to Canada when rinks representing the Canadian branch of the Royal Caledonian Curling club defeated members of the Grand National Curling club of America in the 1955 competition. The dominion players won by 603 to 373 at Montreal, Que., for their 40th victory in this annual rivalry. The United States had been triumphant in 20 of the matches. The American season was featured by the visit of 20 Scottish curlers from the Royal Caledonian club who engaged in a series of exhibitions and matches during a tour that covered 10,000 mi. Among the highlights of their trip was a 166-89 victory over Grand National representatives from the metropolitan New York area. The 16-match series was played Feb. 6-7 at the St. Andrew's Golf club at Mount Hope, N.Y. Willie Piper was the only all-winning Scottish skip, taking three matches. On the first day of play, the Westchester Wicks, a women's organization skipped by Mrs. Frank S. Baker, defeated the Scots, 6-5.

Another bright spot of the campaign was the international centennial bonspiel of the New York Caledonians played at St. Andrew's. The Thistle club of Montreal, led by Dick Walsh, routed two rivals on the final day to gain first prize. In a scheduled 14-end final the Thistles defeated Mahopac (N.Y.), skipped by Jock MacFarlane, 19-5. The Thistles had won their semifinal from Caledonia No. 1, skipped by Frank S. Baker. The Utica (N.Y.) No. 1 rink, skipped by Fred Parkinson, set back Utica No. 2 by 18-8 to capture the Gordon Grand National medal at Schenectady, N.Y. The No. 1 rink from the Country club of Brookline, Mass., with W. Donald Swan, skip, won the Douglas medal in a three-day bonspiel at St. Andrew's. The winners beat Schenectady No. 2 by 12-11 in the final. The Griffith medal for the consolation flight went to Schenectady's No. 1 group. In the midwest, where the sport continued to grow, the annual championship of the Midwest association at La Crosse, Wis., climaxed the season. Frank Kleffman's team from Hibbing, Minn. (region 6), took the laurels by halting the Rogers rink, defending titleholder, 12-3, in the final day's match. The U.S. women's association championship was taken by the Wauwatosa (Wis.) Granites. Mrs. Erwin Nell, skip, Mrs. Ben Dunlop, Mrs. Tillman Bruett and Mrs. Fred Rathkamp comprised the winning team. The Heather club of Chicago won both the Indian Hill and Exmoor trophies in women's play and the Utica club Glen Garries gained the Skokie trophy.

Other winning teams, with skips in parentheses, included the following:

- Northwest championship—Superior, Wis. (Ray Somerville)
- Midwest association bonspiel—Duluth, Minn. (Ed Nicoliason)
- Detroit international, grand aggregate—Wauwatosa, Wis. (Luke Collins)
- Manitoba, grand aggregate—Manitou (Bill Sharpe)
- British Consols trophy—Strathcona C.C., Winnipeg (Bill Sharpe)
- Quebec international championship—Club Jacques-Cartier, Quebec (G. Amyot)
- Quebec grand aggregate—Bathurst, N.B. (Charles McArdle)
- Chateau international—Etchemin club, St. Romuald, P.Q. (N. Lemelin)
- Omega international—Bathurst (Charles McArdle)
- François Jobin Gold cup—Bathurst (R. A. Archibald) (T. V. H.)

Currency: see COINAGE; EXCHANGE CONTROL AND EXCHANGE RATES. See also under various countries.

Cycling. Jack Disney of Altadena, Calif., won national senior open laurels for the second successive year in the 1955 championships of the Amateur Bicycle League of America. Taking first in the half-mile, mile and 5-mile contests, Disney scored 21 points in the competition held at Flushing Meadow track, Flushing, L.I., Aug. 27-28. Arthur Longs, Fitchburg, Mass., was runner-up with 12 points. Pat DeCollibus, Buffalo, N.Y., became the new junior titleholder after winning two races and placing second in another for 19 points. Jean Robinson of Detroit, Mich., regained the women's national title with 21 points, sweeping the half-mile, mile and 2-mile races. Nancy Nieman, Detroit's defending champion, was second with 15 points.

Ernie Matteis of Somerville, N.J., won United States 50-mile road racing honours on Sept. 11. He was timed in 2 hr. 15 min. 23 sec. over a hilly Fairmount Park course in Philadelphia. Ed John Chiselko, also of Somerville, was second. Arthur Longs was among the year's racing stars, numbering among his victories first prizes in the Eastern 75-mile championship and the first two races of a series to determine a national amateur around champion. Ruppert Walzl of Brooklyn, N.Y., set a new U.S. mark of 1 hr. 2 min. 1.4 sec. in winning the Middle Atlantic 25-mile title.

World Championships.—Stan Ockers, Belgium, won professional road racing laurels at Frascati, Italy. Ockers covered the course of 293.132 km. in 8 hr. 43 min. 29.2 sec. The 90° heat forced many riders, including Louison Bobet, defending champion from France, and Fausto Coppi, Italian ace, to withdraw. Italy's Sante Ranucci led home Lino Grassi, Italy, in a close duel for world amateur honours. Gino Bruni, Italy, placed third.

Tour de France.—Louison Bobet captured cycling's most difficult race for the third successive year, a feat unparalleled in the 42-year-old history of the classic. Bobet finished the 22-day grind of about 2,704 mi. only 4 min. 53 sec. in front of Jean Brankart, Belgium, his nearest rival. A field of 130 started the tour that wound through four countries, but only 69 finished. Earlier in the year, Bobet had lost his French national road cycling title to Andre Darrigade. (T. V. H.)

C.Y.O.: see SOCIETIES AND ASSOCIATIONS, U.S.: Catholic Organizations for Youth.

Cyprus. Cyprus is a British island colony and strategic base in the eastern Mediterranean. Area: 3,572 sq. mi. Pop.: (1946 census) 450,114 (80.3% Orthodox Greeks; 17.9% Moslem Turks); (1954 est.) 517,000; 10% of the population can speak English. Chief towns (pop., 1953): Nicosia (cap., 40,200; Limassol 27,000; Famagusta 20,500; Larnaca 16,300. Governors in 1955: Sir Robert Armitage and (from Oct. 1955) Field Marshal Sir John Harding.

History.—A more sinister phase of Cyprus affairs opened after Greece's failure in Dec. 1954 to win a place on the United Nations agenda for discussions on the island's future. The terrorist organization EOKA became bolder and was identified with murder, bomb attacks and thefts of arms and ammunition. Archbishop Makarios, leader of the *enosis* movement (which demanded self-determination as much as union with Greece) intensified his campaign against the government, and the colonial office spoke of evidence that he was enlisting Communist support. A. T. Lennox-Boyd, United Kingdom secretary of state for the colonies, visited the island in July 1955, when he met the archbishop; and in September Greek and Turkish delegates w

to London for a conference. This was suspended on Sept. 7 with neither side accepting British proposals for a large measure of self-government. The Turks remained highly sensitive to any thought of change in Cyprus' status and severe anti-Greek riots in Turkey in September damaged feelings between the two countries and endangered NATO relations.

In the meantime Greece again sought the inclusion on the UN agenda of self-determination in Cyprus, but was outvoted. A serious riot occurred in Nicosia, when the British institute was burned and ransacked. On Sept. 25 the British government announced that in view of Cyprus' importance as a NATO base and the need for concerted action by all security forces to keep law and order, Field Marshal Sir John Harding would take over the governorship from Sir Robert Armitage. Harding arrived in Cyprus at the beginning of October (considerable troop reinforcements already having begun) and at once held talks with Archbishop Makarios. No agreement was reached, but there were signs that the Greek Cypriot Church's political front was divided on the question of self-government before self-determination. (See GREECE.) (J. J. Ty.)

Education.—Schools (1953-54): elementary 730, pupils (1953) 67,994; secondary 57, pupils 18,353; agricultural 2; trade 1; teachers' training colleges 2, pupils (1953) 217.

Finance and Trade.—Monetary unit: piastra (180 piasstras = £1 sterling = \$2.80 U.S.). Budget (ordinary, 1955 est.): revenue £9,658,165, expenditure £9,562,023; development (1954 est.), revenue £162,740, expenditure £1,373,658. Foreign trade (1954): imports £23,600,000; exports £17,000,000. Main products and exports: pyrites (955,000 metric tons, 1954), asbestos, copper, citrus, carobs, wine, vines, olives, potatoes.

Czechoslovakia. A people's republic of central Europe, Czechoslovakia is bounded west and northwest by Germany, north and northeast by Poland, east by the U.S.S.R., south by Hungary and Austria. Area: 49,354 sq.mi. (including autonomous Slovakia, 18,902 sq.mi.). Pop. (1954 est.): 12,948,000 (including Slovakia 3,750,000). Language (1954 est.): Czech 65.4%; Slovak 27.7%; German 1.4%; Hungarian 3.1%; Ukrainian 1.4%; Polish 0.7%. Religion (1930

census): Roman Catholic (Latin rite) 73.5%; Protestant (all denominations) 7.7%; Czechoslovak Church 5.4%; Greek Catholic 4%; Greek Orthodox 1%; Jewish 2.4%; atheist 5.8%. Chief towns (pop., 1947 census): Prague (cap.) 922,284; Brno 273,127; Moravska Ostrava 180,960; Bratislava 165,134; Plzen (Pilsen) 117,814; Olomouc 58,617; Usti nad Labem 56,328; Liberec 52,798; Kosice 51,689. First secretary of the Communist party of Czechoslovakia in 1955, Antonin Novotny; president of the republic, Antonin Zapotocky; chairman of the council of ministers, Vilem Siroky.

History.—As a result of the elections to the national assembly which took place on Nov. 28, 1954, the Communist leaders of Czechoslovakia were able to claim that about 98% of the population was in favour of the regime and that "the enemies of our regime were not able to do better than 2%." The electorate were in fact offered no choice of candidates and were placed under considerable pressure to participate in what was mainly a nation-wide political demonstration. The new government appointed after the elections, with Siroky as prime minister, differed only in detail from its predecessor. No important changes in the leadership of government or party took place during 1955.

At the first meeting of the new national assembly Siroky outlined his government's policy for 1955 and laid great stress on the need for greater agricultural output, which had remained at about the pre-World War II level. This was the government's most serious preoccupation throughout the year. While asserting his faith in the collective farms, which already embraced 44% of the country's arable land, as the basis for improved production, the prime minister promised "full support" for individual farmers and condemned the use of pressure to force them into the collectives. In the spring prices offered by the government for deliveries of farm produce were raised and financial incentives were offered to persons willing to enter farming.

In the middle of the year, however, the authorities reverted to a firmer farm policy. At a special meeting of the party central committee in June, Novotny, the first secretary, called

GYMNASTS performing in the first national Spartakiade held at Prague, Czech., in June and July 1955



for "a systematic persuasion drive to convince small holders and medium farmers of the necessity for joining collective farms and setting up new ones." They must not wait, he said, for "spontaneous progress." This appeal was followed in August by a campaign to "suppress" the kulaks, or wealthier farmers. Bad weather and lack of manpower were reported to be threatening the harvest later in the year.

By contrast with the situation in agriculture the authorities appeared satisfied with the progress made in industry, the output of which was said to have doubled since 1949. The 1955 plan conformed to the principle of priority for heavy industry and provided for an increase in military expenditure from 8.9% to 12.1% of the total budget. The revised plan for 1954 was said to have been fulfilled in most respects. Reductions in the prices of consumer goods, except for food, were announced in March. New trade union rules introduced in May were intended to instill a greater sense of discipline "into the soul of every worker and employee."

At the end of October, however, the authorities were forced to admit a serious crisis in the coal-mining industry resulting from the shortage of manpower and failure to recruit new labour. "Extraordinary measures" were decreed for recruiting labour to avoid a major fuel crisis.

An amnesty was proclaimed in May for certain categories of relatively minor offenders. It did not affect political prisoners serving long sentences, but it was extended to cover persons who had fled the country illegally. This was made the basis of an intensive campaign to persuade émigrés to return.

In common with the other Communist countries of eastern Europe, Czechoslovakia became a member of the collective defense treaty organization set up in Warsaw in May. In all pronouncements on foreign affairs the Czech and Slovak leaders echoed the policy of the Soviet government. In September they announced a reduction of 34,000 in the size of the armed forces, following similar moves by other Communist states. (See also EASTERN EUROPEAN ECONOMIC PLANNING.) (D. Fd.)

Education.—Schools (1953): nursery, pupils 165,000; primary 9,045, pupils 1,030,000; higher primary 2,745, pupils 473,000; secondary 304, pupils 80,300; vocational, pupils 113,000; institutions of higher education 17, students 42,000. There were also Hungarian, German, Ukrainian and Polish schools.

Agriculture.—No reliable data published since 1951. Main crops (metric tons, 1948-50): wheat 1,485,000; barley 1,034,000; oats 972,000; rye 1,233,000; maize 239,000; potatoes 6,780,000; sugar beet 4,455,000. Livestock: cattle (1951) 4,100,000; pigs (1951) 3,700,000; sheep (1950) 480,000; horses (1950) 640,000.

Industry.—Employment in manufacturing (Nov. 1949): 1,477,700. Production (metric tons, 1954 est.): coal 20,200,000; coke 5,400,000; lignite 35,000,000; crude oil 180,000; pig iron 2,900,000; steel 4,500,000; electricity 13,500,000,000 kw.hr.; cement (1949) 1,738,000.

Finance.—Budget (1954 est.): revenue 87,800,000,000 koruny; expenditure 87,600,000,000 koruny, including 49,000,000,000 koruny invested in the national economy. Monetary unit: koruna, revalued on May 30, 1953, with an official exchange rate, high and fictitious, of 7.20 koruny to the U.S. dollar as compared with the previous exchange rate of 50 koruny to the dollar.

Foreign Trade.—(1950) Imports U.S. \$653,000,000; exports U.S. \$800,000,000. Main sources of imports (1950): U.S.S.R. 29.4%; Poland, Rumania, Hungary and Bulgaria 26.0%. Main destinations of exports: U.S.S.R. 28.0%; four other eastern European countries 21.1%. Trade with the Soviet bloc considerably increased between 1950 and 1953, namely: with the U.S.S.R. by 63%, with Poland by 44%, with Rumania by 137%, with Hungary by 100%, with Bulgaria by 65%. Czechoslovak trade with 17 western European countries (1953): exports U.S. \$144,300,000; imports U.S. \$83,500,000.

Transport and Communications.—Roads (1946): 43,969 mi. Licensed motor vehicles (Dec. 1950): cars 165,000, commercial 65,000. Railways (1947): 8,161 mi. Air transport (1953 est.): 1,689,000 km. flown; 20,541,000 passenger-kilometres. Telephones (1954 est.): 350,700. Radio receiving sets (Dec. 1952): 2,717,000, including 320,000 in Slovakia.

Dahomey: see FRENCH UNION; FRENCH WEST AFRICA.

Dairy Products. U.S. milk cows in June 1955 numbered 22,067,000 as compared with 22,425,000 a year earlier. Nevertheless, milk production continued at a

record level, the total for the year being indicated as slightly greater than the 123,700,000,000 lb. of 1954, with some further expansion likely in 1956.

Government price supports were continued at 56.2 cents per pound for butter fat and \$3.15 per hundredweight for manufacturing milk, but the amounts offered to the government were reduced by about 30% as compared with 1954. A major fraction of the Commodity Credit corporation stockpile of dairy products was disposed of, largely overseas, and disposals exceeded acquisitions during the year.

Prices received by farmers for all wholesale milk averaged \$4.16 per hundredweight in September as compared with \$4.11 per hundredweight a year earlier and an average of \$4.42 per hundredweight for the 1947-49 period. Prices paid to farmers who retailed milk averaged 20.9 cents per quart in September, slightly higher than the 20.6 cents prevailing a year before and well above the 18.3-cent average of 1947-49. Butterfat in cream at 56.6 cents per pound was slightly above the 55.8 cents of Sept. 1954 but much below the average 71.2 cents per pound of 1947-49.

Butter production in 1955 declined below the 1954 rate of 1,449,000,000 lb. Consumption increased 3% over 1954 to 9.1 lb. per capita as compared with a low of 8.5 lb. per capita in 1953. The use of margarine meanwhile declined slightly to 8.1 lb. per capita as compared with a peak level in 1954 of 8.4 lb. per capita. Government purchases of butter declined throughout the year; stocks in the hands of the C.C.C. as of June 30 were 273,895,000 lb. valued at \$169,347,000 as compared with 467,057,000 lb. valued at \$304,309,000 a year previously. Moderate amounts of butter oil were distributed in India and Pakistan and "American ghee."

Cheese production was slightly lower in 1955 than the 1,363,000,000 lb. of 1954. In particular, less American cheese was produced; some minor types showed an increase. Consumption per person was indicated as 7.9 lb., or 4% more than in 1954. Privately held stocks increased and the government-held stockpile dropped to 349,615,000 lb. valued at \$139,874,000 as of June 30, as compared with 419,082,000 lb. valued at \$167,598,000 as of June 30, 1954. The comptroller general of the U.S. in 1955 questioned the \$2,000,000 involved in the purchase-resale transaction of March-April 1954 under which the Commodity Credit corporation, as dairy price supports were being lowered from 90% to 75% of parity, paid 37 cents per pound for cheese in dealers' warehouses, then sold it back to them at 34½ cents per pound without taking actual possession.

Ice cream production and consumption were moderate, larger in 1955 than the 71,350,000 gal. of 1954, in spite of further rapid expansion in competitive marketing of "Mellorin type" frozen desserts (utilizing vegetable oils instead of butterfat), of which 28,260,000 gal. were produced in 1954 in the states permitting such production.

World milk production in 1955 increased to a level more than

Milk Production in Principal Producing Countries

Country	(In millions of pounds)			
	Preliminary 1954	1953	1952	Average 1934-53
United States	123,702	121,449	115,197	105,411
France	40,860	38,590	34,079	33,000
Western Germany	37,597	36,905	34,862	33,060
United Kingdom	24,195	23,572	22,454	18,420
Italy	18,523	18,001	13,735	13,735
Canada	16,884	16,449	15,735	15,220
Australia	13,184	12,195	11,850	11,760
Netherlands	12,967	12,837	12,344	11,110
Denmark	11,898	11,856	11,019	11,680
Argentina	11,236	11,804	8,536	6,820
New Zealand	10,998	11,740	11,108	10,170

*Average, 1935-38.

†Average, 1935-39.

one-fifth above prewar, but only enough to meet 60% of the estimated minimum dietary needs of the world's population. Factory production of cheese and canned milk increased in 1955



WEBSTER DAM, Kansas. An aerial construction photograph made May 31, 1955. The dam was being built by the U.S. bureau of reclamation as part of the Missouri river basin project

but butter and dried milk declined. Factory butter produced in the principal countries in 1954 was 5,624,000,000 lb., and world production, including farm butter, was estimated at 9,545,000,000 lb. Cheese production, including farm cheese for the more important dairying countries, was estimated at 5,308,000,000 lb. in 1954 as compared with 5,214,000,000 lb. in 1953 and 3,530,000,000 lb. before World War II.

Milk production in Canada increased by about 2%; more than half of it was used for manufactured factory products. The government continued to buy butter at 58 cents per pound and exported some storage stocks at a lower price. England experienced an unusual summer shortage of fluid milk, and all manufacture of dairy products was temporarily discontinued.

Australia, with a new record milk production of 13,200,000,000 lb. for 1954-55, achieved record butter production of 423,000,000 lb. and increased export availability by about 50%. Cheese production was reduced by 10% to less than 100,000,000 lb.

(J. K. R.)

Dakar: see FRENCH WEST AFRICA.

Dams. World-wide interest in the construction of dams for the optimum development of water resources continued during 1955. Table I lists 15 of the important dams of the

world under construction or completed during 1955. The fifth International Congress on Large Dams, an assembly of 800 delegates, met in Paris May 31 to June 4 to review developments and progress in the science and art of dam design and construction.

Increased appropriations for dams resulted in 1955 in the United States as the policy of the federal government favoured multipurpose projects in partnership with local agencies. At the Dalles dam on the Columbia river, concrete was placed at 6,000 cu.yd. per day, with pours limited to night hours from June to September in order to keep temperatures and consequent shrinkage to a minimum. Upstream, many proposed dams were held in abeyance pending clarification of varying interests.

The world's largest rolled earth-fill dam, Oahe, on the Missouri river, required presoaking of the earth borrow areas with 55 in. of water supplementing the 16 in. of rain in order to obtain the proper proportion of moisture for compaction. At the same time, 28 8-in. drain holes, 100 ft. apart, 600 to 1,000 ft. long, were drilled into the bluff at the spillway stilling basin excavation to aid in the prevention of slides from excessive ground-water pressures. Uneven rebound of the 200-ft.-deep excavation required changes in plans. A unique 85-ton tunnelling machine bored through the shale of the Pierre formation at the rate of four feet per day to form the six tunnels for the outlet works. Upstream, Gavins Point, reregulating dam for Fort Randall, was closed July 31 with the aid of the huge 13-cu.yd.

Table I.—Chief Dams Completed or Under Construction During 1955

Name of dam	River	Place	Type	Maximum height (feet)	Crest length (feet)	Volume (cu. yd.)	Purpose*	Built by	Progress†
Bersimis	Bersimis	Quebec, Can.	Rock fill	200	2,200	3,800,000	P	Quebec Hydro-electric commission	U
Chattahoochee	Chattahoochee	Georgia, U.S.	Earth fill	200	1,630	4,145,000	F, N, P	U.S. army engineers	U
Capilano	Capilano	British Columbia, Can.	Concrete arch	325	640	150,000	W	Greater Vancouver Water district	C
Dalles	Columbia	Washington-Oregon, U.S.	Concrete gravity-rock fill	285	—	1,200,000 conc. 2,250,000 rock	N, P	U.S. army engineers	U
American	American	California, U.S.	Concrete gravity	350	1,400	1,200,000	I, F, P	U.S. army engineers	U
Pei Ho	Pei Ho	Anhui, China	Multiple arch	244	1,700	—	F, P	—	C
Gavins Point	Missouri	South Dakota, U.S.	Earth fill	74	8,700	18,000,000	F, N, P	U.S. army engineers	U
Grand Dixence	Dixence	Switzerland	Concrete gravity	584	1,600	2,352,000	P	Grand Dixence, S.A.	U
Mullardoch	Loch Mullardoch	Scotland	Concrete gravity	160	2,385	310,000	P	North of Scotland Hydroelectric board	U
Oahe	Missouri	South Dakota, U.S.	Earth fill	230	9,300	78,000,000	F, I, N, P	U.S. army engineers	U
Salinas	Snake, S. Fork	Idaho, U.S.	Earth fill	258	2,200	13,800,000	I, P	U.S. bureau of reclamation	U
Presidente Alemán	Rio Tonto	Mexico	Earth fill	200	2,700	11,000,000	I, N, F, P	Comision del Papaloapan	U
Roanoke Rapids	Roanoke	North Carolina, U.S.	Concrete gravity	72	2,965	250,000	P	Virginia Electric Power company	C
Terre Poncon	Durance	France	Earth fill	402	—	18,000,000	P	Electricité de France	U
Yishon	Kings, N. Fork	California, U.S.	Rock fill	250	3,350	3,680,000	P	Pacific Gas and Electric Corp.	U

*F=flood control; I=irrigation; N=navigation; P=power; W=water supply. †C=Completed in 1955; U=Under construction.

Table II.—World's Largest Dams

Type of dam	Name of dam	River	Location	Height (feet)	Length (feet)	Volume (cu.yd.)	Purpose†	Completed (year)
Concrete straight gravity	Grand Coulee	Columbia	Washington, U.S.	550	4,173	10,585,000	F,I,P	1942
Concrete arch-gravity	Hoover*	Colorado	Arizona-Nevada, U.S.	726	1,244	4,400,000	F,I,P	1933
Concrete arch	Tignes*	Isère	France	592	1,400	900,000	P	1953
Earth fill	Fort Peck	Missouri	Montana, U.S.	250	10,578	109,000,000	F,N,P	1940
Earth fill	Anderson Ranch*	Boise, S. Fork	Idaho, U.S.	456	1,350	9,600,000	F,I,P	1948
Rock fill	San Gabriel No. 1*	San Gabriel	California, U.S.	381	1,520	10,809,000	F	1937
Concrete multiple arch	Pensacola	Grand	Oklahoma, U.S.	152	5,625	500,000	F,P	1940
Concrete multiple arch	Bartlett*	Verde	Arizona, U.S.	287	1,063	182,000	I	1939
Concrete buttress	San Giacomo di Fraele	Adda	Italy	275	1,365	650,000	—	1950
Concrete buttress	Ancipa*	Tolina	Italy	305	750	380,000	—	1952

*Highest of its type.

†F=Flood Control; I=Irrigation; N=Navigation; P=Power.

electric drag line, after being delayed one month for completion of work at the intake.

The Long Sault dam, major element of the St. Lawrence International Hydro-electric Development, key to the St. Lawrence Seaway, began to take shape early in 1955 with the unwatering of its cofferdams. Cofferdams were also unwatered for the Barnhart Island powerhouse on June 23 after pumping out 65,000,000 gal. in eight days. The latter forms the dam across the north channel of the St. Lawrence river and, together with the Long Sault dam, floods the International rapids, creating the head for the great power development and the navigation pool for the seaway.

Work was also commenced on Iroquois dam, 30 mi. upstream, which would regulate the levels of Lake Ontario in place of the natural rock control which must be removed to facilitate navigation.

Power developments in France continued to feature arch dams in 1955 with the completion of 215-ft.-high, 575-ft.-long Couesque dam on the Truyère river and the construction of 250-ft.-high Cagnet dam on the Drac river. Another concrete arch, Drossen dam, on the Kaprun river in Austria, was also under construction in 1955. This dam, together with Mooser dam, would form Mooserboden reservoir, middle reservoir of the tremendous Glockner-Kaprun pumped-storage scheme. Another pumped-storage project, the Oberaar-Grimsel scheme, located in the glaciers of the Bernese Oberland in Switzerland, was completed in 1955 with the completion of Oberaar dam.

Sariyar dam, the 360-ft.-high concrete gravity dam on the Sakarya river in Turkey, reached the halfway mark in 1955, with concrete being placed at 57,000 cu.yd. per month. Development of the power at Zongo falls of the Inkisi river in the Belgian Congo was underway in 1955 as the diversion dam, Zongo I, neared completion.

Completion in 1955 of the Ghulam Mohamed barrage on the

Indus river in Lower Sind province of Pakistan culminated four years of work in intense heat and dust, as well as floods and diversion difficulties. The dam is 3,000 ft. long, made up principally of 44 gates 60 ft. long and 21 ft. high, with a ship lock. The dam supplies four feeder canals to irrigate nearly 3,000,000 ac., about two-thirds of which would be newly cultivated land.

Progress on the Snowy mountain project in Australia was marked by the completion ahead of schedule early in 1955 of the first element of the project, Guthega dam, at the junction of the Guthega river with the Snowy river. (See also IRRIGATION.) (B. O. M.)

Dance. Ballet.—While the New York City Ballet danced extensively in Europe during 1955, and Ballet Theatre toured South America, the Sadler's Wells Ballet, Festival Ballet of London, ten dancers from the Royal Danish Ballet and several companies of Spanish dancers appeared in America. A Japanese company danced in Europe; Martha Graham planned a tour of the orient.

United States.—The state department officially recognized the dance as an important part of its cultural exchange program. Under a plan administered by the American National Theatre and Academy, with the assistance of a dance advisory committee, the state department sponsored South American tours of Ballet Theatre and José Limon, and some of the European performances of the New York City Ballet. Graham's oriental tour, beginning in Nov. 1955, was under its auspices.

The New York City Ballet danced *The Nutcracker* for several weeks, breaking records for successive nightly performances of one ballet. Later the company produced *Roma*, choreographed by George Balanchine, music by Georges Bizet, and *Pas de Trois*, by Balanchine, music by Michael Glinka. *Ivesiana* was revised. In summer 1955 the company danced in Monte Carlo, Marseilles, Lyons, Florence, Rome, Bordeaux, Lisbon, Paris, Lausanne, Stuttgart, Amsterdam and The Hague. On its return to America it appeared in Los Angeles, San Francisco and Chicago.

Lincoln Kirstein resigned as managing director of the New York City centre but remained as director of the New York City Ballet. Janet Reed left the company; Melissa Hayden and Yvonne Mounsey rejoined it. Maria Tallchief returned during the European tour. Other leading dancers included Tanaquil Le Clerq, Diana Adams, Patricia Wilde, Jillana, André Eglevis, Nicholas Magallanes, Francisco Moncion, Herbert Bliss, T. Bolender, Roy Tobias and Jacques d'Amboise.

Ballet Theatre completed a transcontinental tour before its 15th anniversary season at the Metropolitan Opera house, New York city. Ballets added to the repertoire were *A Street Named Desire* and *The Sphinx*, both created by other companies. Antony Tudor revived his *Pillar of Fire*, *Lilac Garden*, *Romeo and Juliet*, the *Judgment of Paris* and *Gala Performance*. *Le Quatre*, *Bluebeard*, *Petrouchka* and *Three Virgins and the Devil* were restored to the repertoire. Leonide Massine restored his *Aleko* and *Mam'zelle Angot*.

Nora Kaye rejoined Ballet Theatre after a three-year absence. Alicia Alonso and Igor Youskevitch resigned to join the Ballet Russe de Monte Carlo. Rosella Hightower and Sonia Ar



CONSTRUCTION PHOTOGRAPH of the spillway of the dam for the Gorky hydroelectric station on the Volga river, U.S.S.R.

joined the company. Erik Bruhn, on leave of absence from the Royal Danish Ballet, toured with the company and partnered Alicia Markova in *Giselle* during the New York season. John Kriza, Ruth Ann Koesun, Lupe Serrano and Eric Braun were principal dancers; guests included Annabelle Lyon, Viola Essen, Tatiana Riabouchinska and Anton Dolin. Lucia Chase resumed roles she had created. Hugh Laing returned to the company. During Ballet Theatre's tour of South America, its Buenos Aires performances were briefly interrupted by the revolution which deposed President Juan Perón.

The Ballet Russe de Monte Carlo toured the United States, with Frederic Franklin as *maitre de ballet* and *premier danseur*. Igor Youskevitch was appointed artistic adviser as well as leading dancer. Maria Tallchief left the company in April, and Alonso signed a contract to join it later. Other artists included Nina Novak, Leon Danielian, Gertrude Tyven, Irina Borovska, Yvonne Chouteau and Victor Moreno. Mia Slavenska appeared as guest artist.

Sadler's Wells Ballet, directed by Ninette de Valois, began its fourth American tour with an autumn season at the Metropolitan Opera house, New York city, presenting the first American performances of its productions of *The Firebird*, *Coppélia*, *Tiresias*, *Les Sylphides*, *Scènes de Ballet*, *Rinaldo and Armida*, *The Lady and the Fool* and *Madame Chrysanthème*. Featured dancers were Margot Fonteyn, Beryl Grey, Svetlana Beriosova, Violetta Elvin, Rowena Jackson, Frederick Ashton, Michael Somes, Alexander Grant, John Hart, Alexis Rassine, Brian Shaw, David Blair and Philip Chatfield.

For the Metropolitan Opera Ballet, Zachary Solov choreographed *Vittorio*, music by Giuseppe Verdi. Principal dancers were Slavenska, Yurek Lazowski, Jean Lee Schoch, Judith Younger, Edward Caton and Solov, making his first Metropolitan Opera appearance as a dancer. Markova appeared in *Orfeo*.

The Bethsabée de Rothschild foundation sponsored a season of modern American dance at the ANTA theatre, New York city. Works by Martha Graham included *Ardent Song*, a revised version of *Theatre for a Voyage* and new choreography for Norman Dello Joio's score *St. Joan*, retitled *Seraphic Dialogue*. The José Limon company appeared in *The Traitor*, *Felipe el Loco* and other works. Anna Sokolow produced *Rooms* and Valerie Bettis revived *As I Lay Dying*. John Butler and Pearl Lang appeared with their companies. Other soloists included Janet Collins, Ann Halprin, Pauline Koner, Iris Mabry, Paul Draper and Daniel Nagrin.

An unprecedented number of Spanish dance companies appeared in New York city, including those of Antonio, Teresa and Luisillo, and Vincent Escudero.

Ted Shawn, director of the Jacob's Pillow Dance festival, brought ten members of the Royal Danish Ballet to America. Mona Vangsaa, Inge Sand, Kirsten Ralov, Mette Mollerup, Kirsten Petersen, Viveka Segerskog, Frank Schaufuss, Fred Bjoernsson, Stanley Williams and Flemming Flindt appeared in works by the 19th-century Danish choreographer Auguste Bournonville. Birgit Akeson made her American debut at the festival, at which Alonso, Bruhn, Slavenska, Merce Cunningham, Alexandra Danilova, Josefina Garcia, Carola Goya, Iva Kitchell, Matteo, Priyagopal, Ruth St. Denis and Xenia Zarina also appeared. Shawn danced the role of Lear in *Sundered Majesty*, choreographed by Myra Kinch.

At the American Dance festival, New London, Conn., Doris Humphrey choreographed *Airs and Graces*, with music by Pietro Locatelli, and revived *The Shakers*. Other new works included *Cherzo* and *Symphony for Strings*, choreographed by José Limon, *Idyl* and *The Antagonists*, by Ruth Currier, *Concertino* and *A Major*, by Pauline Koner, and *Satyros* and *Ballad*, choreographed jointly by Lavina Nielsen and Lucas Hoving.

The Brooklyn Academy of Music presented several major companies not seen elsewhere in New York city. Festival Ballet of London, directed by Dolin, appeared there after touring the United States and Canada. A short version of Bournonville's *Napoli* featured Toni Lander and Oleg Briansky; other artists were Nora Kovach, Nathalie Krassovska, Belinda Wright, Violette Verdy, Tamara Toumanova, Istvan Rabovsky and John Gilpin.

In Brooklyn the National Ballet of Canada, headed by Celia Franca, Lois Smith and David Adams, presented Tudor's *Offenbach in the Underworld*.

John Butler, choreographer of the New York City Opera for its spring season, resigned and was replaced by Ray Harrison. The Juillard Dance theatre was organized, and presented works by Humphrey and Sokolow.

Shanta Rao and Marcel Marceau made American debuts. Paul Draper, Angna Enters, May O'Donnell, Pearl Primus, Marina Svetlova, Sahomi Tachibana, the Dance Drama company and the ballet groups of William Dollar and Robert Joffrey made New York concert appearances. Danilova, Kitchell, Svetlova, José Greco, Ruthanna Boris, Frank Hobi, Mata and Hari and Miriam Marmein toured extensively.

The San Francisco Ballet presented Balanchine's *Apollo* and Lew Christensen's *Renard*. *The Nutcracker* was revised. Carmalita Maracci danced in Los Angeles, where Michel Panaieff presented his company in *Song Without Words*.

Ruth Page was choreographer of the Chicago Lyric theatre, with Patricia Wilde as guest ballerina. Ballet Guild of Chicago produced Page's ballets *The Triumph of Chastity* and *Spectre of Love*, and works by Romola James, Richard Ellis and Christine du Boulay. For the Stone-Camryn Ballet, Walter Camryn choreographed *Waltz Suite* and Bentley Stone a *Schubert Impromptu*.

The Southern Ballet, headed by Karen Conrad and Pittman Corry, produced *The Nutcracker* in Atlanta. The Dance council of Dallas was organized and presented original works by Texas choreographers.

Louis Horst received the Capezio award for service to the dance. Capezio, Inc., made a special grant to the dance department of the High School of Performing Arts, New York city. The Dance Business Group of America announced grants to Lang, Limon, the Dance Drama company, the Ballet guilds of Chicago and San Francisco and the Merry-Go-Rounders.

The Rockefeller foundation awarded grants to Ann Hutchinson of the Dance Notation bureau and to the Connecticut School of the Dance. The Henry Hadley medal for distinguished service to American music was given to Martha Graham.

England.—Sadler's Wells Ballet toured Italy and Great Britain late in 1954. Beryl Grey returned after a leave of absence. Beriosova was named ballerina. Ashton choreographed *Variations on a Theme of Purcell*, music by Benjamin Britten, *Madame Chrysanthème*, music by Alan Rawsthorne, and *Rinaldo and Armida*, music by Malcolm Arnold. *Ballabile* and *Les Sylphides* were revived, and John Cranko's *The Lady and the Fool* was added to the repertoire. Dolin made his final appearance as Satan in *Job*. De Valois was awarded the honorary degree of doctor of letters by Oxford university, and that of doctor of music by the University of Sheffield.

Sadler's Wells Theatre Ballet produced *Dances Concertantes* and *House of Birds*, both choreographed by Kenneth Macmillan. *Les Patineurs* was added to the repertoire, and *Café des Sports* received its first London performance. *Selina* was revived. The company began an extended tour of Great Britain. Maryon Lane, Annette Page and David Poole resigned to join the Sadler's Wells Ballet.

Festival Ballet returned from an American tour. Harald Lan-

der's *Etudes* was added to its repertoire. *Mademoiselle Fifi* was produced, with Danilova and Michael Maule as guest artists. Kenneth Melville joined the company.

Ballet Rambert toured Great Britain, and danced at the Aix-les-Bains festival. During a summer season in London, Macmillan's *Laidrette* and Joffrey's *Persephone* and *Pas des Déesses* were presented. Beryl Goldwyn retired; the company was headed by Noreen Sopwith, Ann Horn, Alexander Bennett and Norman Dixon.

In the autumn of 1954 the Paris Opera Ballet danced at Covent Garden. Soviet dancers Raissa Struchkova and Alexander Lapauri appeared in London. The Yugoslav National Opera and Ballet, Bulgarian State company, Azuma Kabuki dancers and Antonio and his Spanish Ballet were among foreign companies visiting London. Markova danced in a Christmas production of *Where the Rainbow Ends*, staged by Dolin, with choreography by John Taras. Ballet Workshop produced new ballets by Peter Darrell, Donato Fortes and Michael Holmes.

Fonteyn was re-elected president of the Royal Academy of Dancing, which established a scholarship honouring Dame Adeline Genée.

At the Edinburgh festival, the Royal Danish Ballet appeared in *La Sylphide*, *Capricious Lucinda* and *Romeo and Juliet*.

France.—Serge Lifar, director of the Paris Opera Ballet, choreographed *Les Noces Fantastiques*, music by Marcel Delannoy. John Cranko became the first English choreographer ever engaged by the Paris Opera, when his ballet *La Belle Hélène* was presented. *The Tragedy of Salome* was revived, choreography by Albert Aveline. Francine Collement, Josette Amiel and Micheline Grimoin were named *premières danseuses*, and Peter van Dijk was engaged as *danseur étoile*. Liane Daydé took a leave of absence.

The Grand Ballet du Marquis de Cuevas produced *Achille*, *The Return* and *La Reine Insolente*, choreographed by George Skibine, *Scarlattiana*, choreographed by Wladimir Skouratoff, *Le Lien*, choreographed by Paul Goubé, and *Joan of Arc*, choreographed by Leone Mail. In the court square of the Louvre, Paris, it produced Hector Berlioz' *Romeo and Juliet*, with choreography by Skibine, Skouratoff and Taras. Belinda Wright joined the company, which was headed by Marjorie Tallchief, Genia Melikova, Jacqueline Moreau, Skibine, Skouratoff and Serge Golovine.

The Paris Opéra Comique produced *The Nutcracker*, with choreography by Constantin Tcherkas.

The Amsterdam Opera Ballet danced in Paris and Monte Carlo. Yvette Chauviré was guest artist. Olga Preobrajenska, former ballerina of the Russian Imperial Ballet, was granted the diploma of an *officier du mérite civique de France* in recognition of her valuable service as a teacher. Francine Collement received the Prix René Blum.

For the Evian festival, Chauviré choreographed *La Péri*, and danced it with Serge Perrault. The Vichy theatre revived the ballet-opera *L'Atlantide*, with Ethery Pagava as guest artist.

Josette Clavier and Pierre Lacotte left the Opera to organize Les Ballets de la Tour Eiffel, which appeared in Paris, as did Ballets de l'Étoile and Ballets Modernes de Paris.

Australia.—The Borovansky Ballet toured Australia and New Zealand with a repertoire of 15 ballets. Yurek Shabelevsky and Royes Fernandez joined Kathleen Gorham, Jocelyn Vollmar, Vassili Trunoff and Paul Grinweis as principal dancers. *Tres Diabolos* was produced, with choreography by Grinweis.

Walter Gore and Paula Hinton organized the Australian Theatre Ballet, sponsored by the Australian Ballet society. The repertoire included Gore's *Street Games*, *Hoops* and *Classical Suite*.

Ballet Guild, headed by Laurel Martyn, toured New South Wales. Harcourt Algeranov and Claudie Algeranova toured for

the Australian Children's theatre. In Sydney, the Bodenweiss Ballet produced *Errand Into the Maze*.

Austria.—Gordon Hamilton was appointed assistant to Eril Hanka, ballet mistress of the Vienna State Opera, which engaged Jann Borall and Richard Adama. Harald Kreutzberg Dance Theatre Berlin and the Zagreb National theatre danced appeared in Vienna.

Belgium.—At the Théâtre de la Monnaie, Brussels, *Les Bal de Paris*, *Danse* and *Pelleas et Melisande* were produced. The Royal Danish Ballet appeared in Brussels.

Canada.—Tudor produced *Offenbach in the Underworld* for the National Ballet of Canada, which toured the dominion and appeared in Brooklyn, N.Y.

After a season of inactivity, the Royal Winnipeg Ballet was reorganized under Gweneth Lloyd, with Nenah Lhotka as ball master. Festival Ballet toured Canada.

Denmark.—The Royal Danish Ballet produced *Back Stage*, choreography by Bjoernsson, *Capricious Lucinda*, choreography by Niels Bjoern Larsen, and *Romeo and Juliet*, choreography by Ashton, music by Sergei Prokofiev. Taras staged *Balanchine Night Shadow*. Hans Brenaa made his farewell appearance. During the sixth Danish Ballet festival, the company celebrated the 150th anniversary of the birth of Auguste Bournonville, with performances of his *Napoli* and *Konservatoriet*.

Irina Tikhomirova and Geladij Ledjakh of the Bolshoi theatre, Moscow, danced in Copenhagen.

Finland.—Mary Skeaping produced *The Sleeping Beauty* in Helsinki, with Doris Laine and Margareta von Bahr as ballerinas. Fonteyn and Sömes made guest appearances in *Swan Lake*.

Germany.—The Berlin City Opera (west zone) presented ballets by Tatiana Gsovsky, Heinz Rosen and Jens Keith. Gsovsky organized the Dance Theatre Berlin, headed by Natasha Troianova, Gisella Deege, Gert Reinholm, Harald Horn and Ra Smolik.

The State Opera (east zone) produced *Apollo and Daphne*, *The Master's Right* and *The Converted Philistine*, all choreographed by Daisy Spies.

At the Munich Opera, Alan Carter choreographed *Four Times Four*, *The Miraculous Mandarin* and *The House of Shadows*.

In Hanover, Yvonne Georgi choreographed *Apollon Musgès*, *Happiness*, *Dream and Death*, *Serenade for Strings*, *Symphonie Fantastique*, and *Les Biches*. At the Düsseldorf Opera Kurt Jooss choreographed *Persephone*, and Hans Zullig staged *Pulcinella*.

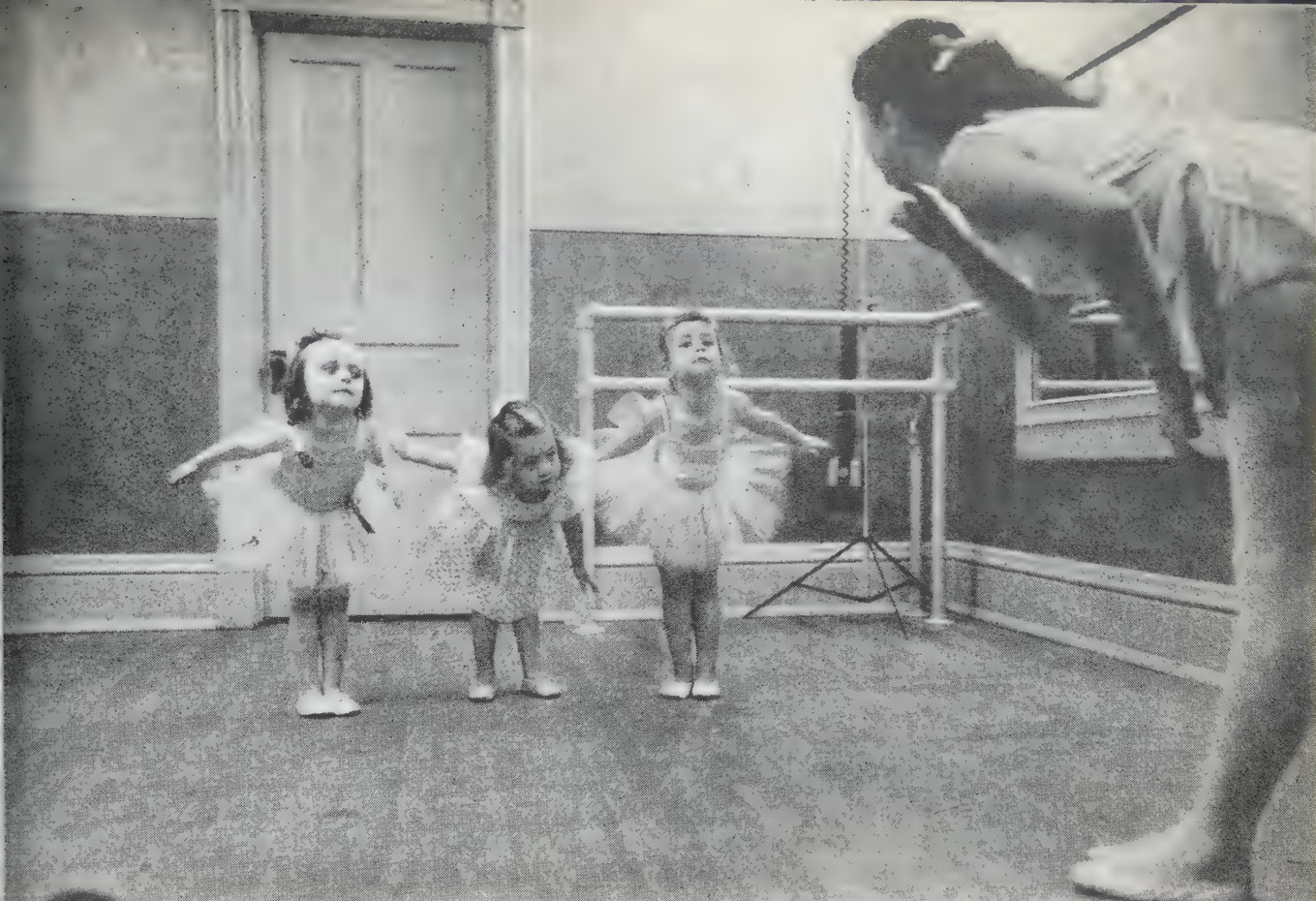
Greece.—For the Athens festival Tudor staged the ball scenes of Christoph Gluck's *Orfeo*.

Italy.—An international dance festival was held at Nerone near Genoa. Participants included Markova, Milorad Miskovitch, Kreutzberg, John Butler, Grand Ballet du Marquis de Cuevas, Azuma Kabuki dancers and the Yugoslav National Ballet.

At the Rome Opera, Boris Romanoff staged the dances *Carmina Burana*. Dancers included Attilia Radice and Ugo dell'Ara; Svetlova appeared as guest artist. Romanoff revived *The Sleeping Beauty* and *The Nutcracker* in Bologna, with Romanoff dancers.

Michel Fokine's version of *The Firebird* was staged at Scala, Milan, by Serge Grigoriev and Lubov Tchernicheva, with Olga Amati and Ugo dell'Ara in leading roles. Later Fonteyn and Sömes appeared in this production.

Japan.—The Komaki Ballet produced *Swan Lake*, with Mutsaers Sunaga and Naoto Seki in leading roles. The Hattori Shimada company presented *Miss Julie*, with Shigedo Sasada as principal dancer. The Paul Szilard Ballet, headed by Coleman Marchand, Maria Angelica, Miskovitch and Michael Llaure, toured Japan. Danilova, Maule, Moscelyne Larkin and Romanoff Jasinsky began a tour of Japan, after appearing in Manila. J



CHILD BALLERINAS performing classical bows before their instructor at the Fahl School of dancing, Madison, Wis., which in 1955 celebrated its 75th anniversary

rdman danced in Hawaii, Japan and India.

Mexico.—During a season of Mexican ballet at the Palacio de Bellas Artes, Mexico City, new works included *Children's Corner*, choreographed by Guillermina Penalosa, *The Dream Shop*, choreographed by Guillermo Keyes Arenas, *The Daughter of the Moon*, choreographed by Rosa Reyna, and *Chromatic Fantasy and Rhapsody*, choreographed by Helena Jordan.

Keyes Arenas was the first dancer to receive a fellowship from the Institut Français de l'Amérique Latine.

Los Ballets de Mexico, headed by Felipe Segura, appeared in Monterrey and Guadalajara.

Netherlands.—The Netherlands Ballet, directed by Sonia Gasell, produced ballets choreographed by Balanchine, Taras, Aart Merstegen, Jap Flier and Rudi van Dantzig. For the Ballet der Lage Landen, Jack Carter staged *Coppélia* and choreographed *Il Pagliaccio* and *Pavana Interrumpida*. Max Doyes received a grant from the Amsterdam Gemeenterad, to produce a work for this company.

Françoise Adret directed the Amsterdam Opera Ballet, staging *The Dream of Véronique*. Scapino Ballet produced *The Women of Stayoren*, choreography by Jean Rebel.

South America.—Ballet Alicia Alonso completed a tour of South America with a return engagement at the Colon theatre, Buenos Aires, Arg. Ballet Theatre, José Limon, Manolo Vargas and Antonio toured South America.

At the Colon, Leonide Massine revived his *Choreartium* and *Les Deux d'Enfants*, and choreographed *Usher*, based on a story by Edgar Allen Poe, music by Robert Garcia Morillo, with José Leglia in the title role.

The National Ballet, Rio de Janeiro, Braz., produced new ballets by Tatiana Leskova, Nina Verchinina and Denis Gray. Alvin and Field were guest artists. The Ballet do IV Centenario, of São Paulo, directed by Aurel Milloss, appeared in Rio. In Santiago, Chile, Ernst Uthoff choreographed *The Prodigal*

Son and Alotria. Dimitri Rostoff directed a season of ballet in Lima, Peru, with Tatiana Grantzeva, Natalie Clare, Oleg Tupine and George Zoritch as guest artists.

Spain.—Pilar Lopez reorganized her company and danced *El Amor Brujo* in Madrid. Rosario, with Roberto Iglesias and Aida Ramirez, appeared at the Granada festival. The companies of Janine Charrat and Antonio danced in Madrid, as did Festival Ballet of London.

Sweden.—At the Royal Opera, Stockholm, Skeaping staged *The Sleeping Beauty*, with Elsa Marianne von Rosen, Mariane Orlando, Ellen Rasch, Gerd Andersson, Bjoern Holmgren, Bengt Andersson, Julius Mengarelli and Teddy Rhodin. Fonteyn, Grey, Sones and Field appeared as guest artists. Birgit Akesson was the first modern dancer to appear in concert at the Royal Opera house. (LN. M.)

Ballroom and Folk Dancing.—There were three widespread, distinctive new developments in ballroom dancing during 1955: the cha-cha-cha, the merengue and the rock 'n roll.

The cha-cha-cha was a variation of mambo but it did not supersede that dance in popularity; rather, it augmented it. By 1955 the mambo had become an international Latin-dance favourite. Conservative dance experts in England and Scotland held heated debates to determine the correct beat for accent and some of the largest orders for mambo musical recordings came from Tokyo, Jap. Mambo music even spread beyond Latin influence and old fox trot favourites such as "Why Don't You Do Right" and "Temptation" were rerecorded in mambo phrasing.

The cha-cha-cha is done to moderate mambo tempo with swing-style arrangements such as those heard in these 1955 hit recordings: "Adele," "Jamaquino," "Sweet and Gentle" and "Having a Ball." Cha-cha-cha step patterns in partnership position are very simple but expert dancers add almost unbelievable and rather ludicrous variety by dancing solo style, opposite their partners—imitating penguins, kangaroos, etc.

The merengue dance comes from the West Indies but it took several hundred years before it reached modern ballroom form.

The music and dance evolved from a combination of the stylized forms favoured by the early Spanish colonists plus the strong rhythms inherent in the Africans who had been transported to the Caribbean regions during slavery days. Merengue music is similar to that of one-step and paso doble. It is easy to keep time to the emphatic, marchlike beat so that once the dance started to travel, it progressed rapidly. Even a novice can quickly follow the music and can readily copy the "lame duck" or limping side step that is the outstanding characteristic of the dance. These recordings became internationally available in 1955: "Ay Caramba," "La Empaliza" and "Consigueme Eso."

The third new dance for 1955 developed in the United States. It was a form of jitterbug called rock 'n roll. The dance originated with teen-agers and, since they prefer fast, lively music, it seemed doubtful that adults would ever adopt the jumps and energetic hops of rock 'n roll. The best-known recording in this tempo was "Dance With Me, Henry."

Despite these new 1955 developments, the standard ballroom dances were not overlooked. The fox trot still held international first place. The waltz, too, continued, but with its usual mild influence. Second to the fox trot were the Latin dances and, of these, the mambo and rumba were by far the international favourites. In comparison, the tango and samba had minor rating.

There was a marked revival of interest in square dancing in the western part of the United States and in college towns. In April 1955, 7,654 members from 38 states attended the fourth National Square Dance convention in Oklahoma City, Okla. In July the *New York Times* stated that there were more than 3,500 professional callers in the country and that an estimated 15,000,000 people in the U.S.A. were familiar with the intricate, standard dance patterns.

(A. Mu.)

Dates: see FRUIT.

Daughters of the American Revolution, National Society of: see SOCIETIES AND ASSOCIATIONS, U.S.

DDT: see AGRICULTURAL RESEARCH SERVICE.

Deafness: see HEARING.

Deaths (of prominent persons in 1955): see OBITUARIES.

Death Statistics. Mortality in the United States continued during 1955 at a low level. For the first eight months the death rate was only 9.3 per 1,000 total population, the same as for the corresponding period of the year before. For all of 1954, the number of deaths registered was 1,481,000, the death rate being 9.2 per 1,000 total population, excluding the armed forces overseas.

The age variation in mortality within the United States during 1954, in terms of death rates per 1,000 total population of stated age was: under one year, 30.3; ages 1-14 years, 0.7; ages 15-24 years, 1.1; ages 25-34 years, 1.5; ages 35-44 years, 3.1; ages 45-54 years, 7.7; ages 55-64 years, 17.5; ages 65-74 years, 39.2; ages 75-84 years, 86.6 and ages 85 and over, 175.1. For each age group, the death rate for 1954 was below that for 1953. Likewise, each race and sex category shared in the improve-

Table II.—Expectation of Life at Birth. White Persons by Sex. Geographic Areas, United States, 1949-51 and 1939-51

Region	Rank by Expectation of Life for White Males in 1949-51		Increase in years	White females		Increase in years
	1949-51	1939-51		1949-51	1939-51	
United States	66.3	62.8	3.5	72.0	67.3	4.7
West north central	67.8	65.2	2.6	73.3	69.2	4.1
New England	66.9	63.3	3.6	72.1	67.5	4.6
East north central	66.5	63.4	3.1	71.9	66.7	5.2
Middle Atlantic	66.2	62.7	3.5	71.2	68.7	2.5
Pacific	66.1	62.5	3.6	72.9	66.8	6.1
West south central	66.1	62.1	4.0	72.6	66.8	5.8
East south central	66.0	62.0	4.0	71.8	66.3	5.5
South Atlantic	66.0	61.7	4.3	72.5	67.0	5.5
Mountain	65.4	61.0	4.4	71.9	66.0	5.9

Table III.—Death Rates per 1,000 Population From All Causes in Selected Countries for 1953 and 1954

Country	1954	1953	Country	1954
North America			Italy	9.0
United States	9.2	9.6	Netherlands	7.5
Canada	8.2	8.6	Norway	8.4
Costa Rica	10.6	11.7	Portugal	10.9
Dominican Republic	8.8	9.0	Spain	9.1
Guatemala	18.5	23.2	Sweden	9.6
Mexico	12.9	15.6	Switzerland	10.0
Panamá	7.7	9.4	United Kingdom	11.4
Puerto Rico	7.6	8.1	Yugoslavia	10.8
Salvador, El	15.0	14.7		
Trinidad and Tobago	9.8	10.7	Asia	
South America			Ceylon	10.4
Argentina	8.5	8.7	Hong Kong	8.5
Chile	13.1	13.2	India	13.2
Peru	9.1	11.6	Israel (Jewish pop.)	6.4
Venezuela	10.1	9.9	Japan	8.2
Europe			Africa	
Austria	12.1	12.0	Union of South Africa (European)	8.6
Belgium	11.9	12.1	Oceania	
Denmark	9.1	9.0	Australia	9.1
Finland	9.1	9.6	New Zealand	9.0
France	12.0	13.0	Europeans	9.0
Germany (western)	10.4	11.0	Maoris	9.4
Ireland	12.1	11.8		

Source: United Nations, *Monthly Bulletin of Statistics* (Sept. 1955), and *Statistical Population Series A*, vol. vii, no. 4 (Oct. 1955); Office of Population Research, Princeton University, and Population Association of America, *Population Index* (July 1955).

ment, death rates per 1,000 being: 10.5 for white males; 10.5 for nonwhite males; 7.7 for white females and 8.7 for nonwhite females.

Deaths of the heart continued as the outstanding cause of death during 1954, accounting for 37.4% of all deaths. Second rank was held by the malignant neoplasms (cancer and allied conditions), with 16% of all deaths. The rank of the first ten leading causes of death is shown in Table I. There were over 2,140 deaths from maternal causes in the United States during 1954, with a rate of 5.3 per 10,000 live births. Only one decade earlier, in 1944, the rate was 22.8 per 10,000 live births.

According to mortality conditions prevailing in the United States during 1953, the expectation of life at birth was 68.8 years, a gain of 21½ years since 1900. For white females in 1953, the expectation of life at birth was 72.9 years, while that for white males came to 66.8 years. In the nonwhite population the corresponding figures were 64.4 for females and 59.7 for males.

Provisional data for Canada, relating to the first eight months of 1955, showed an increase of 4% in deaths over the same period of the year before. For the whole of 1954, the number of deaths was estimated as 124,520, with a death rate of 8.2 per 1,000 total population. During the first half year of 1955, England and Wales experienced 8.3% more deaths than in the similar period of the year before. For the whole of 1954, England and Wales recorded 501,900 deaths (provisional figure) and a death rate of 11.3 per 1,000 total population. The death rate in Australia (excluding aborigines) in 1954 was 9.1 per 1,000, the same as for 1953. In New Zealand, the population of European origin registered a death rate of 9.0 per 1,000 in 1954. Death rates for 1953 and 1954 for a number of countries are shown in Table III. (See also ACCIDENTS; CENSUS DATA, U.S.; INFANT MORTALITY; INFANT MORTALITY; SUICIDE STATISTICS.) (M. Sp.)

Table I.—Estimated Death Rates, Rank Order and Percentage of Total Deaths for the Ten Leading Causes of Death, United States, 1954

Rank	Cause	Death rate	Percentage of total deaths
1	Diseases of heart	343.4	37.4
2	Malignant neoplasms, including neoplasms of lymphatic and haematopoietic tissues	147.0	16.0
3	Vascular lesions affecting central nervous system	103.6	11.3
4	Accidents	56.9	6.2
5	Certain diseases of early infancy	39.4	4.3
6	Influenza and pneumonia, except pneumonia of newborn	25.2	2.7
7	General arteriosclerosis	19.0	2.1
8	Diabetes mellitus	15.4	1.7
9	Congenital malformations	12.9	1.4
10	Chronic and unspecified nephritis and other renal sclerosis	11.0	1.2

Source: National Office of Vital Statistics, *Monthly Vital Statistics Report*, vol. iii, no. 13, pt. 2 (May 20, 1955).

Debt, National. The national debt of the United States at the end of fiscal year 1955 amounted to \$274,374,000,000, about \$3,000,000,000 higher than a year

lier. (See Table I.) This was the fourth successive yearly increase. In its Aug. 25, 1955, report reviewing the 1956 budget, the bureau of the budget estimated that the national debt would be further increased to \$275,000,000,000 by June 30, 1956. The prospective rise was attributed to an anticipated budget deficit (estimated at \$1,700,000,000) in the fiscal year 1956.

The upturn in public debt after fiscal year 1951 followed a substantial reduction during the 1946-48 period and an irregular, moderate increase over the 1949-51 period. The public debt as of June 30, 1955, was about \$5,000,000,000 below the peak total of \$279,214,000,000 reached at the end of Feb. 1946.

In Aug. 1954, congress enacted legislation by which the statutory debt limit of \$275,000,000,000, which had been in effect since mid-1946, was raised to \$281,000,000,000 until June 30, 1955. This legislation was extended for another year in June 1955.

The increases in public debt during the fiscal years 1952-55 stemmed primarily from budget deficits. The debt increase that occurred in 1955 reflected, in the main, a budget deficit of about \$4,000,000,000 partly offset by a decrease of a little more than \$550,000,000 in the treasury cash balance.

As shown in Table II, the debt increase in fiscal 1955—as well as in the three previous years—was concentrated in the marketable interest-bearing category. Over the four-year period, outstanding marketable issues increased by about \$17,300,000,000, absorbing more than nine-tenths of the net rise in total public debt. Such issues accounted for 56½% of the debt total as of June 30, 1955.

This development in the fiscal years 1952-55 marked a reversal of trend. Through fiscal 1951, the post-World War II debt retirement program of the treasury had involved a large reduction in marketable interest-bearing securities. From the debt peak in Feb. 1946, when they formed 71% of the total public debt, marketable obligations were reduced nearly \$62,000,000,000 by the end of June 1951. During the last ten months of 1946, the funds used to retire aggregate maturities of more than \$23,000,000,000 were obtained chiefly from the general fund cash balance accumulated by the Victory Loan drive. In the period Jan. 1947-June 1951, funds for reducing the marketable public debt were derived mainly from the growth of nonmarketable issues.

Of the public debt total of \$274,374,000,000 as of June 30, 1955, interest-bearing debt amounted to \$271,741,000,000 and

Table III.—Maturity Distribution of Interest-Bearing Publicly Held U.S. Government Marketable Securities

	(In millions of dollars)				
	1951	1952	June 30 1953	1954	1955
Maturing					
Within one year	60,752	70,851	75,943	63,244	51,132
Treasury bills	13,613	17,219	19,707	19,515	19,514
Certificates of indebtedness	9,509	28,423	15,854	18,405	13,836
Treasury notes	18,911	...	15,217	13,540	16,333
Treasury bonds	18,719	25,209	25,165	11,783	1,449
1 to 5 years	31,022	29,435	30,163	38,408	46,400
5 to 10 years	16,013	13,322	13,018	27,112	42,755
Over 10 years	30,023	26,708	28,138	21,544	14,901
Total*	137,811	140,316	147,261	150,308	155,186

*Excludes postal savings bonds. Detail may not add to totals because of rounding. Source: U.S. Department of the Treasury.

Table IV.—Estimated Ownership of Federal Securities—Public Debt and Guaranteed Securities

	(In billions of dollars)					
	Feb. 1946	June 1951	June 1952	June 1953	June 1954	June 1955
Total federal securities outstanding	279.8	255.3	259.2	266.1	271.3	274.4
Total held by banks	116.7	81.4	84.0	83.6	88.7	87.0
Commercial banks	93.8	58.4	61.1	58.8	63.6	63.4
Federal reserve banks	22.9	23.0	22.9	24.7	25.0	23.6
Total held by nonbank investors	163.1	173.9	175.2	182.6	182.6	187.4
Individuals	64.1	65.5	64.7	66.3	64.6	64.5
Insurance companies	24.4	17.1	15.7	16.0	15.3	14.8
Mutual savings banks	11.1	10.2	9.6	9.5	9.1	8.7
Other corporations	19.9	20.0	18.9	18.4	16.4	18.5
State and local governments	6.7	9.4	10.4	12.0	14.3	16.0
U.S. government investment accounts	28.0	41.0	44.3	47.6	49.3	50.5
Miscellaneous investors	8.9	10.7	11.6	12.8	13.7	14.4

Detail may not add to totals because of rounding. Source: U.S. Department of the Treasury.

matured debt and debt bearing no interest amounted to \$2,633,000,000. The interest-bearing debt consisted of \$228,491,000,000 in public issues and \$43,250,000,000 in special issues held by the various governmental funds and agencies.

The publicly held debt, in turn, was comprised of \$155,206,000,000 in marketable obligations and \$73,285,000,000 in non-marketable obligations.

Table III shows the maturity distribution of interest-bearing public marketable securities for the years 1951-55. Particularly noteworthy is that the volume of securities maturing within one year was reduced by almost \$25,000,000,000 over the fiscal years 1954 and 1955. The proportion that such securities formed of the marketable total rose steadily from 27% as of June 30, 1950—a postwar low—to 52% as of June 30, 1953. By the end of fiscal 1955, however, the proportion had declined to 33%.

In fiscal 1955 the banking system reduced its holdings of federal securities by \$1,700,000,000. (See Table IV.) Nonbank investors thus absorbed more than the growth in the public debt.

The principal factor in the decline of bank holdings was the sale of government obligations by the federal reserve system, which shifted to a policy of relative tightness in the money markets in the latter part of fiscal 1955. Commercial bank holdings of federal securities, on the other hand, showed a decline of only \$200,000,000 during the fiscal year 1955. This small decline, however, masked a sharp swing in commercial bank holdings within the year. During the first half of fiscal 1955, commercial banks increased their investment in government securities by \$5,600,000,000; they liquidated \$5,800,000,000 of such securities in the latter half of the year to accommodate the rising private demand for credit.

These changes in bank holdings of federal securities in fiscal 1955 may be viewed against the background of previous developments. As one of the measures adopted by treasury and federal reserve authorities to combat post-World War II inflation, a substantial reduction in bank ownership of federal securities was effected over the period from Feb. 1946 to June 1953. Securities held by the banking system declined from \$116,700,000,000 to \$83,600,000,000—or from 42% to 31% of total federal securities outstanding. During fiscal 1954 bank holdings of federal obligations expanded to \$88,700,000,000. After the de-

Table I.—National Debt of the United States

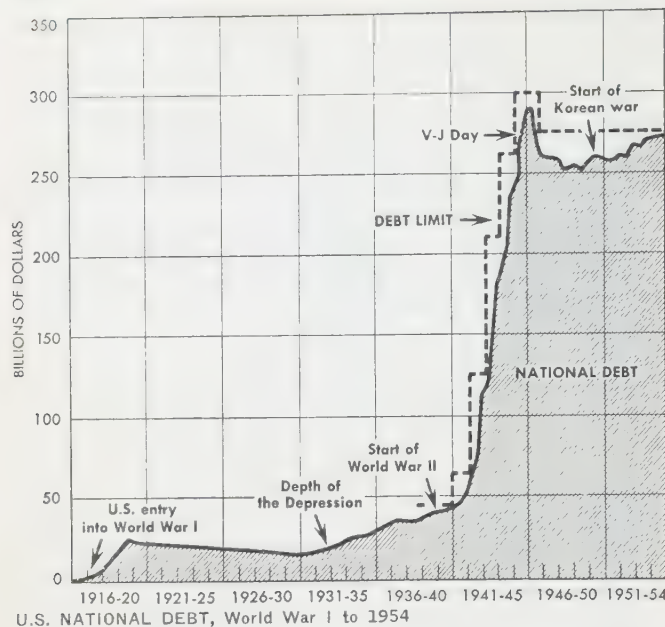
	June 30	(Millions of dollars)		June 30	(Millions of dollars)
1915	1,191		1946	269,422	
1920	24,298		1947	258,286	
1925	20,516		1948	252,292	
1930	16,185		1949	252,770	
1935	28,701		1950	257,357	
1940	42,971		1951	255,222	
1941	48,961		1952	259,105	
1942	72,422		1953	266,071	
1943	136,696		1954	271,260	
1944	201,003		1955	274,374	
1945	258,682		1956	275,000	

Source: Data from 1915 to 1955 are from U.S. Department of the Treasury, daily treasury statement (revised); 1956 is estimate from "Review of the 1956 Budget," Bureau of the Budget, Executive Office of the President, Aug. 25, 1955.

Table II.—Changes in the United States Public Debt

	(In millions of dollars)				
	1951	Fiscal year ending June 30 1952	1953	1954	1955
Total public debt	-2,135	3,883	6,966	5,189	3,114
Marketable interest-bearing debt	-17,393	2,490	6,927	3,019	4,852
Treasury bills	81	3,605	2,488	-192	-1
Certificates of indebtedness	-8,909	18,914	-12,570	2,551	-4,569
Treasury notes	15,402	-16,843	11,462	1,535	8,769
Treasury bonds	-23,967	-3,186	5,548	-875	654
Nonmarketable public debt	15,256	1,393	39	2,169	-1,738
Special issues	2,297	3,086	2,799	1,691	1,021
U.S. savings bonds	36	113	201	175	304
Other	12,923	-1,806	-2,961	303	-3,063

Detail may not add to totals because of rounding. Source: U.S. Department of the Treasury.



cline in fiscal 1955, they amounted to \$87,000,000,000, or 31½% of the total.

Federal debt held by nonbank investors totalled \$187,400,000,000 at the end of June 1955, or nearly \$5,000,000,000 more than a year earlier. Within this large category, insurance companies and mutual savings banks effected a further liquidation of federal obligations. The total holdings of individuals showed little change on balance as higher income investors sold marketable bonds and invested the proceeds in savings bonds. State and local governments, U.S. government investment accounts, and miscellaneous investors continued to invest their accumulating pension and welfare reserves in federal bonds.

The increase of more than \$2,000,000,000 in corporate holdings mirrored a temporary investment of income tax reserves.

During the fiscal year 1955, interest rates on both short-term and long-term federal securities showed substantial advances from the lows reached in June 1954, but did not regain their peaks of June 1953. These advances stemmed largely from federal reserve open-market sales of government securities during a period of expanding private demand for credit. By June 1955, short-term rates (as reflected by treasury bills) had recovered about one-half of the decline registered in the previous fiscal year, when these rates fell sharply subsequent to the adoption of a policy of relative ease by the federal reserve.

Long-term rates commenced to rise after the treasury-federal reserve "accord" of March 1951, when the federal reserve in its government security operations began placing greater emphasis on the supply and availability of bank reserves and less emphasis on maintaining fixed prices of federal obligations. After advancing by one-fourth from March 1951 to June 1953 and attaining the highest point since the early 1930s, the average

yield on long-term treasury bonds dropped sharply during fiscal 1954. About one-half of this drop was recovered in the advance during fiscal 1955.

Interest payments by the federal government, consisting almost wholly of charges on the public debt, approximate \$6,450,000,000 in both fiscal 1954 and 1955. In its Aug. 25, 1955 report reviewing the 1956 budget, the bureau of the budget estimated that total interest payments by the federal government in fiscal year 1956 would amount to \$6,765,000,000. The increase over fiscal 1955 reflected an anticipated rise in the public debt and somewhat higher interest rates.

U.S. State and Local Government Debt.—The latest official estimates available in 1955 of the aggregate debt of state and local governments in the United States are shown in Table V. State and local debt amounted to \$37,904,000,000 at the end of June 1954, an increase of about \$5,000,000,000 during the fiscal year.

It was evident from available information on the volume of new offerings that the rise in such indebtedness continued into fiscal 1955.

These developments were an extension of past trend in the postwar period. After dropping from \$20,246,000,000 in 1940 to \$15,922,000,000 in 1946, the debt of state and local governments expanded steadily to the total of almost \$38,000,000,000 in 1954. In relative terms, the 1946-54 increase in indebtedness

Table VI.—National Debt of Various Countries

Country (Unit of currency) *	Date	Total debt (000,000s)	Date	Total debt (000,000s)
Argentina (peso)	12/31/39	4,794	12/31/52	35,192
Australia (pound-Aust.)	6/30/39	1,215	6/30/54	3,602
Austria (schilling)	12/31/37	3,495	12/31/53	13,677
Belgium (franc)	12/31/39	47,544	12/31/53	281,929
Bolivia (boliviano)	12/31/39	4,192	12/31/53	37,487
Brazil (cruzeiro)	12/31/39	18,885	12/31/53	35,552
Bulgaria (lev)	12/31/39	22,864	12/31/46	162,044
Burma (rupee)	9/30/40	574	9/30/55	602
Canada (dollar-Canadian)	3/31/39	3,710	3/31/54	17,978
Ceylon (rupee)	9/30/39	141	9/30/53	992
Chile (peso)	12/31/39	4,227	12/31/52	11,935
China (dollar-C.N.)	12/31/39	4,190†	12/31/46	9,910
Colombia (peso)	12/31/39	180	12/31/53	555
Costa Rica (colon)	12/31/39	133	12/31/53	327
Cuba (peso)	2/28/39	229	6/30/44	180
Czechoslovakia (koruna)	12/31/39	38,449	12/31/46	108,758
Denmark (krone)	3/31/39	1,506	3/31/53	9,552
Dominican Republic (peso)	12/31/41	20	12/31/52	31
Ecuador (sucro)	12/31/39	424	11/30/53	690
Egypt (pound-Egyptian)	4/30/39	95	3/31/53	208
Finland (markka)	12/31/45	87,752	12/31/53	132,900
France (franc)	12/31/39	482,967	12/31/53	5,417,500
Germany, Western (Deutsche mark)	3/31/49	4,987	3/31/53	10,844
Greece (drachma)	3/31/39	52,138	6/30/54	8,835,900
Guatemala (quetzal)	6/30/39	13	6/30/52	24
Haiti (gourde)	9/30/39	48	9/30/53	31
Honduras (lempira)	6/30/39	18	6/30/53	8
Hungary (pengo)	6/30/39	1,937	12/31/43	6,501
Iceland (króna)	12/31/39	56	12/31/50	275
India (rupee)	3/31/39	11,851	3/31/55	30,395
Iran (rial)	3/20/40	2,111	3/20/52	9,462
Iraq (Iraqi dinar)	1/1/39	2	1/1/48	3
Ireland, Republic of (pound)	3/31/39	61	3/31/53	244
Italy (lira)	6/30/39	145,795†	6/30/54	3,821,900
Japan (yen)	3/31/39	19,921	3/31/51	279,700
Malaya, Federation of (Malayan dollars)	12/31/49	253	12/31/52	295
Mexico (peso)	12/31/39	1,500	12/31/52	2,688
Netherlands (guilder)	12/31/39	4,218	12/31/53	21,962
New Zealand (pound-N.Z.)	3/31/39	313	3/31/54	700
Nicaragua (córdoba)	6/30/42	26	6/30/48	5
Norway (krone)	6/30/39	1,528	6/30/53	5,455
Panamá (balboa)	12/31/39	21	12/31/52	31
Paraguay (peso)	10/31/39	3,340	12/31/47	9,990
Peru (sol)	12/31/39	833	12/31/53	1,855
Philippines (peso)	6/30/46	146	6/30/53	1,100
Poland (zloty)	3/31/39	5,318	9/30/47	29,380
Portugal (escudo)	12/31/39	7,145	12/31/53	11,120
Rumania (leu)	3/31/39	107,716§	3/31/42	94,692
Salvador (colón)	12/31/39	38	12/31/53	2
Spain (peseta)	12/31/39	24,127	12/31/53	76,888
Sweden (krona)	6/30/39	2,634	6/30/54	13,581
Switzerland (franc)	12/31/39	2,589†	12/31/53	7,755
Thailand (baht)	3/31/39	73	12/31/51	1,740
Turkey (pound-Turkish)	5/31/39	557	12/31/53	2,300
Union of South Africa (pound-S.A.)	3/31/39	279	3/31/54	88
Union of Soviet Socialist Republics (rouble)	12/31/37	28,766†		
United Kingdom (pound)	3/31/39	7,269	3/31/54	26,888
United States of America (dollar)	6/30/39	40,440	6/30/55	274,377
Uruguay (peso)	12/31/39	410	12/31/47	70
Venezuela (bolivar)	6/30/39	3†	6/30/53	4

*For approximate value of various currencies see Exchange Control and Exchange Rate

†Domestic debt only.

‡Not strictly comparable with the 1939 figure.

§Long-term domestic debt and foreign debt.

Source: United Nations, Department of Economic Affairs.

Table V.—Debt of State and Local Governments, U.S.

(In millions of dollars)					
June 30	Total	State	Local	June 30	Total
1929.	17,234	2,300	14,934	1946.	15,922
1933.	19,802	3,018	16,784	1947.	16,825
1937.	19,594	3,276	16,318	1948.	18,702
1940.	20,246	3,526	16,720	1949.	20,875
1941.	20,226	3,413	16,813	1950.	24,191
1942.	19,690	3,211	16,479	1951.	27,040
1943.	18,692	2,909	15,783	1952.	29,624
1944.	17,471	2,768	14,703	1953.	32,735
1945.	16,589	2,425	14,164	1954.	37,904
					10,204
					27,700

Source: U.S. Department of Commerce.

was much larger for state governments than for local governments.

Construction outlays occasioned a very large share of all borrowing by state and local governments in the 1946-54 period. In addition to projects that had been postponed from the pre-1946 period, such outlays stemmed from requirements created by the rapid postwar rise in street and highway traffic and in the school-age population.

Other Countries.—In Table VI are presented data on the national debts of many countries of the world. Insofar as permitted by available information, the data are shown for 1939 and for a late postwar year, affording a comparison of national debts before and after World War II. (See also BUDGET, NATIONAL.)

(C. F. Sz.)

Defense, U.S. Department of: see BUDGET, NATIONAL; GOVERNMENT DEPARTMENTS AND BUREAUS, U.S.

Delaware. Delaware, on the middle Atlantic seaboard, one of the original 13 states of the United States, is called the "First state," having been the first to ratify the federal constitution, Dec. 7, 1787. The "Diamond state" is also a popular name. Area: 2,057 sq.mi. (land 1,978 sq.mi.; inland water 79 sq.mi.). Population: (July 1, 1955, est.) 371,000; (1950 U.S. census) 318,085.

History.—Outstanding legislation by the 1955 session of the general assembly was the creation of a state penal system to replace county-operated jails; consolidation under one head of state agencies for the mentally afflicted; adoption of a \$44,000,000 school-building program and increased appropriations for conservation of natural resources and state parks.

In 1955 construction of the first heavy industry in the state was begun: the \$160,000,000 plant of the Tide Water Associated Oil company refinery on a 5,000-ac. tract of farm land along the Delaware river shore north of Delaware City. In addition, during the first nine months of 1955 new construction in the state of all types of buildings amounted to \$57,126,330. Construction at the port of Wilmington, municipally owned, doubled the capacity of its marine terminal for handling cargoes.

The chief state officers in 1955 were: governor, J. Caleb Boggs; lieutenant governor, John W. Rollins; secretary of state, John N. McDowell; tax commissioner, C. Douglas Buck; bank commissioner, Randolph Hughes; state treasurer, Howard Dickerson; auditor of accounts, Clifford E. Hall; chief justice, Clarence A. Southerland; chancellor, Collin J. Seitz; president judge, Charles S. Richards; attorney general, Joseph Donald Craven; adjutant general, Brig. Gen. Joseph J. Scannell; direc-

tor, legislative reference bureau, Andrew Christie; director, state development department, Miles L. Frederick.

Education.—Desegregation of Negro and white pupils in the Wilmington and suburban area schools was completed in 1955 except for a few special classes.

The cost of operating the public schools in the fiscal year ending June 30, 1955, was about \$17,000,000, compared with \$16,250,000 the previous year. Elementary schools had an enrolment of 37,922 and a teaching staff of 1,348. Secondary schools had an enrolment of 22,547 and teaching staff of 1,118. For the fiscal year ending June 30, 1955, the state board of vocational education placed 456 disabled persons in earning jobs. The state superintendent of public instruction was George R. Miller.

Social Insurance and Assistance, Public Welfare and Related Programs.—State unemployment compensation paid for the fiscal year ending June 30, 1955, was \$3,067,605. Active claims on that date were 1,503. The cost of public assistance for the same fiscal year was \$787,886 for an average of 1,287 cases per month. In Oct. 1955, 1,688 persons were receiving old-age pensions.

During the fiscal year ending June 30, 1955, a monthly average of 1,022 children were cared for in their own or foster homes at a cost of \$271,790. The number of dependent children aided averaged 3,146 per month at a cost of \$1,085,400.

State appropriations for public welfare in 1955 amounted to more than \$5,500,000.

Communications.—The mileage of all highways and rural roads was 3,957. The income of the state highway department for the fiscal year was \$15,586,886, including federal aid of \$3,837,229. Railroad mileage was approximately 350. During the year ending May 31, 1955, 7,865,772 vehicles crossed the Delaware Memorial bridge; revenue, \$6,813,507.

For the year ending Oct. 1, 1955, tonnage at the port of Wilmington was 754,003; value of cargoes \$49,704,020. On Oct. 1, 1955, the state had 103,615 main telephones in use.

Banking and Finance.—On June 30, 1955, there were 60 state banks and trust companies, including branch banks and offices, having total resources of \$728,398,244. Assets of the 10 national banks were \$35,743,138. Demand deposits of all banks increased by \$50,158,779, savings deposits by \$13,413,656, during the fiscal year.

Total state receipts for the year ending June 30, 1955, were \$79,362,521, of which \$40,837,368 was from taxes and \$38,525,152 from special funds. The cash balance at the beginning of the year was \$26,434,339. Expenditures were \$84,213,252. The gross debt was \$84,491,000 and total debt service (interest and redemptions) amounted to \$5,799,798.

Agriculture.—The estimated total cash income from agricultural production in 1955 was \$98,820,000, of which \$73,902,000 was from livestock, \$24,918,000 from crops and \$390,000 government payments, compared with the total cash income of \$98,621,000 for 1954.

Manufacturing.—Gross receipts from 816 licensed manufacturers for the year ending June 30, 1955, were \$698,450,745, compared with 877 for the previous year with gross receipts of \$827,388,898. The total number of employees under the unemployment compensation law in March 1955 was 112,845. Total wages paid from April 1954 through March 1955 were \$466,845,000. The Wilmington area quarterly survey of employment Aug. 15, 1955, showed 72,403 employed by 557 employers compared with 64,650 by 574 employers on the same day in 1954. New corporations chartered at Dover for the year ending June 30, 1955, were 3,692 compared with 2,957 the previous year. Corporations that became void were 1,065 compared with 1,007 the year before. (J. EN.)

Mineral Production.—Delaware has the smallest mineral output among the states, and that entirely in building materials. Data for 1954 were not available in 1955, but in 1952 and 1953 (preliminary) sand and gravel totalled 515,399 tons and 520,817 tons respectively (\$382,484 and \$399,685); stone 94,911 tons and 80,364 tons (\$251,759 and \$215,382). The total value of mineral production was \$677,000 in 1952 and \$659,000 in 1953.

Democracy. The year 1955 brought some interesting developments in the progress of democracy in Asia and in Latin America. In Europe and in North America the situation remained on the whole without any fundamental change. Under the threat of fascism and communism, democracy had shown during and after World War II an astonishing resilience. The doubts about the viability of democracy in an age of industrial mass civilization, frequently heard during the 1920s and 1930s, had died down. A new spirit of confidence had filled the democracies after they had achieved victory over the worldwide threat of fascism in World War II and successfully contained the world-wide threat of communism after that war through unity and strength. The North Atlantic Treaty organization and the steps taken toward western European integration bode well for the future of democracy. The year 1955 saw, however, a weakening of the process of integration. This was partly the result of the new communist "peace offensive," which seemed to remove any immediate threat to the peaceful survival of democracy. The weakness shown by the French government in 1955 and the dispute over the Saar between France and Germany also contributed to the weakening of the democratic

Table I.—Leading Agricultural Products of Delaware

Crop	Indicated 1955	1954	Average, 1944-53
Corn, bu.	5,848,000	5,270,000	4,992,000
Apples, bu.	220,000	280,000	361,000
Hay, tons	99,000	100,000	102,000
Wheat, bu.	792,000	822,000	1,152,000
Soybeans, for beans, bu.	1,278,000	1,190,000	762,000
Peaches, bu.	105,000	116,000	204,000
Oats, bu.	315,000	324,000	196,000
Barley, bu.	341,000	341,000	320,000
Potatoes, bu.	2,659,000	2,002,000	582,000
Tomatoes, tons (processed)	16,900	32,400	...
Strawberries, crates (fresh market)	22,000	24,000	...
Lima beans, tons (processed)	11,000	16,660	...

Source: U.S. Department of Agriculture.

Table II.—Principal Industries of Delaware

Industry	(Fiscal years ending June 30)	
	1955	1954
Food	\$93,394,425*	\$93,341,290
Clothing	160,155,445	173,088,266
Household supplies	20,640,137	21,722,593
Auto supplies	10,434,211	7,708,415
Drugs and medical supplies	3,603,207	2,558,894
Tobacco	3,894,650	181,704
Miscellaneous	406,328,670	528,787,736

*Gross receipts of manufacturers.

front in Europe.

Elections in Europe, 1955.—The most important election held in Europe during 1955 was the election in Britain in May. The Conservative party emerged as the strongest party and gained 23 seats, whereas Labour lost 17 seats. In the new house of commons the Conservatives were represented by 345 and Labour by 277 members. However, the voting strength of the parties showed a much more even balance. The Conservatives received 49.85% and Labour 46.42% of the whole vote. The communists received 0.12% of the total vote and were unable to elect a member to the house of commons, whereas before 1951 they were represented by two members.

Various elections in Germany to provincial parliaments showed a growing strength of the right-wing Social Democratic party. Whereas the elections in the Rhineland state brought a victory to the Christian Democrats, the party of Chancellor Konrad Adenauer, the elections in Lower Saxony, in West Berlin and in Bremen gave the Socialists a slight edge over the Christian Democrats. Both parties are strongly anticommunist and the communists were unable to gain more than 4% of the vote in these elections. But whereas the Christian Democrats supported fully the policy of the integration of the German Federal Republic into the North Atlantic Treaty organization, the Socialists opposed it because they felt it might hinder German reunification. On the other hand, in June 1955 the important elections for the regional assembly in Sicily, It., showed a renewed strength of the Christian Democrats, who received 38.8% of the vote. The communists and the fellow-travelling leftist Socialists held to their previous strength of 30.5% of the vote, whereas the Neofascist party lost heavily in favour of the Christian Democrats.

International Labour and Democracy.—In May 1955 the fourth world congress of the International Federation of Free Trade Unions was held in Vienna. At this meeting the representatives of United States trade unions played an important role. The International Federation of Free Trade Unions, which was formed in 1949 in opposition to the communist World Federation of Trade Unions, had rapidly grown in importance and had decided to undertake a world-wide organizing campaign in underdeveloped areas to organize the workers into anticommunist trade unions. The line taken by the congress against all totalitarianism was uncompromising. Not only Spanish but also Yugoslav trade unions were barred from membership. The delegates to the congress, representing 54,000,000 workers in the democracies, made it plain that democratic labour was opposed to all forms of communism.

Democracy in Asia.—Democracy in Asia and Africa showed its growing strength when at the Asian-African conference in Bandung, Indonesia (*q.v.*), in April 1955 many of the delegates unexpectedly arose to defend vigorously democracy against communism. The representatives of Liberia, Sudan, Lebanon, Turkey, Iraq, Iran, Pakistan, Ceylon, Thailand and the Philippines pointed in unmistakable terms to the dangers which communist aspirations implied for the freedom of noncommunist lands. On the other hand, in the elections in the British colony of Singapore, where the British administration granted self-government, left-wing parties gained a majority of members in the legislative assembly and communism showed a growing strength among the Chinese population of the colony. The elections on April 2 marked the first fully democratic step in Singapore and they were in agreement with the British policy of introducing democracy by progressive steps throughout the colonial empire.

In Thailand a political parties bill authorizing the establishment, after registration with the ministry of the interior, of political parties was passed on Sept. 20, 1955. The republic of Indonesia held on Sept. 29 its first national elections, in which

four parties struggled for leadership: the communists; the nationalist party, which had followed a neutralist policy in world affairs backed by the communists; the Mohammedan Masjumi party, which was friendly to western democracy; and the Muslim Teachers party. The new course to be followed by Indonesia in the wake of the elections, which brought no clear majority to any one of the four groups, was to be decided only when the new parliament would be seated in March 1956.

General elections were also held in Japan in the beginning of 1955. The Democrats, a conservative party, emerged as the strongest single party with 185 seats against 124 in the lower parliament, whereas its conservative rival party, the Liberal Party, managed to retain only 112 seats as against 180 in the preceding house. The conservative democratic forces as a whole lost 10 seats, whereas the "progressive" forces, the left- and right-wing Socialist parties, the Labour-Farmer party and the communists picked up 21 seats, having thus a combined strength of 121 seats, or one-third of the house. The communists received only 2 seats but they were supported by the left-wing Socialists with 89 seats in opposition to rearmament and to alignment with the United States.

Democracy in Latin America.—The most conspicuous victory for democracy in 1955 was the overthrow of the totalitarian regime of Pres. Juan Perón in Argentina. It was overthrown by a revolt of the army. Most damaging to Perón were the revelations about financial and social irregularities in his life. It remained to be seen whether the new regime would truly introduce democracy in Argentina or would become a new military dictatorship of the type so familiar in Latin-American countries. The first steps taken by the new government were promising. The Argentine supreme court, which had been a political instrument of Perón's, was dismissed and respected lawyers were appointed. The principles of freedom of thought and education were restored in universities and many scholars ousted by Perón were recalled. Anti-Peronist labour leaders were released from jail and free elections promised in the Peronist-controlled General Federation of Labour, which represented Perón's most valuable support. The future of the new regime would depend to a great extent upon the support which it would receive from the rank and file of Argentine labour.

Elections for the presidency in Brazil, held on Oct. 3, 1955, brought victory to Juscelino Kubitschek and João Goulart as president and vice-president. Both represented the Brazilian Labour party, a left-wing group led by the former president Getulio Vargas, who committed suicide in Aug. 1954. No clear political issues were involved in the election, as all the main candidates were agreed on the need to defend the social security rights of the workers and to develop Brazil's natural resources, especially its oil deposits. (H. Ko.)

Kubitschek and Goulart were to take office on Jan. 31, 1956, and the prospects of their doing so were apparently not threatened by changes in the presidential office which happened late in the year. Pres. João Café Filho took an indefinite leave of absence in early November following a heart attack, and the speaker of the lower house, Carlos Luz, was sworn in to take over for the remainder of the term. After two days, however, he was forced out by the army and Nereu Ramos, speaker of the senate, was installed as acting president. (See also COMMUNISM; EDUCATION; ELECTIONS, U.S.; EUROPEAN UNITY; GREAT BRITAIN; SOCIALISM; UNITED STATES.)

Democratic Party: see POLITICAL PARTIES, U.S.

Denmark. A democratic monarchy of north central Europe. Denmark has an area of 16,577 sq.mi. Greenland (*q.v.*), an island of 840,000 sq.mi. in the North Atlantic ocean.

is an integral part of the kingdom. Pop.: (1950 census) 4,281,275; (1954 est.) 4,392,400. Capital: Copenhagen (with chief suburbs, 1954 est.) 967,600. Other principal cities (1950 census): Aarhus 116,167; Odense 100,940; Aalborg 79,806. Religion: Lutheran Christian. Ruler in 1955: King Frederick IX. Prime ministers: Hans Hedtoft to Jan. 1955; H. C. Hansen after Feb. 1.

History.—Hans Hedtoft, prime minister of Denmark, died while in Stockholm attending a meeting of the Nordic council.

H. C. Hansen was confirmed as prime minister by King Christian IX on Feb. 1. In political outlook, including advocacy of NATO (the North Atlantic Treaty organization), he appeared thoroughly in agreement with Hedtoft.

The threatening economic crisis of 1954 was somewhat under control in 1955. Denmark had paid off much of its dollar debt and employment was at a high level; production in most categories was up slightly over the corresponding periods in 1953 and 1954, and exports were up. However, the price index continued to rise, and after a 5% increase workers were granted a similar wage increase. The root of the difficulty was that internal prices rose while export prices declined. To counteract the resultant squeeze the government took decisive measures to reduce buying and check imports. Additional duties were placed for two years on tea and coffee, and taxes of 10% to 15% were put on clothing, leather goods, jewellery, cars, radios and other items. Taxpayers would receive interest-bearing savings certificates redeemable gradually after 1962. The certificates were intended to avoid a rise in the cost-of-living index with its concomitant adjustment of wages and salaries. The austerity program was passed by a close vote—89 to 86.

Military expenditures were reluctantly curtailed as part of the program of saving. The 1955 budget was cut in this sector from 1,190,000,000 Kr. to 830,000,000 Kr., largely by reducing enlistments by 3,000 men.

Progress was made toward solution of some of the south Schleswig issues. The 42,000 Danish votes in this west German province (Sept. 1954) fell just short of the 5% requirement and gave the Danish element no voice in the Schleswig-Holstein *Landtag* or in the *bundestag*. Negotiations in Denmark and a visit of Prime Minister Hansen to Bonn in the spring of 1955 found an understanding response, confirmed by action of the *Landtag*. Agreement was reached for abandonment of the 5% clause, for the right of the Danish-speaking group to establish high schools and to receive 80% instead of the previous 40% of the funds allotted on a per pupil basis for the German elementary schools. Additional guarantees affected religious, political and individual freedoms for the Danish minority. In municipal elections later in the spring Danish individuals won several posts.

In Nov. 1954 the general assembly of the United Nations affirmed by a vote of 45-1 the arrangements of 1953 by which Greenland was incorporated into Denmark. In another of Denmark's overseas areas, the Faeroe Islands (*q.v.*), an incident of rebellion received wide attention. The home rule authorities called on Denmark to help them eject Olaf Halvorsen as medical officer in Klaksvig. A motor ship and a contingent of police were sent from Copenhagen, but because of the intensity of local feeling they did not land at Klaksvig. Danish Finance Minister Viggo Kampmann went out to use his good offices, and a peaceful arrangement was made whereby Halvorsen returned to Copenhagen. Disturbances broke out again in Sept. 1955, and a police ship was sent direct to Klaksvig; republican agitation seemingly lay at the root of the trouble.

Denmark began manufacture of Salk polio vaccine in Sept. 1954, and in the spring of 1955 gave nation-wide vaccinations (two) to 98% of the children in the first five grades of school.

Inoculation of preschool children, scheduled to begin in August, was postponed until October.

Representatives of Denmark and the United States initialed on June 10 an agreement for Danish participation in the "atoms for peace" program, according to which Denmark would be given information and would be loaned fissionable materials for research purposes.

(F. D. S.)

Education.—Schools (Jan. 1953): primary, middle and secondary 4,040, pupils 582,555, of which 97,149 secondary (101,753 in Jan. 1954); (1952-53) folk high schools 58, pupils 6,193; vocational 642, pupils 109,612. Teachers' training colleges (including physical and domestic science) 28, students 4,707. Universities 2, students 6,447; other institutions of higher education 8, students 7,007.

Finance and Banking.—Monetary unit krone (pl. kroner), with an exchange rate of 6.907 Kr. to the U.S. dollar. Budget (1954-55 actual): revenue 3,223,000,000 Kr.; expenditure 3,215,600,000 Kr.; (1955-56 est.) revenue 4,344,000,000 Kr.; expenditure 4,056,000,000 Kr. Internal debt (March 1953) 7,293,800,000 Kr.; external debt 1,757,700,000 Kr. Currency circulation (Dec. 1954) 2,054,000,000 Kr.; (July 1954) 1,872,000,000 Kr. Bank deposits 5,204,000,000 Kr.; (July 1954) 5,377,000,000 Kr. Gold and foreign exchange (U.S. dollars, 1954; March 1955 in parentheses) U.S. \$143,400,000 (\$131,400,000).

Foreign Trade (1954).—Imports: 8,024,000,000 Kr., exports 6,549,000,000 Kr. Main sources of imports U.K. 26%; Germany 20%; other continental European Payments union countries 33%; Latin America 6%; U.S. and Canada 5%. Main destinations of exports: U.K. 36%; Germany 15%; other continental E.P.U. 22%; U.S. and Canada 6%; Latin America 6%. Chief exports: bacon 15%; butter 15%.

Transport and Communications.—Roads (1954): 82,898 km. Motor vehicles in use: cars (1954) 290,279, commercial vehicles (Dec. 1953) 81,809. State railways (1954): 2,651 km.; passenger-kilometres (1953) 27,522,000; freight ton-kilometres (1954) 1,151,000,000. Shipping (July 1954): merchant vessels of 100 gross tons and over, 704; total tonnage 1,613,903; net earnings (1954) about 450,000,000 Kr. Air transport (1954): passenger-kilometres 240,077,000; freight, ton-kilometres 7,212,000. Telephones (Jan. 1954): 825,879. Licensed radio sets (1953): 1,322,000.

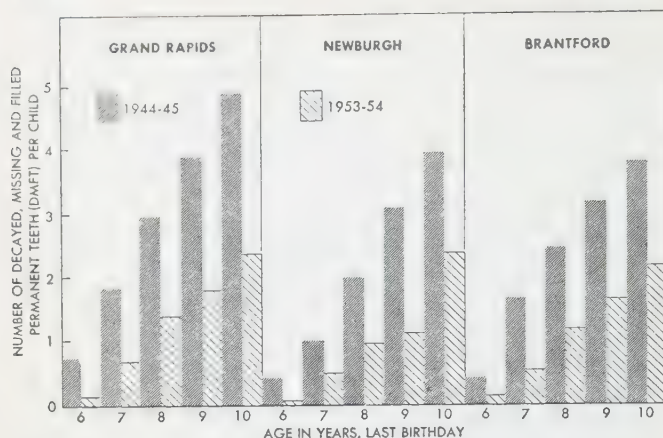
Agriculture.—Main crops (metric tons, 1954): wheat 279,000; barley 2,045,000; oats 787,000; rye 280,000; potatoes 1,963,000; beet sugar (raw) 235,000. Livestock (Sept. 1954): cattle 3,152,000; pigs 4,800; sheep 33,000; horses 358,000. Dairy production (metric tons, 1954): milk 5,400; butter 180,000; cheese 81,600. Meat production (metric tons, 1954): beef and veal 190,300; pork 504,100. Fisheries (metric tons, 1953; 1954 in parentheses): total catch 342,800, (353,000).

Industry.—Fuel and power (1954): lignite 679,000 metric tons; manufactured gas 388,400,000 cu.m.; electricity 2,836,000,000 kw.hr. Manufactured goods (metric tons, 1954): cement 1,174,200; superphosphates (1952) 420,000. Merchant vessels launched (1953): 142,056 tons. Index of production (1948=100): manufacturing (Feb. 1955) 128; metal products (June 1954) 140; textiles (June 1954) 120.

Dentistry. Fluoridation continued during 1955 to be the most discussed subject in dentistry. The year marked the tenth anniversary of fluoridation in Grand Rapids, Mich., Newburgh, N.Y., and Brantford, Ont. The reductions in the amount of dental caries after nine years of fluoridation were remarkably consistent in these independent studies. Results indicated that dental caries could be brought under a large measure of mass control through fluoridation.

As of Oct. 1, 1955, there were 1,115 communities in the United States with a total population of 22,093,955 persons who were using fluoridated water supplies. In addition, about 3,000,000 more persons in the country were using a domestic water supply with a natural fluoride content of about 1.0 part per million of fluoride or more. Excluding Canada, where a number of cities were utilizing this control measure, other countries where at least one city was fluoridating included Brazil, Chile, Columbia, Germany, Netherlands, Japan and Sweden.

The germ-free animal studies conducted jointly by The University of Chicago and the University of Notre Dame, Notre Dame, Ind., aroused considerable interest. These studies utilized the new biological technique of inoculating otherwise germ-free animals with bacteria. Earlier studies had revealed that rats reared entirely free of all bacteria developed no caries, despite ingestion of a cariogenic diet for five months. In the latest report rats were inoculated with known bacterial cells in which an enterococcus was the predominating microbic form. All developed carious lesions in their molar teeth. These animals were fed the same standard diet that was fed to conventional control rats having an unknown complex bacterial flora. These latter



DENTAL CARIES PREVALENCE in continuous resident children of Grand Rapids, Mich., Newburgh, N.Y. and Brantford, Ont., Canada, before fluoridation and after nine years of fluoridation, a study completed in 1955

rats regularly developed cavities during the 150-day test period. These studies suggested that for the first time in history it might be possible to learn whether the causative organism(s) of dental caries fulfils Koch's postulates. F. J. McClure and J. E. Folk continued their studies of producing smooth-surface caries in rats with two relatively new diets, neither of which contained customary caries-producing agents, *i.e.*, (1) coarse particles of corn or rice, or (2) excessive quantities of refined sugars. These two new diets were essentially a combination of four processed cereal foods, enriched rye bread (toasted), enriched white bread (toasted), cooked rolled oats (dry) and cooked yellow corn grits (dry), or a diet containing a roller-processed skim milk powder. This novel avenue of approach opened a new field in experimental dental caries.

Increasing interest was being shown in new instruments for cutting hard tooth structure. These included high-speed rotation (10,000 r.p.m.), ultrasonic mechanical vibration with an abrasive slurry, the hydraulic turbine contra-angle handpiece and a revaluation of the air abrasive technique.

At the 1955 meeting of the International Association for Dental Research, largely American in membership, 211 papers were read, almost treble the number presented in 1950. Studies included continuing research on fluorine and its relation to dental health; structure of the teeth; saliva; oral microbiology; dental caries; periodontal disease; and the science of dental materials. Other research projects in progress were growth and development of the face and head (orthodontics and physical anthropology); radiography; physiology of the mouth; oral surgery; pain control, particularly in operative dentistry; epidemiology; genetics; anomalies; effects of atomic radiation on oral structures; antibiotics; and therapeutic dentifrices.

On the basis of the 1955 edition of the *American Dental Directory*, there were in the United States a total of 95,883 dentists, including retired. Of these, it was estimated that 84,000 were active in the profession. Approximately 81,000 practised dentistry, *i.e.*, worked at the chair, and about 3,000 were engaged in teaching, research and administration. About 75,000 were in private practice. It was estimated that 80% of all active dentists were members of the American Dental association. (See also NUTRITION, EXPERIMENTAL.) (H. T. DN.)

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Dermatology. In 1955 it appeared that the long-held view that acute fungous infections of the feet are freshly acquired infections contracted directly from contaminated sources such as shower room floors, swimming pools, rugs, slippers or wet towels might have to be abandoned. A well controlled study indicated that such infections are caused rather by decreased resistance of the human host to pathogenic fungi that ordinarily lie dormant on the skin surface.

Moniliasis, another mycotic disease caused by yeast organisms, found normally on skin and mucous membranes, had been increasing both in incidence and severity since the widespread use of antibiotic drugs. Affecting warm areas such as folds of the skin, it is especially troublesome in hot, humid weather and tends to resist treatment rather stubbornly. Moniliasis may affect the lungs and other internal organs. A new drug, Nystatin derived from *streptomyces noursei*, which had been extensively studied in the laboratory with encouraging results, was used now with excellent results in humans. Available in capsule, powder, tablet and ointment form, this drug may be administered by mouth, incorporated in babies' formulas, used as tongue swab, mouth rinse, suppository and topically. The results, when used for superficial infections and for oral thrush, were reported to be excellent and no untoward reactions from its use were noted. The drug's value for systemic moniliasis still awaited evaluation.

Scabies, familiarly known as the "seven-year itch," an annoying affliction throughout the history of mankind, was disappearing without apparent reason. The disease, a parasitic infestation of the skin, was widespread in biblical times; perhaps much of the frequently mentioned leprosy in old literature was actually scabies. This has always been among the ten commonest skin diseases, and there is a definite rise in its incidence during war time. An interesting study, undertaken to explain the sudden disappearance of the disease, considered possible causative factors such as the better treatments devised in recent years; improvement in living conditions and hygiene generally, the widespread use of insecticides, the development of immunity; changes in the flora of the skin as a result of use of antibiotics and improved laundering techniques since the introduction of detergent cleansers and washing machines. Ervin Epstein concluded that the latter was probably the most important factor, though a complete explanation for the phenomenon was not forthcoming.

The suggestion that the itching of dry skin might be caused by electrostatic charges resulted from a study which revealed that patients with dry skin harboured an electrostatic charge on the body surface which had a higher voltage than that of persons with normal or moist skin. As atmospheric humidity increased, the surface voltage tended to decrease, and increases in surface voltage occurred when there was diminished or absent sweating, when wool or nylon were worn and when there was little contact with the ground, as when the patient was in bed. Electrostatic charge was increased by rubbing or scratching the skin; it decreased when the irritation was stopped, but more slowly in dry skins. These observations, it was suggested, could explain the usual increased amount of itching in patients with pruritic skin diseases when they were in bed at night and experiments in which patients were grounded by a wire resulted in greater comfort to some of them.

A new treatment for herpes zoster (shingles), gamma globulin administered intramuscularly, was said to have effected excellent results in a small group of cases. As with all treatments for herpes zoster, the results were better when the treatment was administered early in the course of the disease.

In support of the contention that eczema is something more than a skin disease, studies of the reactivity of the skin and

of the central nervous system showed, in a group of persons, that the incidence of abnormal electroencephalographic tracings was significantly higher in persons with eczema than in the general population.

Usually patients suffering from miliaria rubra, prickly heat, obtained relief only from change in the atmosphere; topical agents gave but little help; but it was reported from experience with a large number of patients that the antibiotic agent neomycin in a demulcent and emulsifying vehicle afforded excellent results when applied to the skin.

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Detroit. Detroit, Mich., seat of Wayne County, with a population of 1,849,568 by the 1950 census which gave it fifth rank among U.S. cities, had an estimated 1955 population of about 2,000,000. The city and its metropolitan area, embracing parts of four counties, had an estimated population nearing 4,000,000. In the preceding five years Detroit housing increased by 6%; metropolitan area housing by 45.1%.

Suburban growth by 1955 had created acute problems in water supply (almost wholly furnished by Detroit) and traffic, the one being met with increased pump and main facilities and the other by continued expansion of expressways and multilevel interchanges. So great did the water shortage become that for a time certain localities suspended building permits.

Detroit stands on the north bank of the Detroit river, linking Lakes Erie and Huron. Anticipating that future channel deepening would make it accessible to all vessels capable of using the St. Lawrence seaway, a port director was appointed and studies of future wharfage needs begun.

Two of the three remaining streetcar routes were discontinued during 1955 and steps taken toward abandonment of the third. Public transportation consisted almost wholly of busses. Detroit has an area of 137.9 sq.mi. With reliance upon private automobiles heavy, an acute parking problem had developed, especially downtown, and in 1955 municipal parking facilities with their attendant land condemnation were launched.

Razing of buildings over several blocks, together with shoreline filling, made room for completion of the partly constructed

river front civic centre. It was to include an auditorium, convention hall, exhibits building and underground parking. A skyscraper municipal and county building, part of this development, was occupied.

Eight public housing units were in use in 1955, six segregated. Under a federal court ruling, all had been ordered desegregated. Long-standing legal and financial hinderances were overcome to permit construction of housing on a 50-ac. site cleared by condemnation and for some years vacant. A pilot program for neighbourhood rehabilitation also was begun.

With a fire department rated by underwriters as the country's best, Detroit had the lowest fire loss among cities of comparable size. It kept a fire insurance premium classification of 2, held since 1935. Underwriter ratings range from 1 (best) to 10 (worst). The school system, which embraces Wayne university with about 17,000 students, has long been operationally divided between the elementary and intermediate plans. A new definition of policy called for ultimately making the intermediate plan universal in the city.

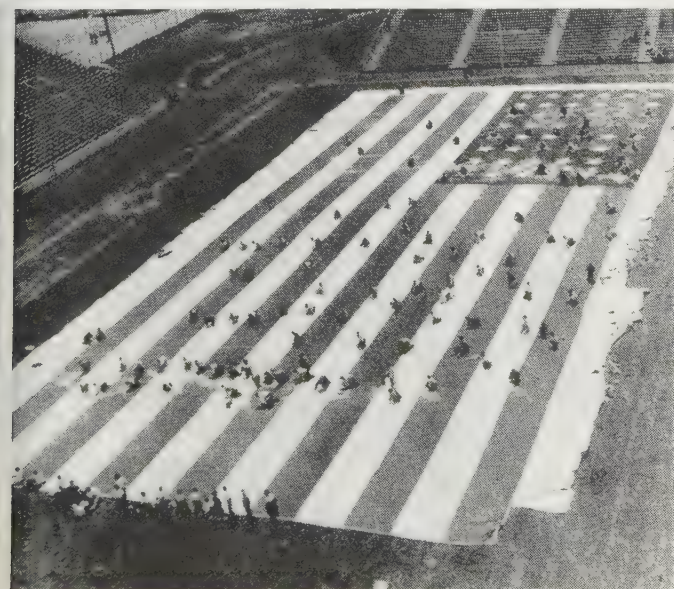
The city government is nonpartisan, with a nine-man council elected at large. Elected officials serve four-year terms.

Detroit's 1955-56 fiscal year assessed valuation was \$4,753,-021,870, its bonded indebtedness \$336,821,000, its tax rate per \$1,000 of valuation \$36.07, of which \$14.30 was for schools.

(R. Ho.)

Diabetes. The number of diabetics in the United States in 1955 was estimated at somewhat more than 2,000,000, of whom 100,000 were diabetics with onset in childhood. Diabetics continued to live longer and longer, the average age at death of 2,897 seen between 1897 and May 31, 1955, who died between 1950 and May 3, 1955, being 64.3 years and the duration of the diabetes 16 years; those with onset between 0 and 39 years lived 22.8 years; with onset 40-59 years, 16.4 years; and with onset at 60 years or over, 9.9 years. There were only five deaths, or 0.2%, under 10 years of age and 21 deaths or 0.7%, above the age of 90 years. Approximately one-third survived their diabetes 20 years. Of the 3,752 children seen during the 58-year period, the duration of the disease for those who died in the last five years was 2.2 years longer than for those in the preceding five years. Disease of the blood vessels was responsible for 75% of the recent diabetic mortality. In young people this was studied advantageously because at this age it was less complicated by the ills of later life.

The knowledge that removal or destruction of the anterior portion of the pituitary gland will lessen the severity of diabetes and, contrariwise, that the injection of an extract of its anterior portion will make the diabetes worse, stimulated physicians and surgeons to remove the pituitary, hoping thereby to lessen its possible harmful effect upon the blood vessels. L. W. Kinsell and R. Luft and their co-workers in California and Sweden performed hypophysectomy upon 5 young diabetics who showed advanced vascular complications in their kidneys and upon 20 who showed such complications in their eyes. Results were awaited with interest. Juvenile diabetic patients with progressive vascular disease of the eyes and kidneys would be candidates for the operation, provided the damage to the kidneys was only moderate. As a result of the operation, the dosage of insulin must be continued, but drops materially. However, because of the removal of the stimulating hormones of the pituitary, patients must receive substitute medication for the thyroid, sex glands and the adrenal gland with careful adjustment of the mineral metabolism. This operation was being performed more and more for the relief of symptoms secondary to cancer, and it was hoped that new methods might be learned which would lessen its gravity.



U.S. FLAG DRY-CLEANED by students of the University of Detroit, Mich., in preparation for Flag day, June 14, 1955. The flag, believed to be the largest in the world, measured 135 x 250 ft.

Increased emphasis was placed upon the detection and identification of the prediabetic and upon prevention of outbreak of the disease, especially in pregnant women. In pregnancy, as in infections, there is a lowering for the tolerance for carbohydrate. No longer was the transitory appearance of sugar in the urine of a pregnant woman considered to be negligible and normal; rather it was looked upon as a precursor of diabetes in future pregnancies. The endeavour, therefore, was made to test pregnant women several times during pregnancy and to discover which showed abnormality in carbohydrate metabolism. It was hoped thus to detect persons who later would be diabetic, and it was hoped that by administration of insulin they and their offspring would be protected.

To detect the future diabetic, S. S. Fajans and J. W. Conn temporarily administered hormones from the suprarenal gland to make individuals more sensitive to the glucose tolerance test, and those who showed impaired tolerance were kept under supervision. E. R. Froesch and A. E. Renold noted that the reducing substances excreted in the urine of normal subjects, hitherto called urine glucose, actually contained only 10 to 20% true glucose. They therefore used a glucose oxidase to determine the true sugar, bearing in mind the possibility of detecting hitherto unrecognized diabetes. G. E. Anderson, using insulin free from glucagon, the active ingredient of the alpha cells of the pancreas which aggravates rather than alleviates diabetes, also sought to discover the prediabetic.

Ferdinand Bertram of Berlin reported discovery of a sulfonamide that lowered the blood sugar without harmful effects. It was tried on more than 100 patients. It does not work with children or, in fact, persons under 45 years of age, persons over 45 years who have had diabetes for five to ten years or persons who have taken insulin for two or more years. Similarly, it will not act in acidosis or preacidosis or in infections. In a few cases there was pruritus and irritation of the skin, and in one case hepatitis developed, although not necessarily because of the drug. In 10 of 38 patients who had taken insulin and with onset after the age of 45 years, it failed. It is given in $\frac{1}{2}$ -g. tablets five times daily at first, then four, three and two tablets, and eventually it can be omitted, although in some cases glycosuria returned and it had to be resumed. The U.S. pharmaceutical industry was experimenting with production.

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(E. P. Jo.)

Diamonds. In 1954, world production of diamonds increased 1.2% over that in 1953. Most of the increase occurred in Tanganyika with some in South-West Africa. The pro-

portion of industrial stones in the total caratage remained 82%. Table I shows the output of diamonds by the major producing countries, including a breakdown of industrials in 1955 according to data supplied by the U.S. bureau of mines.

The sales syndicate reported sales for 1954 as follows: gem stones worth £45,610,010, industrials worth £16,543,115, a total of £62,153,125 compared with £61,155,941 in 1953, an increase of 1.6%. Sales in the first quarter of 1955 rose greatly, indicating a record year. Sales of gems were £15,231,054 and industrials were £6,956,763, totalling £22,187,817 for the quarter.

United States Imports.—The dollar value of diamond im-

Table II.—U.S. Diamond Imports

	(Carats)			
	Rough	Cut	Industrial	Total
1948	909,871	388,499	10,648,250	11,946,619
1949	633,731	335,487	6,381,476	7,350,694
1950	673,699	492,741	11,201,045	12,367,485
1951	654,235	480,602	12,287,407	13,422,244
1952	709,043	438,546	13,522,676	14,670,265
1953*	730,350	444,062	12,768,595	13,943,007
1954	887,273	594,772	13,807,344	15,289,389

*Revised

ports rose from \$156,854,786 (revised figure) in 1953 to \$170,205,321 in 1954, including rough stones \$59,428,768, cut stones \$62,758,349 and industrials \$48,018,204. In 1954 (as in 1953) imports of industrials were equivalent to 83% of the world production for the year. (F. E. H.; B. B. M.)

Diplomatic Services: see AMBASSADORS AND ENVOYS.

Direct Mail Advertising: see ADVERTISING.

Disabled American Veterans: see VETERANS' ORGANIZATIONS, U.S.

Disasters. The loss of life and property in disasters during the period Nov. 1, 1954, to Oct. 31, 1955, is contained in the following list. (See also articles on ACCIDENTS; FIRES AND FIRE LOSSES; FLOODS AND FLOOD CONTROL; METEOROLOGY; SEISMOLOGY.)

Aviation

Nov. 26	Near Liège, Belg. Belgian air force fighter plane crashed in building; 14 persons were killed, 10 injured.
Dec. 4	Near Luang-Prabang, Laos, Indochina. Air liner crashed in mountain; 26 persons aboard were killed.
Dec. 8	Near Athens, Gr. Nineteen Greek military servicemen were killed in the crash of a transport plane.
Dec. 18	New York, N.Y. Italian air liner crashed into pier and fell in Jamaica bay during landing; 26 passengers and crewmen were killed, 6 survived.
Dec. 22	Near Pittsburgh, Pa. U.S. army chartered plane carrying "honor Christmas" soldiers crashed in Monongahela river; 10 persons aboard were killed, 15 survived.
Dec. 24	Prestwick, Scot. British air liner crashed and burned during landing attempt; 28 persons aboard were killed, 8 survived.
Dec. 29	Near Guntersville, Ala. U.S. air force plane struck mountain; 11 persons aboard were killed.
Jan. 12	Near Limaburg, Ky. Air liner and private plane collided; 15 persons aboard were killed.
Jan. 17	Gulf of St. Lawrence. U.S. navy plane went down off Stephenville, Nfld.; 13 persons aboard were missing and presumed dead.
Feb. 13	Central Italy. Belgian air liner crashed in Apennine mountains; all 29 persons aboard were killed.
Feb. 17	Near Anchorage, Alaska. U.S. navy patrol plane crashed into mountain; all 11 persons aboard were killed.
Feb. 19	Near Albuquerque, N.M. Air liner with 16 persons aboard crashed into mountain during snowstorm; there were no survivors.
Feb. 23	Near Windsor, Mo. U.S. air force plane crashed and burned; 9 persons aboard were killed.
March 6	Near Taitung, For. Fourteen persons were killed when U.S. force plane struck mountain.
March 8	Near Mascota, Jalisco, Mex. Commercial air liner crashed in mountain; 26 persons were killed.
March 20	Near Springfield, Mo. Air liner exploded and crashed; 13 persons aboard were killed, 22 injured.
March 22	Near Honolulu, Haw. U.S. navy transport plane crashed into Healeakala; all 66 persons (64 were military personnel) aboard were killed.
April 11	South China sea. Indian air liner crashed near Great Natu Island; 11 Communist passengers, en route to Asian-African conference at Bandung, Indonesia, and four crew members were killed.
April 28	Near Naha, Okinawa, U.S. army plane crashed during landing attempt; ten persons aboard were killed, four on ground injured.
May 4	Atlantic ocean. U.S. air force plane, with nine persons aboard, crashed and burned about 90 mi. off Iceland; no survivors were found.

Table I.—World Production of Diamonds

(Thousands of carats)

	1949	1950	1951	1952	1953	Total	1954
							Industrial
Angola	770	539	734	743	729	722	300
Belgian Congo	9,650	10,147	10,565	11,609	12,580	12,619	10,660
French Africa	218	338	249	299	320	369	240
Gold Coast	973	950*	1,753	2,190	2,167	2,135	1,670
Sierra Leone	494	655	477	452	473	399	260
South Africa	1,254	1,748	2,256	2,376	2,815	2,858	1,810
S.W. Africa	280	488	503	541	617	684	140
Tanganyika	192	195	108	143	171	326	160
Brazil	250*	200*	200*	200*	200*	200*	100*
Others	94*	40*	111	142	128	128	60
Total	14,175	15,300	16,956	18,695	20,200	20,440	16,800

*Estimated.

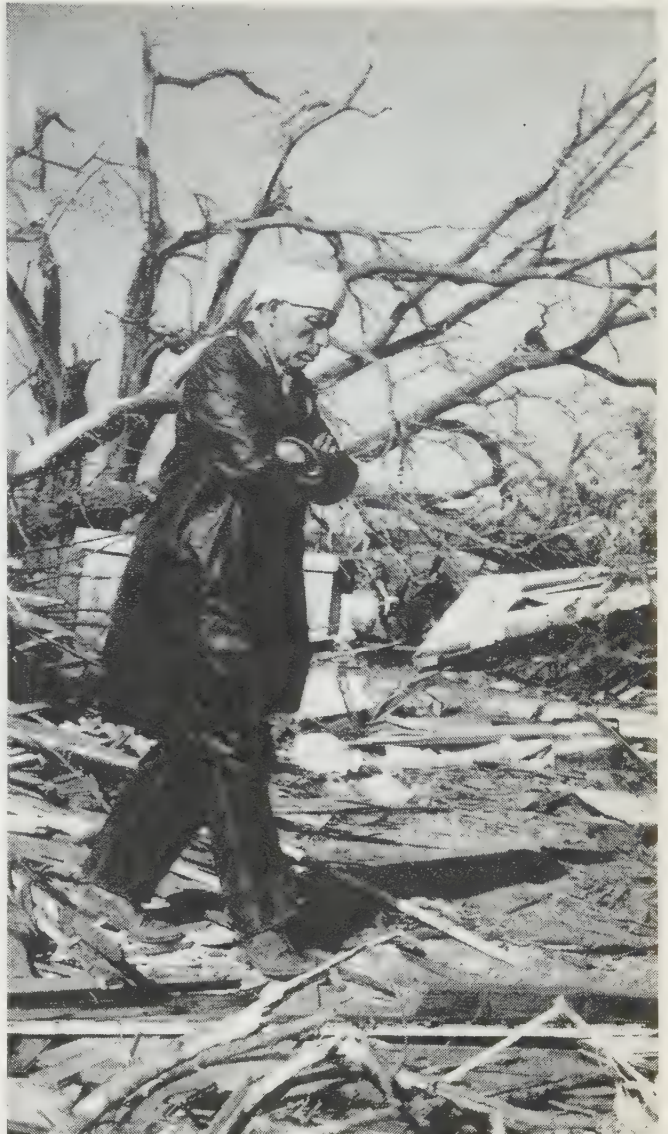
- May 18 Near Nairobi, Kenya. East African commercial air liner crashed into Mt. Kilimanjaro; 20 persons aboard were killed.
- May 30 Near Alamogordo, N.M. U.S. air force plane crashed in canyon; seven persons aboard were killed.
- June 10 Near Stuttgart, Ger. U.S. air force plane crashed into mountain; all 10 crew men perished.
- June 16 Cuatro Mojones, Parag. Brazilian air liner crashed and exploded during landing attempt, killing 14 persons aboard and injuring seven. Among those killed was John Graham Dowling, U.S. foreign correspondent.
- June 25 Near Agra, India. Two Indian air force planes collided in flight; all 19 occupants of both planes were killed.
- July 1 Near Coimbra, Port. Eight Portuguese air force planes, flying in formation, crashed into same peak; all eight pilots were killed.
- July 14 Oaxaca, Mex. All 22 persons aboard were killed in crash of Mexican air liner.
- July 17 Chicago, Ill. Twenty-two persons aboard were killed, 21 injured, when air liner crashed while landing.
- July 27 Near Petrich, Bulg. Israeli air liner crashed after being shot-up by Bulgarian anti-aircraft guns; 58 persons aboard were reported killed.
- Aug. 4 Near Newburg, Mo. Thirty persons aboard were killed in crash and explosion of U.S. air liner.
- Aug. 6 Near Voronezh, U.S.S.R. All 25 persons aboard, including 10 women members of Norwegian parliament, were killed in crash of Soviet air liner.
- Aug. 11 Near Edelweiller, Ger. Sixty-six U.S. air force men were killed in midair collision of two troop carriers.
- Aug. 23 Charleston, S.C. U.S. air force plane crashed into housing area; five crew members and four civilians were killed, 10 persons were injured.
- Sept. 1 Skwentna, Alsk. U.S. air force plane crashed; all 12 persons aboard were killed.
- Sept. 8 Pacific ocean. U.S. air force plane with 13 persons aboard crashed near Naha, Okinawa; all were killed.
- Sept. 11 Ngoaoundere, Fr. Cameroons. French plane crash took lives of 10 persons.
- Sept. 27 Caribbean sea. U.S. navy plane with 11 persons aboard went down during Hurricane "Janet," near Swan Island, Br. Honduras; there were no survivors.
- Oct. 2 Near Vinac, Peru. Commercial air liner crashed in Andes mountains; 19 persons were killed and 16 injured.
- Oct. 6 Near Laramie, Wyo. Air liner struck Medicine Bow Peak; all 66 persons aboard were killed in what was reported to be the worst commercial aviation accident in the U.S.

Explosion

- Nov. 4 São Paulo, Braz. Explosion in fireworks factory demolished neighbouring schoolhouse; 20 children and teachers were reported killed.
- Nov. 13 Near Farmington, W.Va. Gas explosions in coal mine killed 16 miners.
- Dec. 10 Near Manila, Phil. Explosion in fireworks plant killed 26 persons.
- Dec. 24 Near Parkin, Ark. Stove explosion in home killed 11 persons.
- Jan. 23 Zonguldak, Tur. Explosion in coal mine killed 54 persons, injured 14, left 12 missing.
- Feb. 5 Amlabad, Bihar, India. Explosion in coal mine killed a reported 55 workers.
- Feb. 21 San Francisco, Calif. Five sailors were killed in explosions on submarine U.S.S. "Pomodon"; six other persons were injured.
- March 22 Morgnano, It. Explosions in coal mine killed 24 miners, injured 15, and left one missing and presumed dead.
- May 4 Mexico City, Mex. Explosion in plastics factory killed a reported five persons and tossed burning chemicals on parked bus killing six passengers; an escaping bus passenger was killed when a power line fell. Total dead—12 persons.
- June 26 Gelsenkirchen, Ger. Fourteen persons were killed in coal-mine explosion.
- Aug. 3 Near Gelsenkirchen, Ger. Dust explosion in coal mine killed 41 miners.
- Sept. 23 Near Torreón, Mex. Collision of two trucks, carrying explosives, and train killed a reported 20 persons, injured 52.

Fire

- Nov. 27 Istanbul, Turk. Fire destroyed the city's ancient covered bazaar and caused property damage estimated as high as \$178,000,000.
- Feb. 1 Amsterdam, N.Y. Explosion of oil drum started fire in house; 12 persons were killed.
- Feb. 12 Chicago, Ill. Twenty-nine men were killed, 15 injured in fire in "skid row" hotel.
- Feb. 17 Near Yokohama, Jap. About 100 women were killed when fire swept home for the aged.
- April 3 Sclessin, Belg. Fire in movie theatre killed 39 persons, injured six.
- April 9 Tacoma, Wash. Seven children burned to death in home.
- April 12 Saratoga Springs, N.Y. Fire in apartment building caused deaths of eight persons, injured seven.
- May 6 Chicago, Ill. Hotel fire in "skid row" area killed nine persons.
- May 18 Wielopolo, Pol. Theater fire left a reported 58 persons dead.
- May 21 Limbdi, Saurashtra, India. Fire in cotton mill killed a reported 42 persons, injured 24.
- June 18 Ichikawa, Jap. Fire in mental hospital killed a reported 18 persons.
- July 16 Niederschlema, Ger. Fire in uranium mine killed 33 persons and injured 96.
- Aug. 10 Andover, O. Lightning struck restaurant; ensuing fire and explosion killed 22 persons.
- Aug. 27 Whiting, Ind. Oil refinery fire and explosions killed two persons, injured 44 and caused estimated property damage of more than \$10,000,000.
- Sept. 7 Santa Barbara-Yreka, Calif., area. Week-long forest fires killed six persons and caused property damage estimated at \$15,000,000.



HOMEOWNER IN UDALL, KANS., wanders through the wreckage after tornado of May 25, 1955

Marine

- Nov. 15 Atlantic ocean. Brazilian vessel "Deus Quem Manda" ran on sandbar and capsized off Maranhão, Braz.; 7 persons were killed, 18 others were missing and presumed dead.
- Nov. 27 Pacific ocean. Mexican shrimp boat capsized in rough seas; 13 fishermen were drowned.
- Nov. 28- Dec. 9 English, French, Irish coasts. Storms caused deaths of a reported 121 seamen and the loss of 16 ships.
- Dec. 4 Atlantic ocean. Freighter "Southern Districts" with crew of 24 was lost off coast of South Carolina.
- Dec. 31 Sound of Mull, Scot. Trawler "Evelyn Rose" struck rocks and sank; 12 persons were drowned.
- Jan. 7 South China sea. Motor vessel sank off Cavite, Phil.; 12 persons drowned, two others were missing and presumed dead.
- Jan. 16 Central Japan. Fourteen fishermen were reported lost during storm.
- Jan. 27 Atlantic ocean. Heavy coatings of ice caused two British trawlers to capsize; 40 men were missing and presumed lost.
- March 13 Southern Italy. Greek trawler "Iason" sank off Cape Stilo; 11 crewmen were drowned. Eight crew members of British ship "Stratheden" were killed when a lifeboat capsized during rescue operations.
- May 9 Kaohsiung, For. Explosion of ammunition aboard military vessel was reported to have killed 40 persons.
- May 11 Sea of Japan. Ferryboat struck freighter and sank between Honshu and Shikoku islands; 154 persons were reported dead, 19 missing, and 51 injured.
- June 1 Adriatic sea. Yugoslav naval ship sank in Senj channel; 26 navy men were drowned.
- June 9 English channel. Swedish tanker "Johannishus" burned after colliding with Panamanian freighter off Ramsgate, Eng.; 20 of tanker's crew perished.
- June 9 Ganges river. Ferry capsized near Allahabad, India; 32 persons were drowned.
- June 16 Portland, Eng. Torpedo explosion sank British submarine "Sidon"



CHICAGO FIREMEN removing sailor from the wreckage of air liner which crashed at Midway airport July 17, 1955

- in harbour; 13 persons were killed, seven injured; 43 persons were saved.
- June 18 English channel. Pleasure boat was swamped off Caen, Fr.; 22 persons were killed.
- Aug. 12 Chesapeake bay. Fourteen persons were drowned near North Beach, Md., when hurricane winds wrecked excursion steamer.
- Aug. 15 Brittany, Fr. Pleasure launch sank; 20 persons were reported drowned.
- Sept. 14 Near Aveiro, Port. Portuguese trawler sank; 19 persons were reported drowned.
- Sept. 20 North sea. German trawler sank after striking motorship; 15 seamen were reported missing, and presumed dead.

Miscellaneous

- Nov. 7 New York, N.Y. Faulty gas heater emitted carbon monoxide fumes which killed 10 persons.
- Nov. 12 Bel. Cong. Uranium mine was accidentally flooded; 27 workers were reported drowned.
- Dec. 12 Miranda de Ebro, Sp. Panic in church caused stampede, resulting in deaths of 10 girls.
- Jan. 6 Aguascalientes, Mex. Panic in theatre caused deaths of nine persons, injured 40.
- Feb. 13 Hunucmá, Mex. Collapse of bullring stadium grandstand caused deaths of a reported 14 persons, injured about 165.
- Feb. 28 Caribbean sea. Wave swept eight sailors into sea from Colombian destroyer "Caldas"; all were presumed dead.
- April 21 Minas Gerais, Braz. Thirty gold-diggers were killed when trench collapsed.
- June 11 Le Mans, Fr. Racing car, during running of Grand Prix, crashed into spectators and exploded; 82 persons were killed, 78 injured. This was thought to be the worst tragedy in auto racing history.
- July 11 Banff, Alta. Seven boy mountain climbers were killed in avalanche.
- July 11 Western Europe and Great Britain. Severe heat wave killed a reported 420 persons.
- July 28 Ise sea. Wave drowned 36 teen-age girls swimming near Tsu, Jap.
- Sept. 7 Los Angeles, Calif. Ten-day heat wave killed a reported 107 persons.

Natural

- Nov. 12 Zagora, Fr. Mor. Floods caused deaths of a reported 30 persons.
- Nov. 28 Fujiyama, Jap. Avalanche on Mt. Fujiyama swept 16 persons to their death.
- Dec. 11 Parasia, India. Accidental flooding of coal mine caused cave-in; 64 miners were killed.
- Dec. 23 North sea. Storms struck England, Germany, Denmark, and the Low Countries; 74 persons were reported killed.
- Dec. 28 Near El Carmen, Colom. Landslides caused deaths of a reported 47 persons.
- Jan. 5 Leyte, Phil. Storm and floods killed a reported 51 persons.
- Feb. 1 Tunica, Miss., area. Tornadoes killed 31 persons, injured 100.
- Feb. 18 Western United States. Snowstorm killed 18 persons.
- Feb. 21 Japan. Blizzard killed 18 persons, left 180 missing.
- Feb. 26 Western New South Wales, Austr. Floods left a reported 70 persons dead; hardest hit was Maitland area.
- April 1 Southern Philippines. There were 432 persons killed and more than 2,000 injured by earthquakes; hardest hit was Mindanao area.

- April 14 Kangting, Sikang, China. Earthquakes killed a reported 39 persons, injured 113.
- April 16 Sasebo, Jap. At least 73 persons were reported dead in landslides.
- April 17 Pakasiran, Java. Landslide caused deaths of 405 persons.
- May 25 Santa Catarina, Braz. Tornado killed a reported 22 persons, two missing.
- May 25-27 Kansas, Oklahoma, Texas, Missouri. Tornadoes caused deaths of a reported 125 persons, injured more than 700 and left 11 persons killed; property damage; hardest hit was Udall, Kan., area, where 11 persons were killed.
- June 23 Near Patani, Thai. Tidal wave caused deaths of a reported 22 persons.
- Aug. 17-19 Northeastern U.S. Floods and Hurricane "Diane" winds in Connecticut, Pennsylvania, Massachusetts, New Jersey, Rhode Island, New York caused deaths of a reported 191 persons, injured 1,000 and caused property damage estimated as high as \$1,600,000.
- Aug. 30 Kalu, India. Bursting reservoir caused floods which killed a reported 180 persons, injured 200.
- Sept. 12 Near Cairo, Egy. Earthquake killed a reported 20 persons, injured 28.
- Sept. 19 Tampico-Vera Cruz, Mex., area. Hurricane "Hilda" brought on a reported 250 persons, injured 1,000. A reported 206 persons were killed on the Yucatan peninsula, when Hurricane "Janet" reversed course on Sept. 28. Damage in the Tampico area was estimated at more than \$42,000,000.
- Sept. 19 New Bern, N.C., area. Hurricane "Ione" caused deaths of five persons and caused property damage estimated at \$160,000,000.
- Sept. 23 Barbados, Windward Is. Hurricane "Janet" and subsequent floods killed a reported 61 persons, injured 247 and caused property damage estimated at \$5,000,000; the total of dead in the Caribbean area was estimated to exceed 200 persons.
- Oct. 1 Kyushu, Jap., area. Typhoon "Louise" caused deaths of 31 persons, injured a reported 241, left 41 missing and caused property damage estimated at \$30,000,000.
- Oct. 13 Volos, Gr. Twenty-three persons were killed and 15 injured in floods.
- Oct. 13 Punjab, Patiala and Delhi, India. Floods killed a reported 21 persons, and caused estimated property damage of more than \$63,000,000.
- Oct. 17 Northeastern U.S. Rains and resultant floods killed a reported 11 persons and caused property damage estimated at \$21,000,000.

Railway

- Dec. 2 Louvain, Belg. Twenty-one persons were killed, more than 50 injured when train was derailed.
- Dec. 17 Southeast Algeria. Fifteen passengers were killed when two trains collided.
- Dec. 18 Near Dortmund, Ger. Collision of two passenger trains killed 11 persons, injured about 60.
- Jan. 4 Near Barra do Pirai, Braz. Train wreck caused deaths of a reported 15 persons, injured 40.
- Jan. 8 Near Aracaju, Braz. Forty persons were reported killed and a reported 100 injured in train crash.
- Jan. 23 Sutton Coldfield, Eng. Seventeen passengers were killed, 30 injured when train jumped track.
- Feb. 6 Between Johannesburg and Durban, U. of S. Af. Two trains collided; 12 persons were killed, 66 injured.
- Feb. 26 East Germany. Derailment of Soviet troop train killed a reported 40 soldiers.
- March 1 Near São Paulo, Braz. Thirty persons were reported killed, injured when train overturned.
- March 2 Pusan, Kor. Fire in train car killed 39 persons, injured about 100.
- April 3 Near Alsaba, Mex. Six cars of train carrying Holy Week vacationers fell into canyon; 13 persons were killed, about 90 injured.
- May 12 West Java, Indon. Forty-six persons were killed, about 43 injured in train crash.
- July 17 San Bernardo, Chile. Collision of two trains killed 49 persons, injured 43.
- Aug. 22 Spring City, Tenn. Eleven children were killed, 30 injured in train school bus collision.

Traffic

- Nov. 14 Near Caracas, Venez. Two racing cars ran into crowd; nine persons were killed.
- Dec. 16 Near Lens, Fr. Eleven persons were killed when bus ran off bridge.
- Dec. 19 Near Mexico City, Mex. Bus ran into ravine; 37 persons were killed, 38 injured.
- Dec. 24 Johannesburg, U. of S. Af. Ten persons were killed in a collision of two trucks.
- Dec. 24-26 United States. Traffic deaths during two-day Christmas holidays reported by the Associated Press, numbered 392 persons.
- Dec. 26 Near Cuzco, Peru. Bus went over cliff; 17 persons were killed, 5 were injured.
- Dec. 31-1955 United States. Reported 296 persons died in traffic accidents during 54-hour New Year holiday period.
- Jan. 2 Near Tucuman, Arg. Bus ran off bridge and fell into river; 11 persons were killed, 22 injured.
- Jan. 21 Near Mexico City, Mex. Bus fell into canyon and burned; 30 persons were reported killed.
- Feb. 26 Vigo, Sp. Bus struck tree and burned; 31 persons were killed.
- March 9 Near Seoul, Kor. Bus ran off bridge; 38 persons were killed, 17 injured.
- April 8 Northwestern Argentina. Sixteen persons were killed, 14 injured when bus ran over cliff.
- May 27-1955 United States. Associated Press listed three-day Memorial week-end deaths in auto accidents as 369 persons.
- May 27 San Francisco, Calif. Runaway furniture van killed seven persons, injured three.
- July 1-4 United States. Traffic death toll over Independence day week numbered 407 persons.

Aug. 13	Near Bourg St. Pierre, Switz. Seventeen sightseers were killed when bus ran off cliff.
Sept. 6	United States. Labor day weekend (three days) traffic accidents killed a reported 438 persons.
Oct. 2	Near Eudora, Ark. Bus-automobile collision killed all seven passengers in car.

Disciples of Christ. Total membership of the Disciples of Christ in the United States and Canada in 1955 was 1,890,679, and the world membership was 2,045,943. Additions for the year totalled 137,613: by baptism 68,334, by transfer 69,279. Local congregations in the world numbered 8,830; in the United States and Canada 8,009. The world total of ministers was 7,578. Missouri reported the largest number of local congregations, 801; Indiana the largest membership, 194,589; this state also had the largest number of baptisms, 6,033. Total contributions for the United States and Canada were \$75,955,232.30. Of this, \$50,828,610 was for local expenses and \$25,126,622.30 for missions and benevolence. Unified Promotion, the central receiving agency for missionary funds, secured \$3,889,574.28, an increase of \$452,250.78 over the preceding year.

Missionary work during the year was conducted in 11 fields outside the United States: Belgian Congo, South Africa, Argentina, Paraguay, India, Japan, Thailand, Jamaica, Puerto Rico, Mexico and the Philippines, with 223 missionaries and 1,993 national leaders. Baptisms in these fields numbered 9,414. The United Christian Missionary society, located in Indianapolis, Ind., is the major administrative office in the United States for missions, Christian education and church development.

The pension fund of Disciples of Christ reported a total active membership of 4,632 with assets of \$19,000,000. The Board of Church Extension served 824 churches through building loans. The total assets of this board were \$8,198,937.03.

The International Convention of Disciples of Christ, located at 620 K. of P. Building, Indianapolis, Ind., did not hold its usual annual assembly. However, it conducted 12 Area Christian assemblies in Lynchburg, Va., Atlanta, Ga., Pittsburgh, Pa., Cincinnati, O., St. Louis, Mo., Omaha, Neb., Colorado Springs, Colo., Spokane, Wash., Bakersfield, Calif., Wichita, Kan., Ft. Worth, Tex., and Memphis, Tenn. These assemblies were for the purpose of reviewing progress on the ten-year long-range program which would culminate in 1960. The World Convention of Churches of Christ was held in Toronto, Can., with representatives from 13 countries. The total registration was 7,652.

The Disciples of Christ, through their international convention, maintain active membership in the World Council of Churches and the National Council of the Churches of Christ in the U.S.A.

The 1956 assembly of the International Convention of Disciples of Christ was to be held in Des Moines, Ia., Sept. 28 to Oct. 3, 1956, with Riley B. Montgomery, president of the College of the Bible, Lexington, Ky. as convention president. Gaines M. Cook continued as executive secretary. (See also CHURCH MEMBERSHIP.)

(G. M. Ck.)

Displaced Persons: see REFUGEES.

District of Columbia: see WASHINGTON, D.C.

Divorce: see MARRIAGE AND DIVORCE.

Dixon-Yates Contract: see ATOMIC ENERGY.

Dog Shows: see SHOWS.

Dominica: see WINDWARD ISLANDS.

Dominican Republic. Nearly two-thirds of the island of Hispaniola, to the east, is occupied by the Dominican Republic (area 18,682 sq.mi.; population, (1950 census) 2,135,872, (1955 est.) 2,404,000. (The western

one-third comprises Haiti.) The capital of the Dominican Republic is Ciudad Trujillo (known from the beginning of the 16th until the second quarter of the 20th century as Santo Domingo, whence the name of the nation) with a population of about 200,000. The other large city, Santiago de los Caballeros, in the northern mountains, has about 60,000 inhabitants. The 1950 census gave the largest cities the following populations: Barahona 14,654; Ciudad Trujillo 181,553; La Romana 14,074; La Vega 14,200; Puerto Plata 14,843; San Francisco de Macoris 16,083; San Pedro de Macoris 19,876; Santiago 56,558. The president in 1955 was Gen. Hector B. Trujillo y Molina.

History.—There was rising economic activity throughout 1955. While cacao prices fell, they tended to stabilize by mid-year. Coffee production increased over 1954, but prices were unsteady. Sugar production continued to be well sustained, with most of the crop going to Great Britain and elsewhere in Europe, and a slight increase in the amount admitted into the U.S. The resentment caused by the small sugar quota assigned to the Dominican Republic by the U.S. secretary of agriculture was revealed in press and other public comment. A tobacco export monopoly was decreed, effective early in 1956.

Tourist entry requirements were radically simplified in 1955, and as two new large hotels were completed, the number of tourists increased. Spanish immigrants at the rate of 1,000 monthly began to arrive on Italian ships chartered by the government. The government provided land and initial working capital, since its interest was to build up a durable farm population of European origin in the mountain areas along the Haitian border. The extensive program of public works led to an increase in export taxes on sugar, cacao and coffee, and on tobacco until such time as the monopoly began to operate. Import duties were unified in a flat 23% tax ad valorem.

Although agriculture continued to be the principal occupation of more than 80% of the population, new industries continued to get under way. A shipyard was begun in February with a 1,000 ft. dry dock. A plant producing furfural from sugar-cane bagasse was built at a cost of \$7,000,000; its output was reported to be wholly contracted for by an American concern.

Preparations for an international fair, scheduled to begin at the end of the year, were vigorously carried forward in the autumn. Relations with Haiti and other countries were unusually tranquil during 1955.

(C. E. Mc.)

Education.—In 1954 there were 2,641 schools (including 1,250 emergency schools), all of which were maintained by the state except 112 semiofficial (state-aided) and 169 private schools. The total number of pupils enrolled was 246,734. There were also 3,568 centres for combating illiteracy with 78,709 students enrolled. The University of Santo Domingo had 2,560 students. According to the 1950 census, 56.7% of those 10 years of age and over were illiterate.

Finance.—The monetary unit is the peso, officially pegged at par with the U.S. dollar. The 1955 budget estimated revenue at \$108,100,000 and expenditure at \$105,500,000. Revenue in 1954 was \$110,400,000. There was no public debt. Currency in circulation (Aug. 31, 1955) totalled \$41,580,000; demand deposits \$38,150,000; gold reserves \$12,080,000. The U.S. dept. of commerce estimated U.S. direct investments in 1954 at \$133,000,000. The cost-of-living index at Ciudad Trujillo stood at 103 in July 1955 (1948=100). The gross national product (1954) totalled \$471,200,000.

Trade and Communications.—Exports in 1954 totalled \$119,726,923; imports were \$82,827,010. Leading exports were sugar (31%), coffee (26%), cacao (20%), chocolate (7%) and tobacco (4%). Leading customers were the U.S. (57%), the U.K. (21%), the Netherlands (3%), Puerto Rico (3%) and Ceylon (2%); leading suppliers, the U.S. (66%), the Netherlands Antilles (6%), Canada (5%), Germany (5%) and Belgium (3%).

In 1951 there were 152 mi. of public railway, all owned and operated by the government, and 748 mi. of industrial railway, operated mainly by the sugar companies. Road mileage in 1950 was placed at 1,966, of which 694 mi. were classified as first-class all-weather, 1,027 secondary and 245 third-class. On Jan. 1, 1955, there were 11,308 motor vehicles, including 5,794 automobiles, 5,034 trucks and 480 buses.

Agriculture.—In the 1954-55 season 613,000 metric tons of sugar were produced; in 1954, 512,675 tons of sugar and 28,058,340 gal. of molasses were exported. Production of other important crops in 1954-55 (preliminary) included coffee 460,000 bags of 132 lb. each (exports 1954: 393,000 bags), cacao 84,024,000 lb.; rice 170,000,000 lb.; tobacco (1954) 41,500,000 lb. In 1952 there were 769,000 cattle, 833,000 hogs and 129,000 horses.

Manufactures.—In 1954 there were 3,416 industrial establishments with capital of \$166,567,172, 66,299 employees and sales amounting to \$162,516,994. Important products included sugar, cotton textiles, cement, beer, edible oils and chocolate. (J. W. Mw.)

Donations and Bequests. The generosity of the citizenry of the United States to its philanthropic institutions, according to available indexes, continued its upward climb in 1955 and exceeded the \$5,400,000,000 estimated total for 1954.

This upward trend appears to have been in all areas of benefactions. Individual giving which, in 1954, was estimated at \$4,100,000,000, showed an increase in 1955, notably in the number of gifts of \$100,000 and over. John D. Rockefeller, Jr., alone, made publicly announced gifts of more than \$24,000,000.

Foundations, whose grants had been estimated at \$200,000,000 annually, distributed more than \$325,000,000 in 1955. The Ford foundation, early in the year, announced a \$50,000,000 program of aid to higher education through faculty salary increases and, later, a \$20,000,000 scholarship aid program. It allocated \$15,000,000 to strengthen and extend research in mental health over the next five to ten years. During the first nine months of the year, a record of 114 publicly announced grants of \$100,000 and more totalled more than \$151,000,000.

Corporation gifts which, according to income tax figures, amounted to \$398,579,000 in 1952, and were estimated at \$500,000,000 annually, passed the \$650,000,000 mark in 1955. Large corporations continued to announce expanded programs of aid to educational institutions, supported their health and welfare activities on a per employee basis formula and, when the American Red Cross needed additional funds to meet the flood disaster emergency, responded with sizable giving.

Philanthropic bequests average about \$650,000,000 annually, and during 1955 many estates in excess of \$1,000,000 were left to nonprofit institutions. Where does this \$5,500,000,000 go? Churches and other religious organizations receive annually about 55%, or \$3,025,000,000. In 1955, total gifts to religion were responsible for \$700,000,000 in new religious construction—an all-time record.

Colleges and universities receive about \$325,000,000 in gifts and bequests, and it was believed this figure was increasing, for many institutions, both large and small, announced record amounts in benefactions received in the 1954-55 fiscal year.

Expenditures for civilian health and medical care average about \$94 a person, or a total of \$14,400,000,000; philanthropy pays about 2.8 cents of each dollar of this total.

Gifts to welfare agencies continued to increase. Funds raised by community chests and united funds for 1955 totalled \$302,500,000, an increase of 4% over those raised for 1954.

All in all, 1955 promised to be a banner year for philanthropy in the U.S. (See also COMMUNITY CHEST; EDUCATION; SOCIETIES AND ASSOCIATIONS, U.S.) (J. P. J.)

[On Dec. 12, 1955, the Ford foundation announced grants totalling \$500,000,000 to increase teacher salaries in privately supported universities and colleges, to extend services of voluntary nonprofit hospitals and to improve instruction in privately supported medical schools. These grants were to be paid out during the following 18 months.]

Draft: see SELECTIVE SERVICE, U.S.

Drama: see THEATRE.

Dress: see WOMEN'S FASHIONS.

Drew, George Alexander (1894-), Canadian political leader, was born on May 7 at Guelph, Ont., and educated at Guelph Collegiate institute, Upper Canada college and the University of Toronto. In 1938 he was chosen leader of the Ontario Conservative party

and in 1939 he was a member of the Ontario legislature, being re-elected in 1943 and 1945. In 1943, he was sworn in as premier of Ontario. On Oct. 2, 1948, he was chosen leader of the national Progressive Conservative party and on Dec. 20 of that year was elected to the house of commons. In an unprecedented action the Liberal government appointed him member of Queen Elizabeth II's privy council of Canada on May 13, 1953. He has been leader of the official opposition in the house of commons since 1948.

Although Drew suffered a very serious illness during the winter of 1954-55, he made an excellent recovery, returning to active duty at the end of Feb. 1955. Drew's chief contribution to the work of the 1955 session was a vindication of the responsibility of parliament under the constitution. He led opposition to the granting of permanent status to extraordinary powers vested in the minister of defense production, speaking with great vigor and at great length during the debate which ended only when the government accepted Drew's thesis and the defense minister's extraordinary powers became subject to a time limit of three years. Drew was also successful during the session in his contention that the minister of national revenue ought not to retain his position as director of a trust company while he was a member of the government. When Drew made a motion of censure on June 20, Prime Minister St. Laurent told the house that the minister of national revenue had resigned from the trust company one month previously. (M. L. S.)

Drought: see METEOROLOGY; SOIL CONSERVATION.

Drug Administration, U.S. The Federal Food, Drug and Cosmetic act is enforced by the Food and Drug administration (FDA), a unit of the department of health, education and welfare, and is designed to protect the public from harmful and improperly labelled commodities in interstate commerce.

A report on tests of drugs exposed to atomic explosion, conducted in co-operation with the Federal Civil Defense administration (FCDA), was released in Jan. 1955. It showed that of the 42 important common drug items exposed, only 2 (insulin and vitamin B₁₂) were reduced in potency. Under a delegation of authority to the department from the FCDA, the Food and Drug administration began in June 1955 a training program for state and local officials, to help them safeguard food and drug supplies in case of attack.

To correct the lack of complete reports on untoward effects of drugs, occasionally noticed by hospitals and physicians, the FDA undertook a pilot study on voluntary reporting, in co-operation with several medical and hospital groups. If the study proved helpful, efforts were to be made to extend it to a widespread system of permanent reporting, making the information generally available to physicians and hospitals.

Twenty-nine drug and device recalls were supervised during the year, of products that were below their labelled potency, nonsterile injectables and an eye solution, and drugs marketed without effective new-drug applications, varying from U.S. specifications, packaged defectively, and causing untoward reactions when injected. Two devices with mechanical imperfections were recalled—blood donor and intravenous administration sets.

Illegal sales of prescription drugs were charged in 141 of the 154 drug and device prosecutions. Penalties ranging from nominal

Table I.—U.S. Production and Sales of Medicinals

	1954	1953
Production	65,884,000 lb.	66,585,000
Sales		
Quantity	53,232,000 lb.	54,227,000
Value	\$425,835,000	\$409,068,0
Average value per lb.	\$8.15	\$7.54

Source: U.S. Tariff Commission, *Synthetic Organic Chemicals, U.S. Production and Sales of Medicinals, 1954.*

nal fines to \$5,000 and five jail sentences were imposed. Two of the men sentenced to jail issued prescriptions for dangerous drugs, but were not licensed to practice medicine. Many state pharmacy boards suspended or revoked licences of pharmacists convicted of illegal sales.

Besides the occasional pharmacist who disregards his professional obligations, cases of illegal sales frequently involve peddlers who obtain the drugs illegally. In one instance, a woman running a massage parlor sold amphetamines to overweight patients to curb their appetites and to help them reduce. Reports of sales of amphetamines to truck drivers and other motorists to help them stay awake on long or monotonous drives were under investigation.

Nine of the remaining 13 prosecutions filed involved false and misleading curative claims. Other charges were based on faulty composition and failure to bear mandatory labelling.

Promoters are quick to capitalize on the credulity of the sick and ailing by offering "miracle" drugs and gadgets. One recent fad was an import, "Royal Jelly," the secretion of drones fed to the queen bee. Claims for it included sex rejuvenation, growth of retarded children and treatment of Parkinson's disease and heart trouble. Entry was denied because there were no effective new-drug applications for royal jelly products, including analyses of their composition and evidence of their safety.

A number of seizures were followed by an injunction to stop shipments of a device consisting of a cabinet filled with a sun-lamp and short-wave unit and coloured slides assembled to irradiate jugs of water. The water was recommended for apoplexy, tumours, ulcers and virus infections.

Another device case, in which the defendant was sentenced to 90 days in jail, was based on false and misleading curative claims for colour lamps. The itinerant "health" lecturer claimed that diseases are caused by specific colours. He offered a green treatment to cure jaundice, diabetes and consumption, which he said were "yellow diseases," and a yellow light for laryngitis, goiter and heart trouble, which he termed "violet diseases."

Uranium ore "tunnels," pads, blankets, etc., were offered for treatment of arthritis, which were completely ineffective for any therapeutic purpose. Six seizures were effected and other actions were taken by state authorities. Products with enough radioactivity to affect bodily functions are restricted to the use of qualified operators.

Of 2,991 import drug shipments inspected, 2,515 were refused entry because of failure to meet U.S. requirements. Domestic

Table III.—U.S. Consumer Expenditures for Prescriptions, Other Medicines and Auxiliary Health Aids*

	1954	1953
Physicians' prescriptions		
Number:		
Drug store	438,000,000	420,200,000
Other retail stores	10,200,000	10,100,000
Total	448,200,000	430,300,000
Amount:		
Drug store	\$956,700,000	\$872,600,000
Other retail stores	22,300,000	20,900,000
Total	\$979,000,000	\$893,500,000
Other medicines		
Drug store	\$259,030,000	\$263,560,000
Other retail stores	297,560,000	281,780,000
Total	\$556,590,000	\$545,340,000
Auxiliary health aids*		
Drug store	\$282,160,000	\$278,080,000
Other retail stores	269,980,000	257,660,000
Total	\$552,140,000	\$535,740,000
Total for prescriptions, other medicines, and auxiliary health aids*		
Drug store	\$1,497,890,000	\$1,414,240,000
Other retail stores	589,840,000	560,340,000
Total	\$2,087,730,000	\$1,974,580,000

*Includes prescription accessories, first-aid products, foot preparations, veterinary medicines, feminine and baby medicaments.
Source: Drug Topics (March 7 and Aug. 8, 1955).

passing tests for purity, potency and stability. Also certified were 4,655 batches of coal-tar colours, representing 5,140,202 lb. for use in foods, drugs or cosmetics. (See also NARCOTICS.)
(G. P. L.)

Drug Production and Sales.—A drop of 1% in the volume of drug production in 1954 from the preceding year was revealed in the reports of the U.S. Tariff commission. Sales likewise were off about 2% in quantity, but there was an increase of more than 4% in the total value of sales. As a result, the average per pound value of drug sales rose from \$7.54 in 1953 to \$8.15 in 1954.

Expenditures for physicians' prescriptions were up nearly 10% in 1954. The number of prescriptions increased more than 4%. The average price per prescription rose accordingly from \$2.07 in 1953 to \$2.19 in 1954. Approximately 98% of physicians' prescriptions were filled in the 53,000 drugstores in the United States.

Sales of nonprescription packaged medicines were up a little more than 2% to set a record for the year. Sales of auxiliary health aids also increased, more than 3%. Articles in this category include prescription accessories, first-aid products, foot preparations, veterinary medicines and feminine and baby medicaments.

In the export market U.S. drug producers experienced many difficulties. Trade barriers, currency and foreign exchange restrictions and other discriminations imposed by foreign governments had choked off, and in some instances completely stopped, sales of U.S. drug exporters in some of their overseas markets.
(P. C. O.)

Drugs: see AGRICULTURAL RESEARCH SERVICE; ALLERGY; BIO-CHEMISTRY; BLOOD, DISEASES OF THE; CHEMISTRY; CHEMOTHERAPY; DERMATOLOGY; DRUG ADMINISTRATION, U.S.; ENDOCRINOLOGY; MEDICINE; NARCOTICS; PUBLIC HEALTH SERVICE, U.S.; STOMACH AND INTESTINES, DISEASES OF THE; VETERINARY MEDICINE. See also articles on specific diseases, such as CANCER; DIABETES; etc.

Drug Traffic: see NARCOTICS.

Drunkenness: see INTOXICATION, ALCOHOLIC.

Duke Endowment: see SOCIETIES AND ASSOCIATIONS, U.S.

Dulles, John Foster (1888—), U.S. cabinet member, was born on Feb. 25 in Washington. D.C. He graduated from Princeton university, Princeton, N.J., in 1908 and was awarded a law degree at the George Washington university law school, Washington, D.C., in 1911. In World War I he served as a major on the army general staff, and after that war went to the Paris peace conference as U.S. counsel on

Table II.—Value of Medicines Shipped by U.S. Manufacturers

	1953	1952
Pharmaceutical preparations	\$1,514,234,000	\$1,477,772,000
Medicinal chemicals	363,390,000	340,399,000
Inorganic and organic medicinals (bulk type)	346,800,000	322,006,000
Drugs of animal origin (uncompounded)	16,590,000	18,393,000
Biological products	69,565,000	79,868,000

Source: U.S. Bureau of the Census, Annual Survey of Manufactures, 1953.

drug and device shipments seized totalled 170 actions, based on 299 violative samples. Inspections were made of 1,901 drug and device establishments and 8,259 samples were collected.

Applications for 433 new drugs were allowed to become effective after evaluation of their safety—343 for human use and 90 for veterinary use. In addition, 2,277 supplemental applications went into effect, of which 1,163 were for veterinary preparations. Most of the veterinary drugs were growth stimulants for livestock and poultry. Some of the important drugs considered were preparations for the treatment of arthritis, allergic conditions and tuberculosis; radioactive agents; nonbarbiturate hypnotics; antitussive agents; nonmercurial diuretics; anticholinesterase agents; and antibiotics.

During the fiscal year, 329 batches of insulin and insulin products and 20,643 batches of antibiotics were certified after



"WELL, THIS SHOULD MAKE MY POSITION CLEAR!" a critical view by British cartoonist Vicky of the *London Daily Mirror*

reparations and other financial matters. Between the two wars he became a prominent international lawyer. In 1945 he was a member of the U.S. delegation to the conference to organize the United Nations at San Francisco, Calif.

In 1951, as U.S. ambassador-at-large, he travelled to both Asia and Europe to arrange for agreement among the World War II Allies, the U.S.S.R. excepted, to a peace treaty with Japan, which was signed on Sept. 8 by Japan and 48 noncommunist nations. Dulles prepared the foreign-policy plank of the Republican party platform in 1952 and after the national election of that year was designated Pres. Dwight D. Eisenhower's new secretary of state. He was sworn into office Jan. 21, 1953.

Within two weeks of taking office Dulles began a survey trip of Italy, France, Great Britain, western Germany and the Benelux countries to find methods of strengthening the proposed European Defense Community. He flew to Korea early in Aug. 1953 after the truce agreement had been signed. At Seoul on Aug. 8 he negotiated a mutual defense pact with the South Korean government.

Two important events in Dulles' career during 1954 were his signing of the eight-power southeastern Asia security pact at Manila, P.I., on Sept. 8, and his conclusion of the 15-power Paris pact Oct. 23 creating the Western European union and leading to rearmament of West Germany.

Dulles continued his extensive travels during 1955, attending the SEATO conference at Bangkok, Thailand, in February and the Geneva conference of the heads of the Big Four Powers in July. On May 15 he signed the Austrian peace treaty at Vienna. In October he attended the foreign ministers' conference at Geneva, Switz.

Dulles proposed on Aug. 26, 1955, that the U.S., in conjunction with the United Nations, guarantee a new fixed Arab-Israeli boundary to end clashes in the area which had flared again during the year.

Duplessis, Maurice Le Noblet (1890—), Canadian political leader, was born on April 20 at Trois Rivières, Que., the son of a provincial legislator and judge. He was educated at a seminary in Trois Rivières and at Laval university, after which he practiced

law in his native town. He stood for election to the Quebec legislature from Trois Rivières in 1923 but was defeated. In the general elections of 1927, however, he won the seat, and was re-elected in 1931, 1935 and 1936. In 1933 he was chosen leader of the Conservative party but broke with it just prior to the 1936 elections and formed his own—the Union Nationale—which gained 76 of the then 90 seats in the Quebec legislature. Duplessis was sworn in as Quebec's premier and attorney general Aug. 26, 1936. During this first tenure of office he supported various federal social-benefit laws, such as old-age pensions and unemployment insurance.

After Canada's entry into World War II, Sept. 10, 1939, Duplessis declared that the federal War Measures act endangered Quebec's provincial autonomy and he even threatened secession in the event of a national military draft. His stand was repudiated by Quebec's voters in the elections of Oct. 1939, and he resigned as premier but kept his Trois Rivières seat.

Duplessis made a remarkable political comeback in Aug. 1944 when, after five years as leader of the opposition, he won 41 of the 91 seats and again became premier and attorney general. He greatly increased this majority in the elections of July 21, 1948, when the Union Nationale party won 82 seats. He was again re-elected July 16, 1952, although that time his party's control dropped to 68 of the 92 legislative votes.

Dutch Guiana: see SURINAM.

Dutch Overseas Territories: see NETHERLANDS ANTILLES; NETHERLANDS NEW GUINEA; SURINAM.

Du Vigneaud, Vincent (1901—), U.S. biochemist and Nobel prize winner, was born at Chicago, Ill., on May 18. He received his bachelor's degree at the University of Illinois, Urbana, in 1923 and his master's degree there the next year, taking his Ph.D. from the University of Rochester (N.Y.) in 1927. He also studied at the Kaiser Wilhelm institute in Dresden, Ger., and at the medical school of the University of Edinburgh, Scot. He was chairman of the biochemistry department of George Washington university medical school, Washington, D.C., from 1932 to 1938, when he joined the staff of Cornell university medical college in New York City. There he concentrated his research on the synthesis of two hormones—oxytocin and vasopressin. The former, a complex of amino acids, is important in aiding childbirth, the latter in treatment of diabetes. For his work on these two hormones—recognized by the Royal Swedish Academy of Sciences as "a historic feat in biochemistry," Du Vigneaud on Nov. 12, 1955, was named recipient of the 1955 Nobel prize in chemistry.

Dyes. A marked upswing in the consumption of U.S. dyes over the previous year manifested itself during the first eight months of 1955. With the textile industry operating at a high level, it was expected that the demand for dyes would be reflected in an over-all increase of approximately 10% at the end of the year. Export sales of U.S. dyes were slightly ahead of the figures for 1954. Rising labour and raw materials costs necessitated price readjustments of 5% to 10%. A proposed tariff cut on dyes was strongly opposed by dye-producing firms as having a serious effect upon the industry because of the wide difference in labour costs between workers in the United States and in Europe and the inability of the former to compete on this basis.

Of greatest significance to the textile industry was the continuing approach toward simplifying dyeing techniques involving both new and established fibres. Where formerly the range of available dyes for many of the synthetic fibres was necessarily limited, chemical technology developed complete series

of dyes possessing satisfactory application characteristics and outstanding fastness.

Production of all types of U.S. dyes in 1954, based on preliminary figures published by the United States tariff commission, amounted to 142,982,000 lb., 14% less than the 165,806,000 lb. produced in 1953. In 1954 sales of all dyes totalled 137,463,000 lb. valued at \$160,302,000 compared with 151,675,000 lb. valued at \$167,526,000 in 1953, a decrease of 10% in quantity and 5% in value. The average unit value of sales of all dyes increased to \$1.17 per pound in 1954 from \$1.10 in 1953, primarily because of the greater production and sales of certain higher-priced dyes. The vat-colour group maintained the lead in both production and sales, accounting for 31.6% of the 1954 production and 31.5% of the poundage sold; direct dyes represented 18.3%, sulphur dyes 15.8% and acid dyes 9.6%.

Four chemical classes of dyes accounted for about 85% of the total quantity produced in 1954, azo dyes for 37%, anthraquinone vat dyes for 22%, sulphur dyes for 16% and indigoid and thioindigoid dyes for 10%. With the exception of sulphur dyes, which increased 0.5% in 1954 compared with 1953, the output of the remaining three classes was less than in 1953. Indigoid and thioindigoid dyes declined 35%, anthraquinone vat dyes 19% and azo dyes 8%.

Sales of vat dyes exclusive of indigo amounted to \$43,787,000, direct dyes \$34,674,000, acid dyes \$17,395,000 and sulphur colours \$6,573,000. Foreign invoice value of U.S. dye imports in 1954 increased to \$5,832,097 from \$4,594,000 in 1953. Germany jumped into the lead with 55% of total imports, while imports from both Switzerland and the United Kingdom fell off.

(A. G. BR.)

Other Countries.—In a report on the European chemical industry issued by O.E.E.C. (Organization for European Economic Cooperation), it was stated that between 1950 and 1954 world output of dyestuffs rose from about 270,200 metric tons to about 323,100, an increase of 20%. In 1937 the production was estimated at 243,900 metric tons. Precise details of production were not available for all the non-O.E.E.C. countries.

In O.E.E.C. countries as a whole production was at about prewar level and represented about 50% of world output in 1937, but fell to about 37% (121,200 metric tons) in 1954 because of the rise in production in the U.S. and eastern countries. Productive capacity in O.E.E.C. countries was in excess of actual output. Among causes of surplus capacity were the revival of the German industry and the setting up of the industry in countries hitherto without it. As a result dyestuff exporters had to face the forcing down of prices and the granting of credit terms that some considered too generous.

Resumption of trade with eastern European markets, if only on a limited scale, was hoped for as a result of some of the east-west trade agreements concluded during 1954, which specifically provided for dye exports.

Several leading European producers reported good and, in some cases, record sales abroad.

The Indian tariff commission's recommendations to the government in 1954 were accepted. Control of imports of dyes generally was to continue and only those requirements which could not be met by indigenous production were to be admitted. Tariffs on certain dyes were raised and those on intermediates lowered. The commission urged the establishment of coal-tar distillation in India, so that the dye industry might be supplied with home-produced intermediates; the expansion of production of inorganic heavy chemicals used in dyemaking; a revised program for the manufacture of dyes and intermediates; the setting aside of substantial amounts for research; and the employment of trained research workers.

Pakistan announced its intention to set up a dyestuffs manu-

facturing industry. Two German firms, Hoechst and Bayer, were to start building a production unit before the end of the year, at a cost of Rs. 4,000,000. It was hoped that the plant would be in operation by the end of 1957. The plant would at first concentrate on sulphur black and Congo red, large quantities of which had hitherto been imported. (L. E. Ms.)

Ear, Nose and Throat, Diseases of. ^{The Tonsils and Adenoids.}

noids.—The relation of tonsillectomy to incidence of common respiratory diseases in children was studied by L. P. McCorkle *et al.* in a group of Cleveland families. Included were those illnesses in which symptoms referable to the respiratory tract occurred, after exclusion of specific entities such as the common childhood diseases, streptococcal infections, nonstreptococcal exudative tonsillitis and pharyngitis, the viral and bacterial pneumonias, influenza diagnosed by virus isolation and illnesses considered to be allergic.

The occurrence of the common respiratory diseases among all children of the family population three years of age and older was considered separately for those whose tonsils had been removed and for those whose tonsils were intact; no child under the age of three had had a tonsillectomy. The occurrence of these illnesses among 26 children who had a tonsillectomy while under study were recorded both for the period of observation before and for the period after the operation. Each child did not have the same length of observation before as after tonsillectomy; therefore, these data were not balanced for individual children.

Comparisons of these data require the use of either age-specific or age-adjusted rates because the incidence of common respiratory illnesses changes with age and the posttonsillectomy experience is heavily weighted with older children. In this study too, an additional adjustment was necessary because 10 of the 26 tonsillectomies were performed during May and June. Since the rates for the common respiratory diseases are fairly constant between September and April and lower between May and August, the seasonal adjustment was based in these two groups of months. No adjustment was deemed necessary for the calendar year because of the constancy of the rates from one year to the next.

The studies of McCorkle *et al.* found that attack rates for the common respiratory diseases among children who had a tonsillectomy were similar to those among children of comparable age who had not had this operation.

The 26 children who had tonsillectomy while under observation were found to have had a higher than expected rate of common respiratory disease both before and after the operation. Tonsillectomy did not materially alter this incidence.

The "closed season" for surgery of tonsils and adenoids had been in effect for five years or more because of the increased incidence of bulbar poliomyelitis in tonsillectomized children. This led some clinicians to favour irradiation rather than surgery. Louis Sauer and Anna Hamann stated that none of their irradiated cases contracted poliomyelitis. It had long been known that young lymphoid tissue responds well to irradiation, but not permanently. Recent reports warned of the potential dangers of irradiation in young children relative to impeding growth and development and the possibility of encouraging malignant changes.

Antibiotics in Upper Respiratory Infections.—L. M. Hardy, H. S. Traisman, P. P. Pierce and J. S. Walker participated in a symposium on the uses and abuses of chemotherapy and antibiotic agents for infections in children. Numerous serious infections in children begin with fever, slight sore throat, nasal discharge, vomiting and abdominal pain. These symptoms are also

typical for the onset of the common cold. A small percentage of children (15% to 20%) with these initial symptoms develop complications of the respiratory infection or other disease. Chemotherapeutic agents are not effective against an uncomplicated upper respiratory infection. Instituting their use at the onset of a fever to prevent complications is fraught with danger. Since many of the antibiotics alter the clinical picture of an infection, there is a danger of inhibiting the manifestations to a degree that would lead to an early diagnosis of a serious correctable disease. Chemotherapy and antibiotics are without value in the treatment of upper respiratory infections such as the common cold.

As of 1955 penicillin was the drug of choice for gram-positive cocci, gram-negative cocci and treponemata. Streptomycin and dihydrostreptomycin were recommended for the tubercle bacillus.

There were also the three tetracyclines, known as aureomycin, terramycin, and erythromycin, tetracycline or panmycin, which were in general the choice for *H. influenzae* and *H. pertussis*, Shigellae, rickettsiae, certain of the gram-negative rods and perhaps primary atypical pneumonia and, in some cases, gram-positive cocci. Chloromycetin was the drug of choice in typhoid and salmonella and sometimes in infections caused by proteus and resistant staphylococci. Bacitracin was occasionally used against staphylococcus and polymixin was the drug of choice in pseudomonas infections.

In a panel discussion on the subject of antibiotics, Harry Dowling discussed the use of the commonly dispensed lozenges. In answer to a question, "Should antibiotics ever be given by injection in those instances where it can just as effectively be given by mouth?" the answer, of course, was that it should not—if it could just as effectively be given by mouth. One has to use so much more by mouth that this route is used only in those diseases where the organism is quite sensitive; that is, in beta-streptococcal infections, pneumococcal infections and gonococcal infections. Elsewhere, treatment by mouth is seldom feasible and parenteral therapy is therefore recommended. Troches should never have been produced with antibiotics in them. Certainly penicillin troches should not be used because a person can be sensitized to penicillin. Should he later have a serious disease and receive penicillin parenterally, he may not be able to accept it. An infection can be treated much better if the drug can be gotten into the blood stream rather than on the surface of the mucous membranes.

Cancer of the Nose and Sinuses.—Because tumours of the nose and sinuses are usually slow growing with few early symptoms, patients do not seek treatment until the disease has reached an advanced stage. Claude D. Winborn noted that cancer in this site occurs with sufficient frequency to stress the main factors. Most malignant tumours of the nose and sinuses are epidermoid (skinlike) in form. The lesions are often of moderate cell differentiation, although a malignant transitional cell carcinoma (cancer) is occasionally found.

Adenocarcinomas (glandlike) arise from the seromucinous glands of the upper respiratory tract and, depending upon the fibrous tissue content and blood supply, may be soft or hard. These tumours rapidly invade adjacent vital structures, such as the back of the nose, orbit and brain, and are difficult to delineate and dissect.

Sarcomas (also a type of cancer) may originate in any location in the nose and sinuses. With the exception of osteogenic sarcoma, these lesions are soft polyploid or smooth nodular masses, reddish or grayish red in colour. Spindle-cell sarcomas tend to ulcerate. Myxosarcomas do not metastasize (spread to other regions of the body).

Malignant melanoma (pigment-type tumour) is of mesenchymal origin and occurs principally on the septum (partition of

the nose) or lateral nasal wall. The tumour is radiosensitive, but regional and distant metastases occur early.

Pain is the most common symptom and usually occurs over the cheekbone or under the eye. Initially, when a branch of the trigeminal nerve is involved, the discomfort is vague and slight. In elderly people the pain may be misinterpreted as being a result of dental or neurologic problems.

With involvement of the antrum (the sinus in the cheek) swelling may occur in the cheek, the roof of the mouth, or the orbit. In edentulous patients the initial symptom often is a tumour mass on the alveolar ridge. Patients with teeth may erroneously have extractions in an effort to relieve pain in the area. External swelling occurs late with primary tumours of the ethmoid labyrinth (a honeycomblike nest of cells in the nose) and is usually caused by destruction of the bony lamina papyracea with invasion and secondary infection of the orbit. In most cases, however, unilateral nasal obstruction is noted first and is accompanied by anosmia (loss of sense of smell) and nosebleed.

Diagnosis is usually made by visualizing the tumour mass. Roentgenograms (x-ray films) delineate advanced growths and facilitate to a degree the estimation of operability. Soft-tissue changes with little or no bone involvement are noted in early lesions while in later stages evidence of displacement, decalcification (loss of calcium), and absorption of bony walls are found. Usually, the tumour is more extensive than roentgenograms suggest.

The first treatment (primary adequacy) given has the best chance of curing the patient and should be as radical as necessary to remove all of the tumour. Sacrifice of an eye or jaw is justifiable and cosmesis is to be ignored in the interests of saving the patient's life. This is carried out through a combination of the scalpel and electrosurgery. Radium needles are distributed in the area previously occupied by tumour. External irradiation is applied to the high lymph nodes of the neck. Electrosurgery is used when the tumour approaches the skin. (See also HEARING.)

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Earnings, Company: see BUSINESS REVIEW.

Earthquakes: see DISASTERS; SEISMOLOGY.

Earth Satellite: see PHYSICS.

East Africa, British: see BRITISH EAST AFRICA.

Eastern European Economic Planning. This article is concerned with the seven people's democracies of eastern Europe (Albania, Bulgaria, Czechoslovakia, German Democratic Republic, Hungary, Poland and Rumania), which together cover an area of 392,998 sq.mi. and have a combined population (1954 est.) of 93,564,000. The area is 4.5% the size of the U.S.S.R., but the population represents about 45% of the population of the Soviet Union and is an important addition to the Soviet economic potential.

During 1955, under the supervision of the Council for Mutual

conomic Aid (*Soviet Ekonomicheskoy Vzaimopomoshchi*) founded in Moscow in Jan. 1949, the experts of the U.S.S.R. and the seven European satellites were preparing their plans of industrial development and still closer integration of the whole area. The "new course" of the Malenkov era—some readjustment of industrial investment plans at the expense of heavy industry and a greater emphasis on production of consumer

1938 and 13,070,000 tons in 1954—or 31.8% of the Soviet production in the same year.

New coal mines were opened everywhere and the extraction of hard coal increased between 1938 and 1954 from 59,792,000 tons to 117,930,000 tons. The extraction of lignite also doubled,

Table I.—*Polish Six-Year Plan, 1950–55*

(In thousands of metric tons; electricity in millions of kw.hr.)

	1938*	1947	1949	1954	1955 (Plan)
Coal	38,104	59,130	74,081	91,256	100,000
Lignite	10	4,766	4,621	7,200	8,400
Crude petroleum	2,300	...	5,800	9,000	...
Electricity	507	128	154	250	400
Iron	3,977	6,612	8,146	15,500	19,300
Steel	872	544	699	1,614	3,200
Aluminum	880	867	1,365	2,700	...
Cement	1,441	1,578	2,305	4,000	4,600
Sulphuric acid	108	75	90	...	198
Phosphoric acid	1,719	1,522	2,334	3,400	4,250
Nitrogenous fertilizers	189	155	276	603	...
Superphosphates	220	174	388	526	...
...	228	164	392	680	...

*In pre-1939 frontiers.

goods—was abandoned everywhere at the beginning of 1955. The stress was again on heavy industry. A Soviet high official of the Council for Mutual Economic Aid, I. Dudinsky, pointed out in July 1955 that the main goal was to make eastern Europe economically independent of the west.

Table II.—*Czechoslovak Five-Year Plan, 1949–53*

(In thousands of metric tons; electricity in millions of kw.hr.)

	1937	1948	1953 (Actual)	1953 (Plan)	1954
Coal	16,672	17,746	20,300	25,000	20,500
Lignite	17,895	23,591	32,800	35,000	37,100
Crude petroleum	3,280	5,600	8,500	8,000	8,500
Electricity	18	49	196	306	200
Iron	4,115	7,515	12,400	12,300	13,800
Steel	1,800	1,400	2,300	3,800	2,300
Aluminum	1,675	1,650	2,800	3,000	2,800
Cement	2,301	2,650	4,400	4,500	4,300
Sulphuric acid	106	100	240	...	...
Phosphoric acid	1,273	1,652	2,300	3,400	2,300
Nitrogenous fertilizers	166	215	312	...	310
Superphosphates	...	161	193	330	230
...	...	387	477	514	500

The Balance Sheet of Industrialization.—Between World War I and World War II all the governments of eastern European countries were encouraging a balanced measure of industrialization which was the only means of reducing the overpopulation of the countryside and increasing the national income.

Table III.—*Five-Year Plan of the German Democratic Republic, 1951–55*

(In thousands of metric tons; electricity in millions of kw.hr.)

	1936	1950	1953	1954	1955 (Plan)
Coal	3,525	2,800	3,100	3,500	3,500
Lignite	101,100	137,300	175,000	193,000	225,000
Crude petroleum	500	454	692	...	927
Electricity	13,900	18,300	23,000	...	33,400
Iron	300	400	1,300	1,500	3,700
Steel	200	300	1,100	1,600	2,000
Aluminum	1,400	1,000	2,200	2,500	3,115
Cement	1,700	1,400	2,400	2,500	4,000
Sulphuric acid	1,100	800	1,400	...	...
Phosphoric acid	1,000	1,300	1,300	...	...
...	302	233	348	400	450

After World War II the Soviet protector encouraged this process in its own way and according to its own interests. It imposed first and everywhere the Communist dictatorship without which no political control was possible. Such a regime enabled the Soviet Union to foster its own kind of economic planning. By depressing the standards of living, sums equalling between 20% and 30% of the national income were invested yearly into heavy industries.

New blast furnaces, coking plants and steel foundries were added to the existing iron and steel works. New iron and steel works were built. By 1954 the steel production of the satellite states had more than doubled: it was 6,067,000 metric tons in

Table IV.—*Hungarian Five-Year Plan, 1950–54*

(thousands of metric tons; electricity in millions of kw.hr.)

	1938	1946	1949	1954	1954 (Plan)
Coal	1,042	722	1,380	1,900	2,500
Lignite	8,306	5,631	10,538	20,100	25,000
Crude oil	43	685	503	1,194	1,120
Electricity	1,280	...	2,520	4,830	6,930
Pig iron	335	160	428	820	1,280
Steel	648	353	860	1,490	2,200
Bauxite	540	101	561	1,260	...
Aluminum	1.3	...	14.4	32.8	32
Cement	343	133	550	950	2,100
Nitrogenous fertilizers	37	...	79	80	110
Superphosphates	44	2	84	160	230

increasing between 1938 and 1954 from 131,308,000 tons to 271,450,000 tons. The thermic value of lignite in hard coal equivalent varies from country to country, but lignite production in the whole area represented 38,200,000 tons of hard coal

Table V.—*Rumanian Five-Year Plan, 1951–55*

(In thousands of metric tons; electricity in millions of kw.hr.; gas in millions of cu.m.)

	1938	1947	1950	1954	1955 (Plan)
Coal	299	163	300	350	533
Lignite	2,097	2,105	2,900	5,650	8,000
Crude petroleum	6,610	3,810	5,300	10,200	11,000
Gas, natural	1,860	1,176	1,800	3,800	3,900
Electricity	1,148	1,511*	2,200	4,000	4,700
Pig iron	133	90	335	456	800
Steel	277	183	558	780	1,250
Cement	532	422	657	1,800	2,860
Sulphuric acid	43.2	30	50	86.4†	143

*1948 †1953.

in 1938 and 79,000,000 tons in 1954. The total extraction in hard coal equivalent was, therefore, 97,992,000 tons in 1938 and 196,930,000 tons in 1954; the last figure represented 57% of the Soviet extraction.

Table VI.—*Bulgarian Industrial Production*

(In thousands of metric tons; electricity in millions of kw.hr.)

	1938	1948	1952	1953	1954
Coal	146	327	348	370	400
Lignite	1,942	3,544	6,752	7,630	8,200
Electricity	202*	560	1,356	1,620	1,800
Pig iron	...	1.5	10.6	15.0	17.5
Cement	194	380	680	714	793
Sulphuric acid	6.9†	11.6	20.8	24.1	25.5

*1937. †1939.

Thermic and hydroelectric power plants were built throughout the area and the output of electricity between 1938 and 1954 increased 155%; i.e., from 24,700,000,000 kw.hr. to 63,050,000,000 kw.hr., the last figure representing 43.1% of Soviet

Table VII.—*Satellites' Role in Soviet Economy*

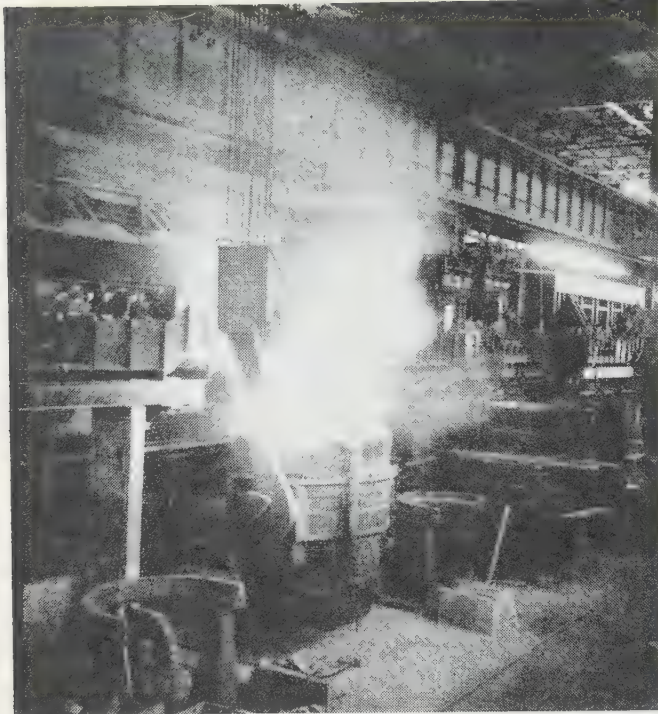
(In millions of metric tons; electricity in 000 million kw.hr.)

	1938	1949	1954
Coal*	Satellites 98 U.S.S.R. 133	231 230	146 376
Crude oil	Satellites 7 U.S.S.R. 32	39 31	6 59
Electricity	Satellites 25 U.S.S.R. 40	65 70	39 109
Steel	Satellites 6 U.S.S.R. 18	24 20	7 27
Cement	Satellites 6 U.S.S.R. 7	13 9	16 20

*Including lignite. Coefficients used for the satellites (quantities of lignite per ton of coal): German Democratic Republic 4.5; Czechoslovakia 1.7; other countries 3.0. Soviet totals are simple sums of coal, anthracite and lignite extracted.

production. The new hydroelectric power stations consisted of high dams and reservoirs which enabled the irrigation of considerable areas of arable lands.

While Poland is the richest country in hard coal, Rumania is the chief supplier in the area of crude petroleum. The Rumanian oil industry is managed by Sovrompetrol, a Soviet-Rumanian joint-stock company, which, together with Sovro-



"MARTEN" BLAST FURNACE, Lenin foundry, Nowa Huta, Pol. The furnace began operations in April 1955 and, together with another furnace completed earlier, made the Lenin works the largest steel producing plant in Poland

masigurare (insurance), Sovromfilm and Sovromquartz (uranium ore), was not included in the agreement of Sept. 18, 1954, on the "sale and transfer" of 12 other joint-stock companies through which the Soviet Union was exploiting Rumania. Rumanian crude petroleum production rose between 1947 and 1954 from 3,819,000 tons to 10,200,000 tons. Eastern Europe's crude petroleum production rose between 1938 and 1954 from 6,878,000 tons to 12,080,000 tons, the latter figure representing 20.5% of the Soviet production.

Production of cement doubled in the area, rising from 5,800,000 tons in 1938 to 11,810,000 tons in 1954, that is, 59% of the Soviet production—a great proportion of the satellite cement output (two-thirds in 1954 in the case of Poland) was being exported to the Soviet Union. In other basic industries there were similar increases.

The industrial production continued to expand in 1955 and, according to the results of the first six months, rose 12% in Poland, the German Democratic Republic and Rumania and 9.5% in Hungary. No progress was recorded in Czechoslovakia, where the 1949-53 five-year plan raised the industrial output 102% above the 1948 level and 119% above 1937. In Slovakia, however, the index number of industrial production stood at the end of 1954 at 468 (1937=100). Industrial production in the country as a whole was scheduled to rise 50% during the second five-year plan 1956-60.

The Price of the Soviet-Type Industrialization.—Housing was in a critical state, and industrial consumer goods and foodstuffs were scarce. Though eastern European standards between the two world wars had been lower than those of western Europe, they were higher than those of the Soviet peoples. After ten years of Soviet planning basic commodities were cheaper in Moscow than in Warsaw, Budapest or Prague, despite the general price cut in foodstuffs and manufactured goods decreed in April 1955 throughout the area.

In the countryside the total collectivization of agriculture was still presented as the only right solution, but the collectivization drive was slowed down. While in Bulgaria 60.5% of arable land was worked by producers' co-operative farms of

the Soviet *kolkhoz* type, in Czechoslovakia the proportion 32.9%, in Hungary 18%, in the German Democratic Republic 15.6%, in Rumania 12.5% and in Poland 9.5%. Forced grain deliveries at low fixed prices did not encourage individual peasants to work hard and produce much. The result was that for a traditionally food-surplus area eastern Europe became one of food shortages. The total average yearly harvest of five basic grains in the six eastern European people's democracies (Albania excepted) was 43,700,000 tons in 1934-38 and 34,100,000 tons in 1948-50. The potato crop for the same periods was reduced from 65,700,000 tons to 48,000,000 tons. No reliable data have been published since 1950, but the import by the area of 4,000,000 tons to 5,000,000 tons of grain a year suggested that the passive resistance of the peasantry to the Communist system continued.

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East Indies, Dutch: see INDONESIA; NETHERLANDS IN GUINEA.

Eclipses of the Sun and Moon, 1956: see CALENDAR, 1956 (page xxii).

Economic Cooperation Administration: see FOREIGN AID PROGRAMS, U.S.

Economics. Continuing in 1955 was a distinct trend in the discipline of economics, away from the interwar model of a decade or two before in economic maturity, the model of static equilibrium, and the theories of the self-generating, inevitable business cycle, toward an emphasis on dynamism and change. This shift was another example of the shaping of theory by developments and events. In the western world total population and new family creations had swung up at a terrific rate. The resulting increase in the demand for and production of housing was accentuated by the unprecedented mobility of the population. On top of these developments were two causes of interrelated dynamic factors: a veritable flood of technological discoveries since 1945 and a spectacular and recently accelerated rise in the standard of living in nearly all parts of the world. Consumer expenditures had kept going higher and higher after World War II with only two or three minor and unimportant interruptions. Private investment including expenditure for housing had remained heavy in volume, and the cold war had kept government expenditures for goods and services at an extremely high level.

Under these circumstances the private, as well as the collective, economics of the world had time after time almost miraculously ridden out incipient distortions that a score or more years earlier would have caused serious difficulty.

By the third quarter of 1955, the gross national product of the United States was booming along at a record-breaking annual rate of nearly \$390,000,000,000. This came after a jitters period in which serious cyclical maladjustments were expected but did not materialize. There was little wonder that the economics of dynamism in 1955 was optimistic.

Some economists, however, were issuing sobering warnings about at least minor difficulties which might soon come to a head. The current prosperity, they said, was based upon two trends that could not continue—the building up of retail inventories and an extremely liberal business and bank policy with respect to consumer credit. They pointed to continuing inflation, called attention to the necessity of a tighter money policy, and warned that what might appear to be a salutary and gradual approach

on of brakes to credit extension could grip the wheels and force the economy into an embarrassing, or more serious, skid. They stressed the fact that the housing supply seemed to be catching up with the demand and that the markets for durable consumables like automobiles and television sets were somewhat dependable.

While recognizing that the prolonged bull stock market was safer and more logical than that of the late 1920s, they did not dismiss the possibility of a downturn that might develop into a minor stampede; while recognizing that agriculture might eventually be saved, at least in the United States, by a rising population and improving consumption standards, they expressed concern over the fact that farm income in general remained low. They were concerned about the possible effects of the curtailment of governmental expenditures, especially if such a policy were to conjoin with other factors which would tend to slow down production. No one, however, expected anything in the way of a depression even vaguely similar to that of the early 1930s.

Price theorists were becoming less concerned in 1955 over competition in the traditional sense and more concerned with the possibility of achieving the types of effective compromise between competition and oligopoly suggested by such phrases and concepts as "workable competition" and "countervailing power." Some were inclined, in fact, to the opinion that price policy should be directed less to the preservation of competition, as such, and more to the maintenance of tolerably workable total situations, even though the latter might contain elements of unvarnished monopoly. The problem was less a matter of maintaining competition than of defending the interests of consumers in plentiful and cheap goods, of producers in low costs and adequate revenues and of everyone in an effective allocation of resources, however these desiderata might be accomplished. (See also BUDGET, NATIONAL; BUSINESS REVIEW; CONSUMER CREDIT; DEBT, NATIONAL; EMPLOYMENT; FOREIGN AID PROGRAMS, U.S.; FOREIGN INVESTMENTS; INCOME AND PRODUCT, U.S.; INTERNATIONAL TRADE; STOCKS AND BONDS; HEALTH AND INCOME, DISTRIBUTION OF.) (G. J. C.)

Ecuador. A republic on the west coast of South America, straddling the equator, after which it was named, Ecuador is bounded on the north and east by Colombia, on the east and south by Peru and on the west by the Pacific ocean. It has an area of 105,743 sq.mi. (including the Galápagos Islands, a dependency of 3,029 sq.mi.) and a population (1950 census) of 3,202,757; (1954 official estimate) 3,567,000. About 75% of this figure represents Indians, 30% mestizos, 9% "whites" and 1% Negroes. Quito (pop., 1950 census, 209,932; 1954 est., 212,873) is the capital; other major cities (with 1950 census, 1954 est. in parentheses) are Guayaquil, the main port, 1,89,666; Cuenca 39,983 (53,871); Riobamba 29,830; Jipijapa 15,59 (8,000); Vinces 3,748; Chone 8,046 (10,000); Ambato 15,312; Loja 15,399 (18,000); and Latacunga 10,389 (18,000). The predominant religion is Roman Catholic. President in 1955: José María Velasco Ibarra.

History.—Although the year 1955 opened with the memory of an abortive revolt hanging over it, internal political order was maintained by the government. The minister of interior resigned in January, apparently in response to pressure from military and civilian elements. A second change in the interior department occurred in June. The minister resigned in the midst of a crisis that had arisen over the insistence of the government's executive branch that the judicial branch could not interrogate police officers who had been involved in an assault (April 1955) upon the editor of Guayaquil's *El Universo*.

The government arrested a handful of opposition spokesmen

in April and May for "disrespect" toward the executive or for suggesting that the government would fall. The former charge resulted in the closure in June of radio station Gran Colombia and the chastisement of *La Tierra*. In early July the government attributed a railroad workers' strike to Communist influence. Following the dissolution of the union, the labourers became public employees. Most of them resumed work by July 4 and management of the road reverted to the civilian operators at the end of the month. A second reportedly Communist-inspired strike was called in July by banana workers in the Esmeraldas area.

On Sept. 8 Ecuador informed the Council of the Organization of American States that Peruvian armed forces were poised to attack. Reacting quickly, the council had representatives of the Rio de Janeiro protocol guarantors convene in the Brazilian capital. Shortly thereafter the military attachés of the guarantor nations in Quito and Lima were instructed to form inspection teams. After viewing the tension area, the inspectors reported that the military situation was normal. In late September the Ecuadorian government withdrew its earlier appeal for aid, attributing the maintenance of peace to the prompt response of the O.A.S.

The Export-Import Bank of Washington granted a \$2,700,000 loan to Ecuador for further work on the Quevedo-Manta highway. Another \$900,000 was made available to construct terminal facilities at the Quito and Guayaquil airports. An agreement calling for the sale of U.S. farm surpluses to Ecuador was negotiated in September. (R. Hn.)

Education.—In 1952 there were 3,706 primary schools with 7,487 teachers and 352,396 pupils and 182 secondary schools with 1,031 teachers and 32,390 pupils. Institutions of higher learning included four public universities, the Catholic university of Quito and the polytechnical school; they had a total of 411 teachers and 4,562 students in 1952. According to the 1950 census, 43.7% of those 10 years of age and over were illiterate.

Finance.—The monetary unit is the sucre, valued during 1955 at 6.6 cents U.S. currency, official rate, and on Aug. 31, 1955, at 5.68 cents, free rate. Ordinary revenue in 1954 was 607,930,000 sucres; ordinary expenditure, 595,927,000 sucres. The foreign debt on Dec. 31, 1954, was \$33,701,446; internal, 268,632,994 sucres. Currency in circulation (July 31, 1955) was 634,000,000 sucres; demand deposits, 595,000,000 sucres. The U.S. department of commerce estimated U.S. direct investments in 1954 at \$20,000,000. The cost-of-living index (Quito) stood at 114 in June 1955 (Aug. 1950-July 1951=100). National income was estimated at 8,637,000,000 sucres in 1954.

Trade and Communications.—Exports in 1954 (Ecuadorian ports) totalled \$101,861,000; imports through the port of Guayaquil, \$86,045,497. Chief exports were cacao (34%), bananas (27%), coffee (27%) and rice (3%). Important imports included machinery, instruments and vehicles (31%), food, drink and tobacco (14%), textiles (12%) and metals and manufactures (11%). Leading customers were the U.S. (65%), Colombia (8%), western Germany (7%) and Belgium (5%); leading suppliers, the U.S. (53%), western Germany (11%), Canada (6%) and the U.K. (6%).

The length of the nine nationalized railroad lines in operation in 1949 was 698 mi.; they carried 513,020 metric tons of freight and 1,866,872 passengers in 1954. Mileage of all highways was estimated at 6,143 in 1951, of which 2,943 mi. were paved. On Jan. 1, 1954, there were 5,500 automobiles, 10,000 trucks and 2,300 buses. Telephones (Jan. 1, 1954) numbered 11,500, 60.9% of which were automatic and 52% of which were located in Quito.

Agriculture.—Production estimates in the 1954-55 crop year included coffee 425,000 bags of 132 lb. each; rice (rough) 260,000,000 lb.; cacao 55,787,000 lb.; cotton 12,000 bales of 480 lb. each. Exports in 1954 included cacao 29,735 metric tons; bananas 21,700,000 count bunches (50 lb. each); rice 19,455 tons; coffee 351,000 bags. Unofficial estimates placed the number of cattle at more than 2,000,000 and the number of sheep and goats at 2,000,000 in 1952. Forest exports in 1954 included tagua nuts 7,410 tons; balsa wood 4,029 tons. No rubber was exported in 1953 or 1954.

Manufactures.—Production estimates for 1954 included sugar 52,106 metric tons; cement 94,807 tons; salt 34,875 tons; beer 58,160,000 bottles. Exports of *toquilla* (Panamá) hats totalled 1,982,700.

Minerals.—Production in 1954 included gold 18,942 troy ounces; silver 56,600 troy ounces; copper 13,400 kg.; lead 114 metric tons; crude petroleum 3,146,430 bbl. (J. W. Mw.)

Eczema: see DERMATOLOGY.

Eden, Sir (Robert) Anthony (1897—), British statesman, was born at Windlestone hall, near Bishop Auckland, Durham, Eng., and

was educated at Eton college and at Christ Church, Oxford. In 1923 he was elected to the house of commons. In 1931 he became undersecretary of state for foreign affairs. He was made lord privy seal in 1934 and minister for League of Nations affairs a year later. Eden became foreign secretary in 1935 but resigned in 1938 because of disagreement with Neville Chamberlain's policy toward Italy. At the outbreak of World War II he returned to government as dominions secretary, and when Winston Churchill became prime minister in 1940 Eden was appointed secretary of state for war and, later that same year, foreign secretary. In 1942 he was leader of the house of commons, and in 1945, when his party was defeated, he was deputy leader of the opposition. When Churchill was returned as prime minister in 1951, Eden was appointed deputy prime minister and foreign secretary.

On April 6, 1955, after being Conservative member for Warwick and Leamington for 32 years, Eden was appointed prime minister. He announced on April 15 that a general election would take place on May 26. He conducted a strenuous election campaign, travelling more than 2,000 mi. and addressing 40 meetings. On April 21 he was elected the new leader of the Conservative and Unionist party, in succession to Sir Winston Churchill who described him as "a leader worthy of their cause."

In July he represented Great Britain at the Geneva conference of the heads of state of the Big Four powers, where he proposed a mutual security pact between the Big Four and a reunited Germany. This, and his suggestion of a demilitarized area between east and west Germany to act as "a protective pad," were a modification of the "Eden plan," put forward at Berlin in 1954.

After his return from Geneva Eden devoted much attention to home affairs. In October he attended the Conservative party conference at Bournemouth (Oct. 6-9), where his announcement that he contemplated no immediate changes in the cabinet resulted in criticism in the press. He also announced at the conference that there would be a total reduction of 100,000 in the U.K. armed forces by April 1958.

In November Eden and other members of the government convened a meeting with the Trades Union congress leaders as a result of their criticism of the autumn budget. As a result of the public concern at the Burgess-McLean affair, Eden announced (Nov. 8) that he would preside over an informal conference of privy councillors to inquire into security procedure. On Nov. 9, in the traditional Guildhall speech at the lord mayor's banquet, he offered to give any help necessary to maintain peace between Israel and the Arab states.

Education. The outstanding events in education in the U.S. from Oct. 15, 1954, to Oct. 15, 1955, included the following: (1) the continuing shortage in faculties, facilities and funds; (2) the free immunization of millions of school children with the Salk antipolio vaccine; (3) the steady rise in school attendance for the eleventh year in succession; (4) the unanimous decision by the U.S. supreme court in May making local school authorities responsible for desegregating the schools as soon as feasible; (5) the slow but definite progress in the integration of the education of the white and Negro races in spite of open opposition in some areas of the south; (6) the rise in college and university enrolment for the third consecutive year; (7) the efforts by the educational profession, governmental bodies and other interested parties to combat juvenile delinquency and vandalism; (8) the increase in grants and scholarship funds by business corporations and industries to higher education; (9) the state conferences on educational problems in preparation for the White House Conference on Education late in November; and (10) the continuing controversy

among educators and in public circles over the content methods in the public schools, especially with reference to teaching of reading.

Statistics.—The annual estimate of enrolment by the office of education, department of health, education and welfare for the year 1955-56 indicated the following figures: kindergarten through grade eight, 29,038,000, an increase of 1,300,000 over the previous year; secondary schools (grades nine through twelve), 7,680,000, a rise of 258,000; higher education, 2,800,000, or 99,000 more than in 1954-55; private commercial nurse training schools, 215,000. The grand total of 39,772,000 represented an increase of 1,865,500 and made up 24.1% of the entire population of the U.S.

Among the other significant facts reported by the office of education were the following: the shortage of 141,300 qualified teachers in the elementary and high schools would have to be met by more teachers with emergency certificates, the appointment of former teachers and more overcrowded classrooms; need of providing at least 52,000 classrooms more than available during the previous year; and the probable lower rate of increase in elementary school enrolment toward the end of the 1964-65 period.

Federal Participation in Education.—In his message to congress, Feb. 8, Pres. Dwight D. Eisenhower urged the enactment of a three-year co-operative program involving federal, state and local authorities in providing \$7,000,000,000 for the construction of schools. Included in his program was a request of congress to set aside \$220,000,000 in federal funds and \$200,000,000 in loans for this purpose. At the basis of his proposal was the conviction, expressed by him in 1954, that the major responsibility for education lay in the state and local governments, rather than in the federal authorities. The presidential plan was supported by Mrs. Oveta Culp Hobby, secretary of the department of health, education and welfare, Samuel M. Broner, U.S. commissioner of education, and members of the Democratic publican party in congress. On the other hand, the Democrats and most educators tended to oppose or at best to be skeptical of the proposed program. Despite talk of compromise, there was no positive action by congress to pass any of the school bills.

During the year, many state conferences took place in order to prepare for the White House Conference on Education which began on Nov. 28 in Washington, D.C. These meetings were rehearsals on a small scale of the national conference, which discussed fundamental problems in education. One of the significant issues taken up by the 2,000 delegates in Washington was that of federal aid to education, which Pres. Dwight D. Eisenhower called for in limited form.

In July Mrs. Hobby resigned and was replaced by Mario Folsom. During the same month, the Air Force academy opened with 306 cadets at Lowry Air Force Base, Denver, Colo. Also of interest was the passing of a bill by congress in February extending full educational benefits to 1,400,000 veterans.

Elementary and Secondary Education.—The announcement in April that the vaccine against poliomyelitis discovered by Jonas E. Salk was declared effective by medical authorities led to steps to inoculate millions of school children all over the country. In spite of some initial difficulties in the administration of the inoculation program, it was clear that an important contribution had been made toward the eradication of a dread childhood disease.

With relation to curriculum, the National Council for the Social Studies pointed out in Nov. 1954, that the high schools were weak in their teaching of world history and geography. Various surveys called attention during the year to the drop in high school enrolments in science and mathematics. A report by the Metropolitan School Study council of New

revealed in Oct. 1955 that children in the public schools are learning little about the significant problems of public education.

The weaknesses of vocational training in the high schools are stressed in the report of the National Manpower council December, 1954. Unsatisfactory counselling or guidance in elementary schools was mentioned as an important cause of failures and dropouts in high school in the 1955 yearbook of the Association for Supervision and Curriculum Development of the National Education association.

Other surveys during 1955 indicated that the nation's gifted youth was going to waste because of lack of opportunity to enter or to remain in college.

Probably the most sensational event in connection with the teaching program of the schools was the publication of Rudolf Schick's *Why Johnny Can't Read; and What You Can Do About It*, a severe critique of the prevailing methods of teaching reading by having the child learn the word as a whole. The suggestion and exposition by the author of the older phonetic method led to a spate of articles and booklets by educators in justification of their own procedures and in criticism of Flesch. The fact that this book enjoyed a wide sale as a best seller spurred the educators to greater efforts to convince the public that they were doing the best possible job of teaching the art of reading to children.

A disturbing situation was disclosed in July in the report of study carried on by the Commission for the Defense of Democracy through Education of the National Education association of the problems faced by 3,400 representative teachers. This survey concluded that discipline had weakened perceptibly in schools all over the country, with pupils exhibiting restlessness, frequent disobedience and signs of anxiety.

National attention was drawn in February to the plight of teachers in New York, which was threatened by the state department of education with the loss of state funds unless it improved its school system by the end of the year. Other events included the decision by the New York state department of education in March compelling New York city to promote children from kindergarten on the basis of ability rather than age; the dissolution of the Progressive Education association in July after more than 20 years of campaigning in behalf of modernizing the philosophy and methods of the schools; the introduction by New Mexico in the fall of a bilingual program of teaching Spanish and English in the elementary schools; the recommendation in September by Harold C. Hunt, new undersecretary of health, education and welfare, that high school buildings be used after hours for instruction on the junior college level, in line with President Eisenhower's suggestion for a national system of free junior colleges; and the reintroduction, on a trial basis, by the elementary schools of the District of Columbia in the fall of the letter-type report card with the grades of A, B and C.

Higher Education.—The steady increase in enrolment in colleges and universities was shown in the figures announced in October 1954 by the U.S. office of education (2,472,000, or 10% more than in 1953) and by Pres. Raymond Walters of the University of Cincinnati in the Dec. 11 issue of *School and Society* (895,280 in 846 approved institutions, a 7.6% increase). A report by the Veterans administration in Nov. 1954 showed an enrollment of 451,000 Korean veterans, twice as many as the year before, and 168,000 veterans of World War II, a decrease of 10,000 since 1953. Much attention was given by higher educational authorities to the problem of maintaining academic standards in the face of the rapidly rising numbers in the years to come. This question was seriously discussed at the Oct. 1955 convention of the American Council on Education, as were the instruction of gifted students, the shortages of students in the

scientific and engineering fields, and the rising costs of attending colleges.

There was much sentiment for more scholarships to worthy students.

Close upon the revelation in 1954 that half of the colleges in the U.S. were operating under a deficit came announcements of gifts and grants by the General Electric company, the Standard Oil Company of New Jersey, and the General Education board of the Rockefeller foundation. In the fall of 1954 the last-named granted \$2,500,000 toward the improvement of the teaching staffs of southern colleges and universities. General Motors announced in January an annual gift of \$2,000,000 to more than 300 institutions, while the U.S. Steel foundation promised in May a grant of \$1,052,000 to colleges in 43 states. In July, John D. Rockefeller, Jr. added \$4,000,000 to the \$1,000,000 he had given a month earlier to Brown university without restriction of any kind as to use.

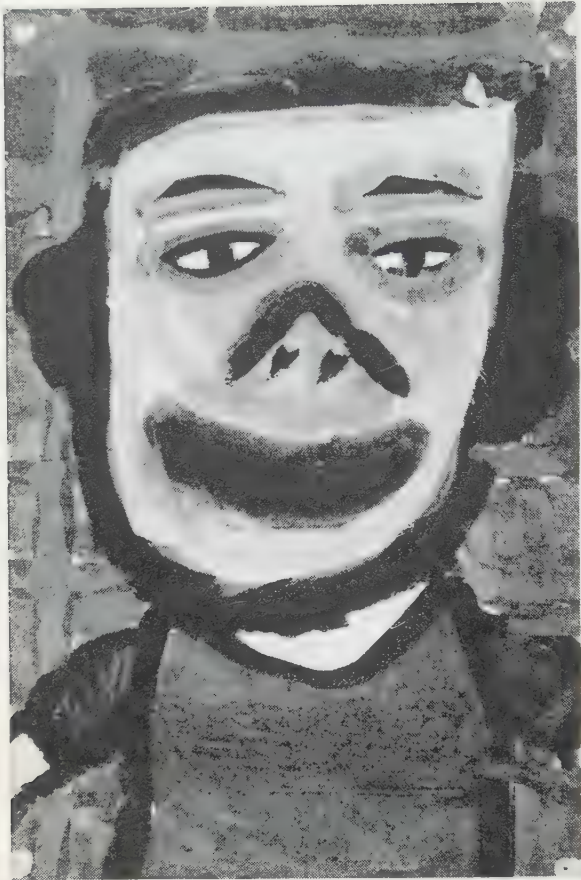
In Oct. 1955, the Standard Oil Company of New Jersey and its affiliates organized the Esso Education foundation and pledged \$1,500,000 for private higher education, and two days later John Hay Whitney donated \$2,500,000 for the purchase of buildings to expand the facilities of Yale university.

The largest grants were announced in March and December by the Ford foundation, the distribution of a total of \$260,000,000 to aid colleges and universities to increase the salaries of their faculties. Still another substantial gift was the five-year program of financial aid of \$5,000,000 to colleges and universities made in March by the Westinghouse Education foundation.

Among the larger grants for specific academic purposes were \$20,000,000 by John D. Rockefeller, Jr. in January for Protestant theological education; \$4,650,000 by the Ford foundation in January for training and research in international legal problems in the law schools; \$3,321,738 by the Commonwealth fund during 1954 for medical education; \$400,000 by Charles E. Merrill for the establishment of a professorship of medicine



"... IS STOPPING TELLING COMRADE KIDDIES about shortage of teachers in U.S. comrade teacher ... is only encouraging them to slip over border ..." a cartoon of 1955 by Lichty of the Chicago Sun-Times syndicate



Above: "Trying On Masks," Richard King, age 9, grade 4, Houston, Tex.

Below: "Walking My Dog," Ethel May McNeil, age 10, grade 5, Bethel, Conn.



"AS I SEE MYSELF," five of 100 paintings by U.S. school children selected for exhibition at Galerie St. Etienne, New York city, in May 1955. Sponsored by *Junior Arts and Activities* magazine, the show was open to children from kindergarten to grade eight and drew more than 15,000 entries

Above: "I Am Going To Be a Big Politician," Robert Gorlon, age 9, grade 4, Brooklyn, N.Y.

Below: "Riding My Bicycle," Philip Alan Hicks, age 9, grade 4, Houston, Tex.

Bottom: "The Family," Clara Gene Koskinen, age 11, grade 5, Milwaukee, Wis.



specializing in heart diseases at Harvard university; \$1,281,000 to the Carnegie Corporation of New York to various institutions for the study of international affairs, American culture and other fields; and \$500,000 by the Rockefeller foundation in January for the special program in near eastern studies at Princeton university. A study by the John Price Jones Co., consultants for the financing of higher schools, revealed gifts of \$32,347,000 to fifty colleges during 1953-54, a gain of 13.9% over the previous year and 637.2% over 1920-21. In May, Wilson Compton, president of the Council for Financial Aid to Education, estimated voluntary financial support to the colleges from corporations as between \$75,000,000 and \$90,000,000 a year. He also stressed the fact that the operating deficits of private institutions, now less than \$30,000,000 each year, were being reduced. Other competent observers shared this optimistic view of the financial status of higher education.

The financial problem of colleges and universities was attacked from another angle. In order to raise revenue to raise the salaries of professors, a number of prominent institutions increased the tuition fees. Large increases in faculty salaries were reported by Princeton and New York universities. Others adjusting tuition and salaries were Cornell university, Ithaca, N.Y.; Syracuse university, Syracuse, N.Y.; Bryn Mawr college, Bryn Mawr, Pa.; and Mt. Holyoke college, Hadley, Mass. Several educators pointed out the danger of rising tuition costs in that qualified students lacking sufficient funds would be unable to attend college. One promising venture to assist students of exceptional ability was the founding in September of the National Merit Scholarship program, a plan administered by an independent, nonprofit corporation consisting of representatives of higher education, business and industry. A source of help to university and other research workers was the decision by the tax court of the U.S. in November that recipients of funds for research purposes from philanthropic organizations would not be required to pay any income tax on such grants.

At the annual conference in January of the Association of American Colleges, much stress was laid on the need for promoting the study of the liberal arts in higher institutions of learning, discouraging too much specialization, including previous education in the curriculum and improving the processes of teaching. The importance of the liberal arts was underlined in a report in May of an 18-months' study by a faculty committee at Yale university. The program recommended by the faculty would take effect in the academic year of 1956-57 and would feature more required and less elective courses than heretofore, more stringent entrance requirements, seminars and interdepartmental curriculum. Later that month, Yale announced that its experimental program to accelerate the education of gifted students who had not completed high school was a success. Of the original 52 students who entered Yale under this plan in 1951, 34 were able to obtain their degrees. St. John's college, Annapolis, Md., published in May an extensive report which upheld its faith in the teaching of the liberal arts by plans of the careful and thorough study of the *Great Books of the Western World*.

In Nov. 1954, the *New York Times* made public the results of its survey of the teaching of Russian and other Slavic languages in the colleges and universities of the U.S. Since 1950, there was a drop of 35% in enrolment, with only 5,000 students learning Russian in 183 colleges, Polish in 22 and Czechoslovak in eight others. Among the factors cited by the report for this decline were the students' fears for taking courses dealing with the Soviet Union lest some day suspicion be directed against themselves, pressure by parents or friends and the feeling that Russian is too difficult to master. From the positive standpoint, college officials were cited as agreeing that a knowledge of

Russian was of increasing importance, especially in the study of science.

All through the year, there were expressions of serious concern on the part of educators and leaders in government and industry over the insufficient number of persons being prepared in the fields of physics, engineering, medicine, nursing and pharmacy. In his annual report to the trustees in Oct. 1955, Pres. James R. Killian, Jr. of the Massachusetts Institute of Technology laid emphasis on the need for improving the training of engineers. A major change in policy was publicized in January by the Harvard Divinity school when it stated that it would admit women in the fall of 1955 as regular students in the undergraduate and graduate programs.

There were some notable developments in the field of intercollegiate athletics during the year. Fordham university announced in Dec. 1954, that it would give up varsity football on account of "continuing financial loss," thus leaving New York city with only one major college team. One month later, an evaluation by the Middle States Association of Colleges and Secondary Schools disclosed that the University of Maryland "violated the rules" of the National Collegiate Athletic association by recruiting athletes, facilitating preferential scholastic treatment and providing easy jobs for players. The response by the university was immediate and plans were at once under way to regain its accredited status in 1956. In April, the National Collegiate Athletic association placed the University of Oklahoma and the University of Cincinnati, O., on probation for two years and one year respectively because of infractions of athletic policies and rules. On the whole, however, the athletic situation in colleges and universities looked better in 1954-55 than in previous years.

The Teacher Situation.—A report by the research division of the National Education association in Dec. 1954 indicated a total of about 80,680 new teachers who lacked full qualifications for the standard teaching certificates. This figure represented 2,000 more emergency teachers than in the previous year. Moreover, according to this report, at least 75,000 trained teachers were to be expected to leave their classes during the year because of higher salaries in industry and other reasons; and 30 states anticipated a shortage in high school teachers in the next three years. A later report issued in March by the same division, the Teacher Supply and Demand report, asserted that 86,696 qualified candidates for teaching posts would be graduated from colleges in the spring of 1955. Of the 35,278 persons available to teach in the elementary schools, only 27,800 could be expected to be on the job in the fall; while of the 51,418 graduates qualified for high schools, only a little over half would probably accept positions. With about 60,000 elementary teachers leaving the profession each year and many others giving up their jobs in the high schools, a much larger number was needed than the graduates available for the schools.

The U.S. office of education estimated in September that only about 63,000 of the 100,000 eligible graduates would go into teaching. The lot of the teacher was made by no means easier by the fact that about 500,000 pupils attended half-day classes on account of the lack of classrooms, in spite of the record construction of 60,000 classrooms during the year. According to the office of education, there were about 138,000 less teachers than necessary to conduct a sound program of instruction in the nation and about 91,000 teachers who fell short of professional standards of training.

In June, the Carnegie Corporation of New York granted \$300,000 to the American Association for the Advancement of Science for the purpose of improving the teaching of science and mathematics in the high schools.

The American Association of Collegiate Schools of Business

issued in August a report with disquieting data about shortages of teachers of business administration in colleges and universities. This situation was regarded with seriousness, particularly because one out of every eight college students was studying business.

According to a survey reported in May, most state legislatures had made all-out attempts to improve the status of education by increasing financial aid to the schools and including provisions for the raising of the salaries of teachers. In October, Missouri voters approved a state cigarette tax to raise funds toward the equalization of educational opportunities in the state and the lifting of teachers' salaries to the national level. A study released by the Fund for the Advancement of Education in Dec. 1954, showed that the single salary schedule for elementary and secondary teachers, which had developed into a controversial problem in New York city, was working out satisfactorily in many of the 25 largest cities all over the country.

Late in 1954, Temple university received a grant from the Fund for the Advancement of Education for the initiation of a five-year co-operative experiment in preparing liberal arts graduates to teach. New York city teachers seeking licences as principals were examined in April by means of a closed circuit television exhibition of a classroom in action. Also in April, the National Education association made public the results of an inquiry showing a total of 160,000 substitutes, or one for every six regular teachers, in the U.S. At its convention in August, the American Federation of Teachers charged that the NEA did not represent teachers, since it was dominated by school administrators.

Adult Education.—The National Commission on Adult Education Finance of the Adult Education association reported in Nov. 1954, that more than 3,000,000 persons attended adult education programs in 6,000 public schools throughout the country, that the cost of adult education per person each year was \$26.60 as compared with \$235 per year for each child, and that one third of the nation's adults lived in school districts which lacked educational provisions for grown-ups. At the same time, the National Conference on Adult Education charged a lack of proper appreciation in high government circles of the value of adult education to the country. In April, the Fund for Adult Education revealed that it had furnished \$4,578,000 for educational television during 1953-54. The library situation was not a good one according to L. Quincy Mumford, librarian of congress, who asserted in July that 27,000,000 Americans had no access at all to a local public library and that more than the 7,500 public libraries were essential to the U.S.

Communism and Education.—The problem of subversive affiliation continued during 1954-55 to arouse discussion and debate. A report by a special committee of the house of representatives claimed in Dec. 1954 that some of the tax-exempt foundations had "directly supported subversion" by distributing funds to questionable educational causes. In Sept. 1955, the senate permanent subcommittee on investigations started an inquiry concerning communist influence in private trade schools attended by Korean War veterans with the aid of G.I. bill funds. Ten teachers resigned from the New York city public schools rather than testify under oath about connections with communists. A U.S. supreme court decision in February upheld the dismissal of 13 New York city teachers who had refused to answer questions of a senate subcommittee regarding membership in the Communist party. The Newark, N.J., board of education discharged in June three teachers who had invoked the fifth amendment in refusing to tell the house committee on un-American activities about communist affiliations.

A lively nation-wide debate was precipitated in Nov. 1954,

when the U.S. Military academy at West Point, N.Y., and Naval academy at Annapolis, Md., refused to permit their debating teams to discuss the question of whether the U.S. should recognize Red China. In spite of urging by President Eisenhower and Senators William E. Jenner and J. William Fulbright to allow discussion of this issue, the service academies did not change their policies. Civilian institutions as a rule, however, continued to argue the pros and cons of this topic in the debating circles.

Among the other incidents dealing with the problem of communism in education were the resignation in Oct. 1954, of a librarian of Lafayette college after he had been named by a senate subcommittee as having once been a communist; a grant by the Fund for the Republic in January of \$250,000 for objective historical studies by university scholars of the extent of communist influence in American life; the disapproval in March by the Virginia state board of education of an elementary school textbook which contained passages described by Gov. Thomas Stanley as "un-American"; the dropping in April by the department of defense of the oath taken by students taking basic courses in the Reserve Officers Training corps that they had never belonged to a subversive group; the opinion in July by the N.Y. State Education Commissioner Lewis A. Wilson in New York that boards of education could not force teachers to testify about communist connections of other teachers, a statement which apparently questioned the earlier policy of the New York city board of education; and the affirmation by the California supreme court in July of the dismissal of a professor at San Diego State college for refusing to answer the questions by the state board of education as to membership in the Communist party.

Juvenile Delinquency and Crime.—As in previous years, the problem of curbing youthful delinquency, vandalism and crime proved to be a formidable one in 1954-55. Serious efforts were made by the Comics Code authority to tone down violence and other objectionable material in comic books for children. The charge by the New York state legislative committee investigating comic books in its report in February that these writings still stressed sex, sadism and crime led to a promise by the administrator of the code that the campaign to clean up the comic books would be intensified. An Associated Press survey in July showed that 13 states had passed laws banning or curbing the sale of such writings. The U.S. government was especially active in the campaign against juvenile delinquency, with the president including the sum of \$3,000,000 in his January budget message for this purpose. The senate committee on juvenile delinquency recommended in February that publishers purge their comic books, urged in March that the government and the states undertake action to reduce juvenile crime, and recommended in August that strict federal control and private restraint should be applied to remove crime violence from television programs designed for children. That these measures were needed was evident from the persistence of acts of juvenile vandalism and crime in all parts of the country during the year.

The Race Problem.—In reply to the historic U.S. supreme court decision of May 17, 1954, which declared segregated public schools unconstitutional, the people of Georgia and Louisiana voted in Nov. 1954, to amend their constitutions. The voters of Mississippi followed suit in December to maintain separate schools for the white and Negro races. In March 1954 the Florida supreme court criticized the decision against segregation as "a great mistake." From this time until the anticipated second decision of the U.S. supreme court in spring, the two opposing camps busied themselves in advancing their respective interests. The foes of segregation b

the process of petitioning for the abolition of separate schools in the south, and in many states steps were actually taken or considered to bring about integration. The defenders of the segregated system of schools made use of boycotts, secret organizations and legal devices to prevent the mixing of the races in the schools.

The long-awaited decision was handed down unanimously by the U.S. supreme court on May 31, 1955. This ruling ordered the states to "make a prompt and reasonable start toward full compliance" with the 1954 decision, and directed the regional federal courts to determine whether the local school authorities were carrying out the judicial order "at the earliest practicable date." Since the court recognized the difficulties that prevailed in local areas, it made no provision for a specific deadline. This policy of "practical flexibility" led to much debate in the south as to the interpretation of the court's decree, with some southern authorities expressing the belief that integration could be stalled off for a long time. Negroes affiliated with the National Association for the Advancement of Colored People adopted the policy of applying for the admission of their children to white schools and, if denied, to file suits in federal courts to obtain justice in accordance with the U.S. supreme court decisions. A survey by the N.A.A.C.P. disclosed in September that only six states—Alabama, Florida, Georgia, Louisiana, Mississippi and South Carolina—had made no move at all toward desegregation of their schools, but that in the other eleven southern states some positive action or plans had taken place. According to a study released in Oct. 1955, by the Southern Education Reporting service, 134,000 Negro children were enrolled in the fall in the schools of the District of Columbia and eight states which had formerly segregated them from the white children. The largest single group was in the nation's capital, where more than 63% of the 106,000 school children were Negroes. Reports from leading cities, such as Washington, D.C., Baltimore, Md., and Kansas City, Mo., as well as from smaller communities stressed the lack of upward incidents in the setting up of integrated schools. It was apparent to many observers that full equality was a matter of time but inevitable.

There were several developments unfavourable to desegregation. A circuit court in Virginia ruled in June that a county could not use 1953 school bonds to build mixed schools. The Georgia state board of education resolved in August to revoke the licences of teachers who were members of the N.A.A.C.P. Later that month, the board rescinded this resolution, as well as one passed in July to revoke the licences of teachers approving or agreeing to teach mixed classes. Also in July, the Alabama legislature overruled Gov. James E. Folsom's veto of a law to bypass integration, and federal courts in Virginia and South Carolina avoided setting a deadline for desegregating the schools in the areas affected by their respective decisions.

International Educational Relations.—The annual survey of the Institute of International Education indicated the presence of 34,232 students from 129 foreign nations in U.S. colleges and universities during 1954–55. The department of state permitted in April 76 Chinese students to return to their homes in mainland China. During the year, the U.S. Foreign Operations administration arranged for U.S. educators and specialists to aid many countries, such as Ecuador, China (Formosa) and Ethiopia. The Lafayette Fellowship foundation was organized in September to enable French students to attend American colleges.

The 8th general conference of the United Nations Educational, Scientific and Cultural organization (UNESCO) met from Nov. 12 to Dec. 11, 1954, at Montevideo, Uruguay, with the U.S.S.R. taking part for the first time and with the satellite

countries of Poland, Hungary and Czechoslovakia returning to the fold. The conference adopted an increased budget of \$21,617,830 for 1955 and 1956. UNESCO admitted Paraguay and Ethiopia to its membership, now reaching 74 nations, but rejected Rumania and Bulgaria. In April 1955 South Africa withdrew from UNESCO on account of its "interference in South Africa's racial problems." In September the Universal Copyright convention sponsored by UNESCO came into force. Criticism of UNESCO was expressed by several large American groups for alleged subversion and atheism during 1954–55.

Educational relations among nations were promoted at the Bandung conference in Indonesia during April. Ways of improving education the world over were considered at the International Conference on Public Education convened in July at Geneva, Switz., and at the conference of the World Confederation of Organizations of the Teaching Profession meeting in August at Istanbul, Tur.

World Trends.—Sir David Eccles became minister of education in Great Britain in Oct. 1954. The principle of equal pay for men and women teachers was put into effect in September in Scotland. Proposals for school reform in France during the spring suggested the raising of the school leaving age to 16, the abolition of the present examination systems, and other changes designed to liberalize the traditional educational system of the French people. Catholic objection to proposed legislation in Belgium reducing grants to Catholic schools led to teachers' and students' strikes, riots and other forms of protest during 1954–55. Approximately 91,000 secondary school teachers in Italy went on strike late in May for higher pay, but returned to school after government threats. In West Germany, church-state conflicts arose in connection with education in the states of Lower Saxony and Bavaria. Reports from East Germany indicated a strong campaign to control the minds of university students by a compulsory spy system and by encouraging study in Moscow. In March, the secondary school teachers in Greece waged a three-day strike for higher pay. The Technical school in Prague, Czechoslovakia, reputed to be the oldest public technical college in the world, observed in April its 250th anniversary. The Polish ministry for culture prohibited in January religious teaching in all primary schools. All during 1954–55, newspapers, periodicals and individuals laid stress on the progress made in the U.S.S.R. in the training of scientists, engineers and technicians, often with the added warning that the U.S. lead was being reduced in this field. Beginning in the fall, the U.S.S.R. schools undertook to give more attention to physics, mathematics, and manual and physical training, and less time to the study of the humanities. The Soviet press denounced often those school authorities who had failed to carry out efficiently the communist program for universal education.

Communist China strengthened its hold on education not only in its own territory, but also by attracting students from various Chinese colonies in Asiatic countries and by intimidation of teachers and students in Chinese schools in Singapore. The census report for 1951 on literacy in India, published in Feb. 1955, stated that only 16.6% of the population was able to read. Among the other developments in India were the act banning the import of horror comics and the elimination of English as a medium of instruction at Gujerat university, at Ahmedabad. The proposal to abandon the phonetic methods of teaching reading gave rise to a controversy in Thailand. Saudi Arabia announced new restrictions on education and foreign travel for women. The Bar-Ilan university opened in September in Israel.

The racial segregation policy went ahead in South Africa when the Bantu Education act came into force in April. The attempt by the Perón government in Argentina to extend its con-

trol over education by eliminating the teaching of religion came to naught with the overthrow of his regime. In September, the Argentine universities reopened as free schools after eight years of political control.

(W. W. BN.)

Canada.—According to the most recent figures, there were in June 1954, 2,823,206 pupils taught by 105,209 teachers in public elementary and secondary schools; of these pupils 1,600,000 were in the central provinces of Ontario and Quebec. The latest dominion bureau of statistics report (1952) stated that there were 63,000 full-time students in university courses leading to degrees.

Increasing school enrolment gave rise in 1955 to two major concerns in education: methods of financing education, and meeting the critical teacher shortage. Regarding the former, British Columbia introduced a new formula for payment of provincial grants toward local education costs, designed primarily to provide greater financial assistance and to reduce the disparity between rural and urban resources in meeting these costs. In Nova Scotia and New Brunswick, royal commissions studied educational finance, their reports being tabled in Nov. 1954, and March 1955, respectively. Nova Scotia incorporated most of the recommendations into legislation in the spring. Nationally, a committee of the Canadian School Trustees' association, after 2½ years' study, published a 229-page report on educational finance. Among its recommendations were equalized property assessments within each province and federal aid (\$50,000,000) to the public schools.

Provincial school authorities increased their efforts to recruit young people for the teaching profession, through intensified publicity, more financial assistance for training, and some revision of training programs.

In the field of school health, federal and provincial health authorities co-operated in a policy of inoculating pupils with Salk poliomyelitis vaccine. Generally, children in grades I and II were inoculated, with grade III and kindergarten sometimes included. Between the beginning of April 1955, and the end of June, about 1,000,000 children received at least two doses of the vaccine.

(F. K. S.)

(See also BLIND, EDUCATION OF THE; BUDGET, NATIONAL; CENSUS DATA, U.S.; CHILD WELFARE; HOME ECONOMICS; LIBRARIES; MOTION PICTURES; NEGROES, AMERICAN; RADIO AND TELEVISION. For statistics of institutions see UNIVERSITIES AND COLLEGES; See also under various states and countries.)

Education, Religious: see RELIGIOUS EDUCATION.

Education, U.S. Office of: see EDUCATION.

Eggs. Chicken egg production in the United States during 1955 was indicated as at least 1% in excess of the 1954 record of 65,375,000,000 eggs. For the first nine months of 1955 the total was 51,521,000,000 eggs as compared with 49,535,000,000 eggs for the same period in 1954.

The 397,000,000 layers on farms at the beginning of the year, as compared with 387,000,000 a year earlier, because of favourable egg-price-feed ratios and anticipated price improvement were not heavily culled as was officially anticipated; about 347,090,000 remained on hand in September as compared with 350,015,000 a year earlier. The rate of lay was record high, averaging 148 eggs per hen for the first nine months of 1955 as compared with 144 in the comparable period of 1954.

Egg prices were more favourable than in 1954. Though 15% fewer chickens were raised on U.S. farms in 1955 for laying flock replacement than in 1954, late season indications were that egg prices and feed costs were sufficiently favourable to hold laying flocks at a level not much below 1955.

World egg production in 1955, as roughly indicated by esti-

mates for some of the more important producing countries, slightly larger than in 1954. Western Europe generally increased production, the Netherlands to 4,200,000,000 eggs as compared with 3,750,000,000 in the previous year. Canada showed a decline of 1% to 4,400,000,000 eggs. The U.K. board of price review in February set minimum prices below which any guaranteed prices would not be allowed to fall: 1955-56, 4 cents per dozen; 1956-57, 45.6 cents per dozen; and 1957-58, 43.2 cents per dozen.

World trade in eggs increased. The Netherlands in 1954 exported 170,800,000 doz., Denmark 149,500,000 doz. and the U.S. 48,000,000 doz. West Germany was the principal importer (200,000,000 doz.), followed by the U.K. (119,700,000 doz.).

(J. K. R.)

Egypt. A republic of northeast Africa, Egypt is bounded north by the Mediterranean, south by the Anglo-Egyptian Sudan, east by Israel and the Red Sea, west by Libya. Area 386,100 sq.mi. Pop.: (1947 census) 19,021,840; (1955 est.) 23,240,000. Language: 97% Arabic, with minorities speaking Greek, Italian, Armenian, etc. Religion: Moslem (mainly Sunni) 91.4%; Christian (mainly Copt) 8.19%; Jewish 0.4%. Chief towns (pop. 1952 est.): Cairo (cap.), 2,367,900; Alexandria 1,071,000; Port Said 186,300; Tanta 147,800; Gizeh 135,100; Mehalla el-Kubra 131,000; Suez 115,200; Mansura 118,100. Premier and head of the Revolutionary Council in 1955, Lieut. Colonel Gamal Abd-el-Nasser.

History.—During the year 1955 the stability of the regime in Egypt, although it was certainly not free from grave difficulties both external and internal, gave the appearance of being undiminished. Its two most serious internal opposition parties, the Moslem Brotherhood and the Wafd, appeared to have been so effectively crushed as to have ceased for the time being to exist as organized political forces. Whether or not the bluff popular self-styled "peasant" personality of Colonel Nasser had in fact succeeded in bringing about the start of a diminution in the incidents of the almost endemic Egyptian political and administrative complaint of corruption could only be determined by historians in the future, for the present there seemed good ground for the claim that Egyptian public opinion was more honest than it had been for many years and a good augury for the regime in the fact that this belief appeared to be widely held throughout the country.

An important stage in the regime's attack upon its internal enemies was completed early in the year with the conclusion of a series of trials directed against adherents of a Movement of National Liberation and against alleged Zionists which had been begun in Dec. 1954. After three trials of persons accused of spying, sabotage and of spreading alarm in the interests of Israel, many persons were sentenced to terms of imprisonment and two alleged Zionists to death. These latter were executed in spite of strong protests from the Israeli and French governments and from other bodies. Shortly afterward more than 300 persons alleged to have been engaged in activities directed against the security of the state, under the aegis of the Moslem Brothers, were sentenced to imprisonment: 15 death sentences passed at the same time were all commuted to terms of imprisonment. There was a further indication of the existence of internal difficulties for the regime when in August, after it became clear that the relations between the Egyptian and Sudanese governments had undergone a very serious deterioration, it was announced that Maj. Salah Salem had been placed upon "indefinite leave of absence" and that Nasser himself had taken over his function as minister of national guidance and of Sudan affairs.

A new sterling agreement, as a result of which Great Br



EGYPTIAN TROOPS running for cover toward the remains of a dynamited police station on Sept. 8, 1955, during fighting with Israelis on the Gaza Strip

ed another £15,000,000 for Egyptian use, had been announced in Dec. 1954. This was extended and supplemented by further agreement, signed in Cairo on Aug. 29, 1955, whereby Great Britain undertook to release £20,000,000 in each year from 1955 to 1960 inclusive, £10,000,000 in each of 1961 and 1962 and such sums as might remain in 1963. Meanwhile the Egyptian government undertook to discontinue discrimination against sterling goods. Against this development and against the ready implementation of the terms of the Anglo-Egyptian agreement with regard to the Suez Canal base, must be set minor conflicts between the two governments arising from the fact that British ships were fired on and stopped by Egyptian armed forces in the Gulf of Akaba in April and again in July. Further, the Egyptian government complained that, in spite of the sale in May of two British destroyers to Egypt, which was announced in the house of commons in July, Egypt was not getting from the United Kingdom the delivery of arms which it had felt itself entitled to expect.

At the Bandung (Indonesia) Asian-African conference in April, Egypt, represented by Nasser, sided with India and China and appeared as one of the leaders of the neutralist or pro-communist as distinct from the pro-western group of the powers assembled there. In a speech at the conference Nasser laid down two requirements for world peace, namely noninterference in the right of each country to develop its own social and economic system. He strongly criticized what he described as the oppressive and imperialist policies of the French government in north Africa. These views found more practical expression in the strongly anti-French sentiments which were directed to the Cairo radio to the Arabic-speaking peoples of French north Africa.

Meanwhile Egypt had met with a rebuff in its relations with Arab neighbours. Iraq's treaty with Turkey was bitterly denounced in Cairo as a threat to Arab unity. In this attitude the Egyptian government was supported by Syria and Saudi Arabia and a conference of Arab powers, which met in Cairo at the end of January, failed principally because Nasser refused to meet the Iraqi premier, Nuri es-Said.

It was announced simultaneously in Cairo, Damascus and Baghdad in March, that Egypt, Syria and Saudi Arabia had signed a treaty for military and economic co-operation. The terms included provision for the co-ordination of the military forces of the three countries, for the setting up of an economic council and an Arab bank and for the establishment of a common Arab currency. But other Arab states showed little enthu-

siasm for an invitation to join with the three powers and the project of a conference to be held in Cairo was not pursued.

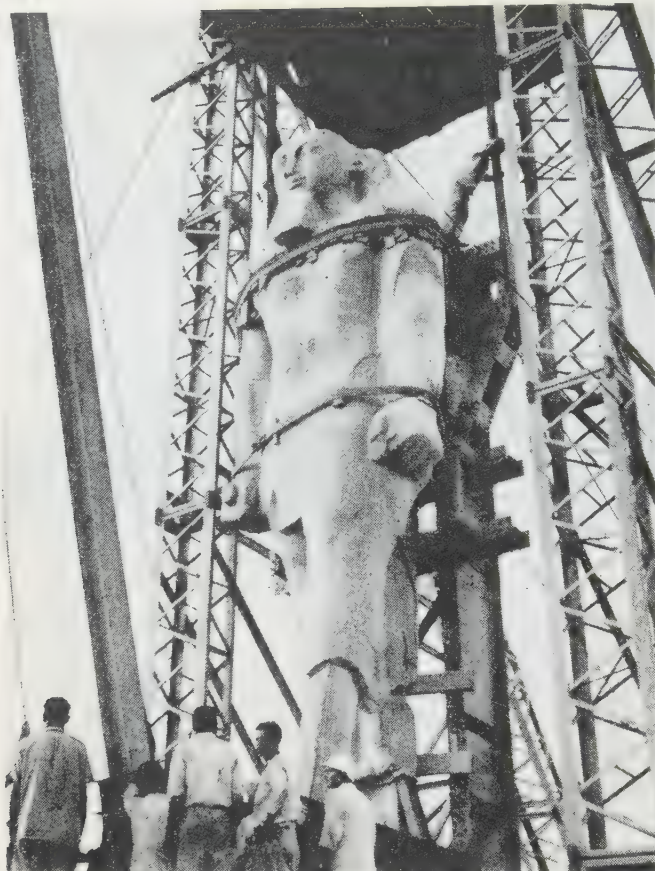
At the end of September came the news that Egypt had successfully approached the U.S.S.R. in its search for arms. Colonel Nasser announced on the Cairo radio that, after first approaching the U.S.S.R., Egypt had concluded a commercial agreement with Czechoslovakia by which Egypt was to receive arms in return for cotton and other goods. Nasser also stated that the attitude of the Israeli government and the activities of Israeli armed forces had become increasingly menacing and in his speech to the cadets (Oct. 2) quoted passages which he declared were extracts from British and French military intelligence documents that had come into the possession of the Egyptian government, designed to show that Israel was better armed than Egypt and that its intentions were patently more aggressive. He denied that the agreements indicated sympathy with Communism and quoted in this connection the measures which his government had taken against the Egyptian Communists. Meanwhile, on Oct. 1, the British, French and U.S. governments had all expressed their "grave concern." The Israeli government protested vigorously and began a renewed search for supplies of arms. In western countries the incident was held to be significant of a powerful Soviet diplomatic offensive in the middle east and was in consequence the occasion of great diplomatic activity.

On Oct. 14 the New China News agency announced the signature of a three-year Sino-Egyptian trade agreement which provided for most-favoured-nation terms between the two countries, for arrangements for balanced trade and for payments in transferable sterling, for the establishment of commercial offices in Peking, China, and Cairo. Among other things, Egypt was to receive deliveries of light machinery.

In June it had been announced that the Alexandria market in cotton futures was to be reopened. The market had been closed in Nov. 1952, because of alleged financial abuses. The Egyptian finance minister, Abd-ul-Moneim el-Kassuni, announced that the safeguards similar to those applied in the Liverpool cotton exchange would be enforced and stated that he had negotiated an agreement with the Liverpool cotton exchange which had only dealt in U.S. cotton since its reopening in 1954. (See also ANGLO-EGYPTIAN SUDAN.) (H. S. D.)

Education.—State schools (1953-54): primary 7,492, pupils 1,493,797; secondary 595, pupils 361,650; vocational 85, pupils 26,629. Teachers' training colleges 80, students 23,051. Institutions of higher education 5, students 75,000, of which 3 state universities, students 45,763.

Finance and Banking.—Monetary unit: Egyptian pound with an exchange rate of £E 0.975 to the pound sterling and £E 0.348 to the U.S. dollar. Budget (1955-56 est.) balanced at £E 315,300,000. Currency circulation: (Dec. 1954) £E 189,600,000; (June 1955) £E 172,100,000. Bank deposits: (June 1954) £E 157,100,000; (Oct. 1954) £E 168,500,000. Gold and foreign exchange: (Dec. 1954) U.S. \$732,000,000; (April



STATUE OF RAMESES II, pharaoh of the 19th dynasty, returned to an upright position after lying flat for several centuries in Memphis, Egy. The raising of the statue was on the occasion of the third anniversary of the Egyptian army revolution, July 1955

1955) U.S. \$746,000,000.

Foreign Trade.—(1954) Imports £E159,660,000; exports £E138,270,000. Main sources of imports: U.K. 13%; other sterling area 9%; France 10%; Italy 8%; other continental European Payments Union countries 30%; U.S. and Canada 12%. Main destinations of exports: France 12%; Italy 8%; other continental European Payments Union countries 19%; U.K. 10%; other sterling area 16%; U.S. and Canada 5%. Main export: cotton 82%.

Transport and Communications.—Roads (1953): 51,700 km. Motor vehicles in use (1953): cars 69,400, commercial vehicles 19,400. Railways (1954): 5,797 km. Shipping, merchant vessels, 100 gross tons and over (July 1954): 68; total tonnage 113,795. Telephones (Jan. 1954): 135,388. Radio receiving sets (1953): 405,000.

Agriculture.—Main crops (metric tons, 1954): maize 1,752,000; wheat 1,729,000; barley 116,000; rice 1,118,000; sugar, raw value 262,000 (1955 est.) 300,000; broad beans 234,000; lentils 60,000; cotton, lint 348,000; cottonseed 623,000; onions 746,400 (1955 est., 791,500). Live-stock (Sept. 1952): cattle 1,356,000; horses 39,000; mules 10,000; asses 816,000; pigs 27,000; buffaloes 1,212,000; sheep (Sept. 1953) 1,216,000. Fish landed (1952): 53,800 metric tons.

Industry.—(Metric tons) Crude oil production (1954): 1,970,000; raw materials (1953): phosphate rock 508,000; manganese ore 75,000; salt 387,000. Manufactured goods (1954): cement 1,237,400; cotton yarn 64,340; woven cotton fabrics 240,000,000 (metres).

Eire: see IRELAND, REPUBLIC OF.

Eisenhower, Dwight D. (1890—), 34th president of the United States, was born Oct. 14 at Denison, Tex.; his parents moved to Abilene, Kan., when he was a year old. He was graduated from the U.S. Military academy at West Point, N.Y., in 1915. (See also his biography in *Encyclopædia Britannica*.) In June 1942, during World War II, he was named Allied commander of the European theatre of operations and headed the invasions of North Africa and Europe that led to defeat of Italy and Germany.

After serving as chief of the army staff at the end of the war, he resigned from active service on Feb. 7, 1948, to become president of Columbia university, New York city. He was recalled to active duty in Dec. 1950 as head of the North

Atlantic treaty forces in Europe.

He resigned that post as of June 1, 1952, to campaign for the Republican presidential nomination. He was nominated July 11, and with his running mate, Sen. Richard M. Nixon of California, elected on Nov. 4.

The nation was shocked when the seemingly healthy Eisenhower was stricken with a heart attack on Sept. 24, 1955, in Denver, Colo., where he had been vacationing. His personal physician, Maj. Gen. Howard M. Snyder, diagnosed the illness as a "mild coronary thrombosis," and placed the president in an oxygen tent at nearby Fitzsimons Army hospital. Paul Dudley White of Boston, leading heart specialist, was called for consultation immediately.

The president was kept under a strict regimen of diet, rest, and treatment and showed steady improvement. He returned to Washington on Armistice day, Nov. 11, but left in a few days for his farm at Gettysburg, Pa., for a rest of an indeterminate period.

Eisenhower's illness had political and economic repercussions. The Republicans were panicked at the thought that he might not be able to run for re-election in 1956, for they had been confident of victory with him at the head of the ticket. But on the same token, the Democrats took new heart, figuring that Eisenhower's 1956 chances would improve if such a popular figure as Eisenhower were removed from the political scene.

Even before the president's heart attack, there had been doubt that he would stand for renomination in 1956. Eisenhower was known to be opposed to it. He himself had emphasized that he did not believe in the theory of the "inevitable man" and had urged the Republican party to "bring out" "young men" for office.

European statesmen showed grave concern over the president's health because of the impetus toward world peace that he had provided at the Geneva conference of the heads of the Big Four Powers in July. This meeting brought together the heads of the Big Four Powers for the first time since Potsdam and the death of Stalin—Eisenhower, Prime Minister Sir Anthony Eden of Britain, Premier Nikolai A. Bulganin of the U.S.S.R. and Premier Edgar Faure of France. Its purpose was to alleviate tensions and to terminate the "cold war," if possible.

On leaving for Geneva July 15, Eisenhower expressed the hope that a spirit of "conciliation, tolerance and understanding" would flow from the conference, provided the Russians were sincere in their professions of peace. He pledged himself to abolish the attitudes of mutual distrust which had plagued the nations since World War II.

"Such a change," he said, "could be the greatest step toward peace, toward future prosperity and tranquillity that has ever been taken in the history of mankind."

On arriving at Geneva, he said:

"Some years ago, I came to Europe with an army, navy, and air force, with a single purpose to destroy nazism. . . . Now, at this time, I come armed with something far more powerful—the goodwill of America—the great hopes of America—the aspirations of America for peace."

Assuming leadership of the conference, Eisenhower proposed a bold disarmament formula. He suggested establishment of an "alarm clock" system, under which the nations would exchange military blueprints, and permit periodical aerial inspection of their military installations. Such a system, he said, would prevent "surprise attacks" and, therefore, act as a deterrent to aggressors. His proposal won general acclaim save from the Communists.

While at Geneva, Eisenhower displayed his winning personality. Followed by a Pied Piper crowd, he walked through the narrow crooked streets to a small shop, where he spent

ys for his grandchildren.

In the conduct of domestic affairs, Eisenhower was relatively successful. His conservative appointees managed the economy and finances in such restrained and orthodox manner that the Democrats attacked the administration as "too friendly to big business." But employment, wages, production and sales reached new peaks. Unlike his predecessors, Eisenhower refrained from politicizing the opposition, and had good relations with congress. Their differences were trivial.

In the field of foreign affairs, congress approved mutual defense pacts with southeast Asia and with the Nationalist Chinese government on Formosa. It empowered the president to intervene if Red China attacked Formosa. It agreed to rearming of western Germany and termination of the four-power occupation of Austria. Finally, it gave approval to his Geneva attempt to negotiate with the Russians.

Despite sharp opposition, Eisenhower won his fight for flexible instead of rigid 90% parity price supports for basic farm commodities. Congress raised the hourly minimum wage from 75 cents to \$1, whereas the administration had asked for 90 cents. Eisenhower sought \$54,000,000,000 for the fiscal 1956 budget, and obtained \$52,200,000,000, of which \$32,000,000,000 was for national defense.

President Eisenhower led a relatively quiet life even before his heart attack, and there were no signs of ill health. His principal exercise was golf at the Burning Tree club in nearby Maryland, and he made several trips to Augusta, Ga., where a house had been built for him alongside the course laid out by Bobby Jones. He journeyed to Treasury Secretary George M. Humphrey's Georgia plantation for hunting in the spring, and until his illness he golfed and fished almost daily during his vacation at Denver. He frequently invited business or military friends to the White House for an evening of bridge.

But his principal relaxation was frequent week-end visits to his farm at Gettysburg, to watch the reconstruction of his future home and to observe the development of his fine herd of cattle. His obvious enjoyment of this bucolic retreat first inspired speculation that, despite the state of his health, he would not run again.

As further evidence of his thoughts, he once explained that he found the presidency a "fascinating experience," but he

added that he "did not like politics in the derogatory sense of the word."

(See also ELECTIONS, U.S.; POLITICAL PARTIES, U.S.; UNITED STATES.) (R. T. U.)

Elections, U.S. A Democratic trend that began in 1953 and coursed through 1954 continued in scattered local elections in 1955. The Democratic national chairman, Paul M. Butler said the 1955 results showed his party would enter the 1956 presidential contest in "a much stronger position at the state, county and local level than at any time since the 1930s." The Republican national chairman, Leonard W. Hall dismissed the results as having "no national significance."

Democrats held on to their control over two of the nation's large cities, Chicago and Philadelphia. In Chicago the Democratic nominee, Richard J. Daley, won election after he had ousted Martin Kennelly, the incumbent, in the Democratic primary.

Daley was backed in the primary and general election by Adlai E. Stevenson, the 1952 Democratic presidential nominee, who was trying again for his party's nomination. Stevenson also was friendly to Richardson Dilworth, Democrat who swept to victory over Republican W. Thatcher Longstreth in the Philadelphia mayoralty contest.

Dilworth's victory was a double blow to Republicans. They had hoped to regain a foothold in Philadelphia, which they had ruled until recent years. Longstreth had been endorsed by Pres. Dwight D. Eisenhower but the president's reputed popularity did not seem to rub off on the local candidate.

Elsewhere in Pennsylvania, the Democrats ended Republican control of six cities while losing only two to the G.O.P.

In Indiana, a farm belt area where there was evident dissatisfaction over declining agricultural prices, Democrats won control of most of the larger cities and many of the smaller towns where the Republicans had been entrenched. Democrats ousted Republican mayors in South Bend, Hammond, Evansville, Muncie and Richmond as well as in Indianapolis, the state capital.

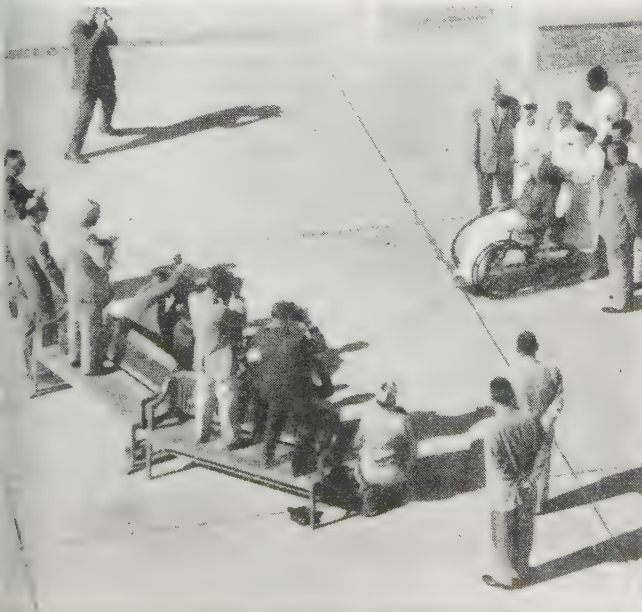
Republicans retained control of the New Jersey state legislature but lost three state senate seats there to the Democrats. A referendum for a proposed \$100,000,000 water supply program was roundly beaten.

In Connecticut, Democrats won the mayor's office in Waterbury, which they had lost to the Republicans eight years previously, ousted an independent mayor in Norwalk and held on to New Haven. They elected five members of the board of aldermen in Bridgeport, but failed to defeat the 77-year-old socialist mayor, Jasper McLevy in that city.

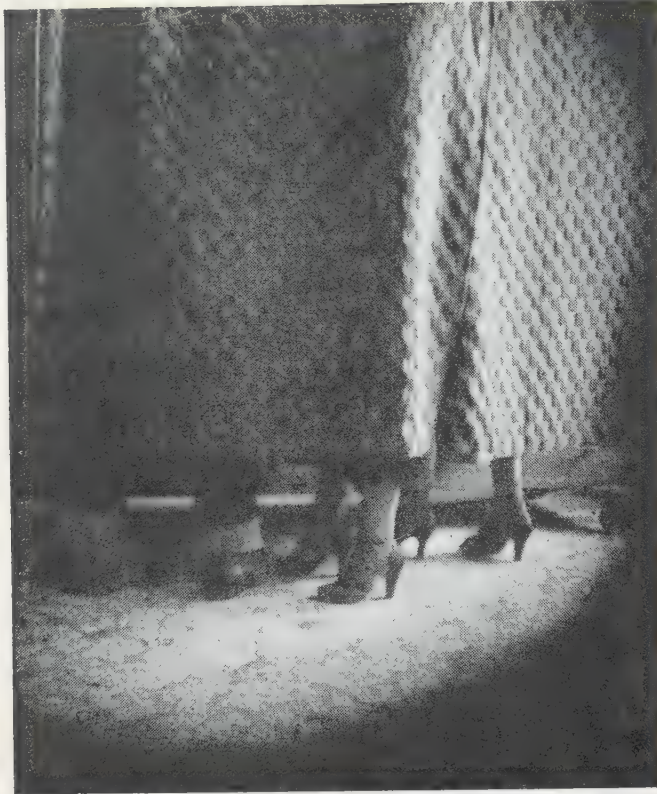
The results in New York were inconclusive from a party standpoint, although both sides claimed gains. In 48 mayoralty contests, the Democrats picked up a net of one seat. Democrats elected mayors in eight cities which previously had chosen Republicans. Republicans in turn ousted seven Democratic mayors.

On the basis of the returns, New York Gov. Averell Harriman said that "the Democratic trend which started two years ago is continuing and growing." Carmine G. DeSapio, Democratic national committeeman and Tammany Hall leader, said "it is evident that the successive Democratic victories since 1952 will continue throughout the country in 1956." But the Republican state chairman, L. Judson Morhouse declared that "The Tammany attempt to high-pressure upstate voters has been stopped cold."

New York state voters defeated a proposed \$750,000,000 state highway bond issue but approved low-rent housing, absentee voting and other state amendments. The general conclusion about the results was that the voters had rebelled against added



IES. DWIGHT D. EISENHOWER posing for news photographers with members of the medical staff of Fitzsimons army hospital, Denver, Colo., where he was recovering from a heart attack in Oct. 1955



CONTROVERSIAL PHOTOGRAPH showing three persons in a polling booth with the curtain closed during the Chicago, Ill., mayoralty election of 1955. The Chicago board of election commissioners claimed that the action was not illegal, as a voter is permitted to have the assistance of two election judges—one of each major party—in the booth. According to the source of the photograph, however, such assistance is not permitted with the curtains closed as shown in the photograph

taxes and expanded state spending.

Ohio voters gave a resounding setback to a proposal of the Congress of Industrial Organization permitting supplemental layoff pay and bigger unemployment benefits for workers in industry. Their decision delayed, but did not necessarily prevent, the eventual effectiveness of a plan which compromised the guaranteed annual wage demands made originally by the unions on the automobile manufacturers.

Under the agreements made by the union and the auto companies, laid-off workers would get 60% to 65% of their usual take-home pay. But such contracts were conditioned on approval of dual payments of states in which two-thirds of a company's employees work.

Across the Ohio border in Kentucky, A. B. (Happy) Chandler won back the governorship he once had held and had relinquished for a seat in the U.S. senate, and later the job as commissioner of baseball. Chandler defeated Republican Edwin R. Denny after Democrats outwardly healed a split in their party primary in which Chandler won the nomination.

The only other governor's race found no Republican candidate in the running in the general election. Democratic Atty. Gen. J. P. Coleman was elected governor of Mississippi without opposition.

In Virginia, which gave President Eisenhower a majority in the 1952 presidential contest, Republicans made some slight gains. They picked up one seat in the house of the general assembly, giving them six there, and retained their three seats in the senate. The G.O.P. won some county offices in Fairfax county (near Washington), for the first time.

Democrats succeeded in ousting Republican Mayor Pratt Remmel of Little Rock, Ark., breaking a four-year G.O.P. hold on that city. Elected was Woodrow Wilson Mann, a political novice.

Republicans came back in Salt Lake City, Utah, to replace veteran Democratic Mayor Earl J. Glade with Republican Adiel F. Stewart. Riverton, Wyo., elected its first woman mayor, Willa Wales Corbitt, a retired school teacher, in nonpartisan balloting.

In San Francisco, a Republican defeated a Democrat for mayor's office in an election conducted on a nonpartisan basis and without party labels. George Christopher, president of the board of supervisors, won the office over George R. Rea, a member of the state board of equalization.

Boston's Mayor John E. Hynes won a third term over another Democrat, John E. Powers, in a nonpartisan contest. In only special election involving a congressional seat, John Dingell, Jr., 24 years old, was elected to succeed his father, Michigan's 15th congressional district. Dingell, an attorney and a former assistant prosecutor, won over Republican Thomas Brennan, 26-year-old attorney, in the strongly Democratic district. (See also DEMOCRACY; POLITICAL PARTIES, U.S.; CONGRESS; and under various states.) (J. L. BE)

Electrical Industries. Sales of energy by electric utilities in the United States rose 15% during 1955 to a total of 476,000,000,000 kw.hr. Industry, the largest user, consuming 320,000,000,000 kw.hr. Of that amount, 244,000,000,000 kw.hr. was purchased from utilities and 76,000,000,000 kw.hr. was generated by industrial plants for their own use. The 244,000,000,000 kw.hr. purchased from industry was 51.3% of all the energy sold by utilities.

During 1955 the use of electric energy in manufacturing reached 212,000,000,000 kw.hr., a 10.4% increase over the previous year. Added to manufacturing consumption was the purchase of 47,000,000,000 kw.hr. for use by Atomic Energy Commission installations. This was slightly more than twice the amount purchased by the AEC in 1954. Other industries, including aluminum and magnesium, used 61,000,000,000 kw.hr. in 1955, 212,000,000,000 kw.hr. used by manufacturing, 47,000,000,000 kw.hr. by the AEC and 61,000,000,000 kw.hr. by other industries made up the total industrial use of 320,000,000,000 kw.hr.

Sales to Residential Customers.—During 1955 the use of energy by the average residential customer showed a real increase of 218 kw.hr. This brought consumption by the average customer to 2,767 kw.hr. per year. Electric utilities also added 1,300,000 new residential customers during the year, bringing the total number of customers to 44,400,000.

These 44,400,000 customers purchased 121,200,000,000 kw.hr. an increase of 12.7% over 1954 and representing 25.5% of the energy sold by the electric utilities. The customers paid an average of 2.65 cents per kilowatt-hour for this energy, and at this price the average customer's use of 2,767 kw.hr. cost \$73.33. The total cost of the energy used by all residential customers amounted to \$3,200,000,000.

Sales to Commerce.—Sales of energy to customers classified as small light and power showed a 9.1% gain during 1955. This gain brought the total use by commercial establishments to 100,000,000,000 kw.hr., or 17% of the total sold by utilities. The conditioning of office buildings and commercial establishments was a prime cause of the increase, although other factors such as lighting and commercial cooking also contributed to it.

Sales to other less important classifications, 6.4% of the total, rose 5% to 30,000,000,000 kw.hr. during 1955.

The increase of 10.4% in industrial sales, 12.7% in residential, 9.1% in commercial and 5% to other classifications brought total sales to 476,000,000,000 kw.hr., and the total gain over 1954 sales to 15.7%.

To meet this demand for energy the nation's major electric utilities (classified as class I electric systems) made available

44,000,000,000 kw.hr. To do this they used 117,000,000 kw. of generating capacity. This equipment experienced a non-coincident peak load of 98,000,000 kw. As a result these systems showed a gross margin (generating capability over peak load) of 19,000,000 kw., or 19% of peak load.

Private companies owned approximately 80% of the nation's generating capacity. Ownership of the remaining capacity was divided among rural electric co-operatives, municipalities, public power districts, state agencies and the federal government.

Electrical Manufacturing.—Manufacture of heavy electric power equipment continued at a high rate during 1955. Although deliveries of steel, particularly heavy plate, lengthened, no serious problems were created. Copper, on the other hand, was in short supply and as a result its price rose drastically. Production manpower was ample but a shortage of technical and engineering talent threatened to become a bottleneck.

The production of electric generating equipment both thermal and hydraulic scheduled for shipment during 1955 was about 1,630,000 kw. Of this amount 10,674,000 kw. was scheduled for shipment to U.S. electric power systems. The remainder was scheduled for export or to U.S. industrial plants. Of the 11,630,000 kw. scheduled for shipment 10,105,000 kw. was thermal. The remaining 1,525,000 kw. were hydraulic turbine generators. Steam generators (450 lb. per square inch pressure and higher) capable of delivering 62,160,000 lb. of steam per hour were scheduled for shipment in 1955. This amount was only 1% of that actually shipped in 1954 and only 54% of the 1953 shipments. New orders for steam generators during the first half of 1955 were 21% greater than those placed during the last six months of 1954. However, new orders for steam generators did not keep pace with orders for new thermal electric generating capacity.

During 1955 there were on order two atomic power reactors for U.S. electric power systems. They were to be used for the production of steam in new thermal power projects having a combined capacity of approximately 300,000 kw. Preliminary study of a number of other atomic power plants was started during 1955.

The production of nearly 60,000,000 kva. of power transformer capacity in 1954 was the highest on record. Scheduled production for 1955 was only 40,000,000 kva.

Appliance Sales.—Sales of electrical appliances during 1955 were generally well above those of 1954. During the first half of 1955 manufacturers of electric refrigerators sold nearly 2,200,000 units. Sales during all of 1954 totalled only 3,600,000 units.

During the first half of 1955 about 3,800,000 television sets were sold, or 34.6% above the sales during the same period of 1954. Total sales during 1954 amounted to 7,300,000 units.

Other appliances which enjoyed a healthy increase in sales during the first half of 1955 were electric ranges, 700,000, up 9% over the first half of 1954; washing machines, 2,100,000, up 29.8%; clothes dryers, 900,000. Sales of ranges during all of 1954 amounted to 1,200,000 units, washing machines 3,600,000 and dryers 900,000.

During the first nine months of 1955 retail sales of air conditioners amounted to 1,300,000 units as compared with 1,000,000 units during 1954. Production during 1955 probably fell below 1954 level because of the high inventory (600,000 units) at the start of 1955. (See also FEDERAL POWER COMMISSION; PUBLIC UTILITIES; RURAL ELECTRIFICATION ADMINISTRATION; TENNESSEE VALLEY AUTHORITY.) (Ar. Mo.)

Canada.—During 1954, 2,420,000 kw. of new generating capacity was brought into operation, raising the total to 13,110,000 kw. While hydro generation accounted for 11,669,000 kw. and thermal generation for only 1,441,000 kw. of total capacity,

the steady growth of thermal capacity over the past few years had been significant in a country blessed with abundant cheap water power. In 1954 thermal capacity accounted for 11% as against 7% in 1950. An electric power survey published by the dominion bureau of statistics in March 1955 forecast a generating capacity of 16,403,000 kw. in 1958, of which 2,295,000 kw., or 14%, would be thermal generated.

Of the presently developed generating capacity, 41% was located in the province of Quebec, 30% in Ontario and 13% in British Columbia.

Among major new power developments under construction were the joint Canadian-U.S. St. Lawrence river project, built in conjunction with the St. Lawrence seaway, the Bersimis river project in Quebec province and the expansion of the Kitimat power plant of the Aluminum Co. of Canada in British Columbia.

Surveys were continuing on two gigantic projects in Canada's north country, the Northwest power project in the Yukon Territory and the Hamilton river project in Newfoundland.

As a joint undertaking of the Canadian government, the Hydro-Electric Power Commission of Ontario and private firms, a start had been made on Canada's first \$16,000,000 atomic power plant near St. Joachim, Ont., expected to be completed in 1958.

(R. Rr.)

Other Countries.—The International Conference on the Peaceful Uses of Atomic Energy at Geneva in August drew attention to the efforts being made, especially by Britain and the United States, to capture the world market for nuclear power plants. The very high capital investment needed for the development of such plants was likely to confine their manufacture to the larger industrialized countries, and several groups of

World Output of Electric Power*

Country	1950	1951	1952	1953	1954
World total†	948,300	1,057,200	1,139,200	1,246,600	1,344,300
United States‡	388,674	433,358	463,055	514,169	471,608§
U.S.S.R.	90,300	103,000	117,000	132,000	146,300||
United Kingdom¶	54,516	59,568	61,992	65,508	72,893
Canada	55,037	61,447	66,104	65,484§	69,136§
German Federal Republic	44,466	51,848	56,781	61,071	67,872¶
Japan	44,890	47,729	51,647	55,698	59,833
France	33,622	38,288	40,849	41,556	42,763§
Italy	24,681	29,223	30,843	32,619	34,649
German Democratic Republic	18,900	20,700	22,400	23,700	—
Sweden	18,177	19,348	20,545	22,430	23,720
Norway	17,761	17,750	18,866	19,622	21,370
Poland	9,408	10,600	12,000	13,600	—
Union of South Africa	10,872	11,664	12,528	13,344	14,634
Australia	10,248	10,860	11,700	12,948	14,470
Switzerland§	9,120	10,248	10,848	11,124	11,240
Czechoslovakia	9,300	10,400	11,700	12,400	—
Belgium	8,481	9,498	9,468	9,806	10,565
Netherlands	7,417	7,911	8,599	9,603	10,590
Spain	6,916	8,287	9,416	10,116	8,606
Austria	6,351	7,375	8,032	8,764	7,704§
India§	5,112	5,856	6,120	6,624	7,497
Mexico	4,423	4,908	5,337	5,703	6,300
Finland	4,176	4,610	4,769	5,403	5,642

*Only countries with an output exceeding 5,000,000,000 kw.hr. in 1954 are included; total output (i.e., including that by individual establishments generating primarily for own use) if not otherwise stated.

†Excluding China.

‡Excluding a relatively small amount of generation by commercial establishments.

§Production by enterprises generating primarily for public use.

|| Estimate based on first eight months.

¶Excluding Northern Ireland and Lochaber Power Co.

§Excluding electricity generated by the Federal railway.

δ Coverage incomplete, about 95% of total production.

engineering manufacturers were formed to undertake this development.

The British Nuclear Energy conference was formed for the discussion of developments in this field, and its inaugural meeting was on Nov. 30.

The British Electricity authority used 40,830,000 tons of coal and coke and 240,000 tons of oil and other fuels during the year ended March 31, 1955, and there were signs that the National Coal board would not be able to meet the increasing demands for coal. Nuclear energy was the most promising long-term solution for this difficulty, and 12 nuclear power stations, costing

about £300,000,000 and having a total capacity of between 1,500 and 2,000 Mw., were to be built and commissioned by 1965. Meanwhile, it was decided that the use of imported oil fuel, particularly at coastal power stations, should be greatly increased, rising to about 3,000,000 tons a year by 1960.

Denmark, the German Federal Republic, Greece, Norway and Switzerland were all planning to build nuclear power plants.

The largest hydroelectric station in the world, Zhiguli, on the Volga river, was nearing completion in late 1955, and details were given of the new five-year plan for electrification in the U.S.S.R. This would include a 600-mi. 400-kv. line from the lower Volga to Moscow and a distribution scheme for the whole of European Russia. (E. W. G.)

Electric Transportation: see URBAN TRANSPORTATION, U.S.
Electrification, Rural: see RURAL ELECTRIFICATION ADMINISTRATION.

Electronics. **Radar.**—An announcement from the U.S. army in Aug. 1955 revealed that more than 50 radar stations were being built along the Arctic coastline of Canada, as part of the U.S.-Canadian DEW (Distant Early Warning) line, a radar chain which was intended to give as much as six hours warning of bombing planes approaching North America over the polar regions.

Already seven stations were operating in Alaska, along with additional stations in Greenland, at the other end of the 3,000-mi. line. The new stations would fill in the middle.

The most powerful airborne search radars yet developed, designed for additional stakes in the radar fence guarding North America from a sneak attack by air, were announced by the General Electric company. These were to be installed in the navy's new radar picket blimps, built by the Goodyear Aircraft Corp. Each blimp was 342 ft. long and contained nearly 1,000,000 cu.ft. of helium. They were capable of remaining aloft on patrol for several days. The radar was housed under the blimp's two-deck control car.

Since radar beams cannot bend around the curve of the earth, they are unable to travel much beyond the visible horizon. Hence raising the radar several thousand feet in the air greatly extends its range, so that a blimp radar can, in some cases, detect a low-flying plane at twice the distance possible for a ground radar. The new radar was also being used in navy and air force aeroplanes.

Aerial Navigation Aid.—An electronic aid to aerial navigation, announced in 1954, was the automatic photoelectric sextant, developed by engineers of the Kollsman Instrument corporation. It automatically sights and follows the sun during the day, and the stars and planets at night and indicates, on a dial at the control panel, the average altitude over a selected period. The sextant tracking device, with its photoelectric telescope, may be installed in any part of the aircraft where it has an unobstructed view of the sky.

Electronic Computers.—A miniature electronic brain or computer, capable of use in aeroplanes flying faster than the speed of sound, was developed for the U.S. air force by the Bell Telephone laboratories. Known as TRADIC (for TRANsistor-DIGital Computer), the device uses nearly 800 transistors in place of the thousands of vacuum tubes in earlier computers. Because the transistor, which performs many of the functions of a vacuum tube, does not generate excess heat, TRADIC requires less than 100 watts to operate, about a twentieth of the power needed by comparable vacuum tube computers.

Progress in the use of electronic computers in foretelling weather was reported in a joint effort by the U.S. weather bureau, the navy and the air force, called the Joint Numerical

Weather Prediction unit.

The computer is fed data on air pressure at 50 different stations. From these, in about an hour, and after performing millions of computations, it yields numbers from which winds at three levels (ground, 20,000 ft. and 30,000 ft.) may be charted and then used, along with figures on rainfall, in forecasting the weather.

Another use of an electronic brain, in controlling the electric power generated by an entire utility system, was announced in April. The Kansas City Power and Light Co. had installed on its power system an automatic dispatching system, built by the General Electric Co. It regulates 500,000 kw. of electricity produced in three plants in the Kansas City area. While maintaining the frequency and scheduled power flow over transmission lines to neighbouring utilities, this new automatic control also adjusts the output of the generators to use the least possible amount of fuel.

In the past, even though automatic controls had been used, it was necessary for human operators to estimate the power required throughout such a system, determine the most economical schedule, and then manually set the controls determining which generators would supply the required power. The new system, which began operation late in 1955, automatically analyzes the information received from the power system and adjusts the throughput of the generators accordingly, to obtain optimum efficiency.

Use of Solar Power.—Direct use of solar power to operate a rural telephone line began in October, in experiments conducted in Georgia by the Bell Telephone laboratories and the Southern Bell Telephone Co. Those made use of the solar battery, announced by the laboratories in 1954 and whose efficiency had been materially increased since then.

The battery, which is encased in an aluminum housing smaller than a yard square and is covered with glass, contains 432 cells made of silicon and capable of converting into electrical power as much as 11% of the solar energy which falls upon them. Excess current, not needed for immediate operation of the



MUSIC SYNTHESIZER, an electronic device said to be capable of reproducing the sound of any musical instrument or group of instruments, demonstrated by H. F. Olson of the David Sarnoff Research centre of the Radio Corporation of America, Jan. 31, 1955

is fed into a storage battery to provide power at night and in cloudy weather. The telephone system makes use of transistors, in place of vacuum tubes, and so requires only small amounts of power.

Photographic Paper.—An electronic method of preparing at low cost a sensitive photographic paper that can make contact prints in exposure of a fraction of a second and requires no chemical processing, was developed by the Radio Corporation of America. It is called Electrofax and can be used to make permanent prints from photographic negatives, or enlargements from projected images.

A coating of a special zinc oxide in a resin binder is applied to the paper, which may be a low-cost wood pulp or a high-strength bond, according to requirements. Thus coated, it is insensitive to light. However, when electrons are sprayed on it in the dark by moving a charged wire across the surface, the paper acquires a negative electrostatic charge, making it sensitive, and it then must be protected from light.

Exposure is made through a photographic negative, as with conventional photographic printing processes. Where light falls, the negative electrical charge is reduced, thus producing a latent electrostatic image. Development is accomplished by dusting the exposed paper with a magnetic "brush," consisting of iron filings mixed with a pigmented resin powder, picked up on the end of a permanent magnet. The powder particles become positively charged and are attracted by the remaining negative charges on the unexposed parts of the paper. This image is fixed permanently by baking the sheet for a few seconds at a temperature that melts the resin powder and fuses it with the coated surface.

Amplification of Light.—Scientists of the General Electric research laboratory demonstrated a means of direct amplification of light which was an outgrowth of studies of the phenomenon of electroluminescence, whereby an electrical field applied directly to a phosphor causes it to glow. A G-E scientist, Donald A. Cusano, developed a phosphor which does not glow merely with application of the electrical field. However, when ultra-violet radiation shines upon it in addition it glows brightly.

As demonstrated, an ordinary lantern slide projector, equipped with an ultra-violet source, projected a picture on the phosphor screen, and a faint yellow image was visible. But when the voltage on the screen itself was applied and increased, the image became many times brighter. The scientists measured the number of photons, or light-units, striking the screen, and the number given off. These increased more than ten times, thus showing true light amplification.

Possible applications of the principles of the device in television, to give a picture-on-the-wall television screen, and also in X-ray fluoroscopy, photography and "seeing-in-the-dark" devices, were foreseen.

Electronics Applied to Medicine.—An electronic physiological monitor for patients under anesthesia was developed by R. Gilford and H. P. Broida, of the national bureau of standards, in a project sponsored jointly by the bureau and the Veterans administration. It automatically indicates changes in blood pressure, pulse, respiration and the volume of air taken into the lungs each minute.

A method which might make it possible to treat kidney stones with ultrasound instead of a knife was devised by Harold Lambort, of the Yale school of medicine, and Herbert F. Newman, of Gouverneur hospital in New York city. The high-frequency vibrations, of 25,000 cycles per second, well above the highest pitched sound waves, pass from the generator to a drill tip so small that it can be passed through the urinary duct to the stone, located in the passage or near the kidney. As it vibrates with a movement that is hardly visible, the stone is broken up.

Surrounding body tissues, which are elastic, vibrate freely with the applicator and are undamaged.

The experiments were made on cadavers, in which plaster of Paris stones had been placed to simulate those formed naturally, and it was found that between five and ten minutes were required to cut one. The physicians said that actual trials on patients might be possible in one to two years.

A new technique for magnifying microscopic details of a pathological specimen and projecting their images, by full-colour television, on to a 6-ft. screen, was demonstrated in February by the General Electric Co., before an American Medical association conference on uses of television in postgraduate medical education. The TV colour camera, looking into the microscope, views the magnified image and transmits it to a television projector.

With several hundred times less light than would be normally required on the specimen, it was said, an image can be secured that is more than a hundred times brighter than with conventional magnifying methods. This would make it possible for large groups of students in a medical classroom to observe with great detail and fidelity of colour, specimens which could otherwise not be viewed because of their sensitivity to light and heat.

Music Synthesizer.—A music synthesizer, that produces by electronic means any known or imaginable musical tone or combination of tones, was demonstrated at the Radio Corporation of America laboratories. Any sound may be described by its physical characteristics, including frequency, intensity, growth, duration, decay, portamento (glide between tones) timbre and vibrato. Each of these may be generated electronically and the synthesizer is a system of circuits which can generate them and combine them in any way desired. This is accomplished by means of a paper tape, punched out by an operator at a special keyboard.

Only a series of single tones can be produced at a time, but a whole orchestra can be simulated by synthesizing each tone series separately and recording it, then later combining the various records.

Electronics Applied to Oceanography.—The direction of flow and speed of water in a stream is recorded with the aid of ultrasonic waves in an instrument developed by Keefer S. Stull, Jr., of Johns Hopkins university, for the office of naval research. Another application of electronics to oceanography was described at the ninth annual National Electronics conference in Chicago. This device, developed by S. S. L. Chang, of the department of electrical engineering at New York university for the Beach Erosion board of the U.S. army corps of Engineers, records frequency spectrum of the power of a wave striking a beach. Previously an involved mathematical analysis was required to obtain such a spectrum, but the new device gives it automatically.

Compared with usual frequencies encountered in electronic circuits, these of the wave power are quite slow, one in a number of seconds. Therefore the method employed is to record the vibrations on magnetic tape and then to play it back at a speed 4,000 times as fast as that at which it was recorded. The speeded-up signal is detected with circuits commonly used in a frequency meter. In this way it was found that there is a peak of power at about one cycle in nine seconds. (See also STANDARDS, NATIONAL BUREAU OF.) (J. STO.)

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Elementary Education: see EDUCATION.

Elements: see PHYSICS.

Elizabeth II

(ELIZABETH ALEXANDRA MARY) (1926–), queen of Great Britain, was born in London, April 21. She spent her early years at the London home of her father, then duke of York, at Windsor and at Balmoral castle. She was educated by her governess, Marion Crawford, and Sir Henry Marten, then vice-provost of Eton. During World War II she joined the Mechanical Transport Training centre, Aldershot. In 1947 she visited South Africa with the king and queen and Princess Margaret, and from there on her 21st birthday she broadcast to the empire, promising "My whole life shall be devoted to your service." Her engagement to Prince Philip of Greece (who later became the duke of Edinburgh) was announced in July 1947; they were married in Westminster abbey on Nov. 20. Prince Charles was born on Nov. 14, 1948; Princess Anne on Aug. 15, 1950. In 1951 she toured Canada and visited Washington, D.C., with the duke of Edinburgh, but in 1952 her tour of Australia and New Zealand was cut short by the death of her father on Feb. 6. She was crowned at Westminster abbey on June 2, 1953. In Nov. 1953 the queen and the duke left by air for their postponed commonwealth tour, returning to London in R.Y. "Britannia" in May 1954 with the royal children, who joined their parents at Tobruk. During June 24–26, 1955, they paid a three-day state visit to Norway. They made a three-day tour of south and west Wales, Aug. 6–8, and spent a day on the Isle of Man (Aug. 9). The queen dined at Downing street with Sir Winston Churchill on the eve of his resignation on April 4, and opened the new parliament on June 10. She launched the 24,000-ton passenger liner "Empress of Britain" at Glasgow on June 22, participated in a sale of work at Abergeldie castle, near Balmoral, to raise funds for Crathie church (Aug. 20) and unveiled the King George VI memorial statue on Oct. 21. On Christmas day she broadcast to the peoples of Great Britain and the commonwealth.

Elks, Benevolent and Protective Order of: *see* SOCIETIES AND ASSOCIATIONS, U.S.

Ellice Islands: *see* PACIFIC ISLANDS, BRITISH.

El Salvador: *see* SALVADOR, EL.

Emigration: *see* IMMIGRATION, EMIGRATION AND NATURALIZATION.

Employment. **United States.**—The total labour force of the United States increased by 470,000, from 67,786,000 in May 1954 to 68,256,000 in May 1955. At the later date, the total labour force represented 58% of the working population (the noninstitutional population, 14 years of age and over).

Total employment increased by 1,584,000 during this period (from 61,119,000 to 62,703,000). This increase was accounted for by a rise of 767,000 in the size of the civilian labour force (from 64,425,000 to 65,192,000) and a fall of 816,000 in the number of unemployed (from 3,305,000 to 2,489,000). Because of rounding, the individual figures do not necessarily add to group totals.

Male employment behaved in a manner similar to total employment. Male employment rose from 42,274,000 (May 1954) to 43,149,000 (May 1955), an increase of 875,000. This increase was accounted for by an increase of 302,000 in the male civilian labour force (from 44,471,000 to 44,773,000) and a decrease of 573,000 in male unemployment (from 2,197,000 to 1,624,000). During this period, the total male labour force rose by 10,000 (from 47,791,000 to 47,801,000), a figure smaller than the growth in the male civilian labour force.

Females in the civilian labour force numbered 20,420,000 in May 1955, and represented an increase of 466,000 over the level of May 1954. Female employment rose by 709,000 (from 18,

846,000 to 19,555,000), and the number of unemployed females decreased by 243,000 (from 1,108,000 to 865,000). The female civilian labour force accounted for 30% of the total civilian labour force, in May 1955.

A reversal of the downtrend in the number of employees in nonagricultural establishments was the outstanding employment development in 1954. Nonfarm employment continued to decline during the early part of 1954. Although this downtrend continued through most of the year, the over-the-month employment reductions were progressively reduced. The decline was ended in the fall, and employment expanded in the last three months of the year. In the first half of 1955, 1,600,000 workers were added to nonfarm payrolls. This represented the sharpest five-half rise since 1950. The June 1955 level of nonfarm employment (*i.e.*, the number of employees in nonfarm establishments), 49,300,000, was 1,100,000 greater than the June 1954 level. Nevertheless, it was still 616,000 less than the record figure for June 1953. (The data for June 1955 were preliminary, and all the data stated below have been adjusted by the bureau of labor statistics to first-quarter 1954 bench marks.)

During the period June 1954 to June 1955, employment in mining fell by 14,000 to 757,000, and contract construction employment was reduced by 19,000 to 2,610,000. The remaining industry divisions of nonfarm employment experienced increases in employment during this period. Manufacturing employment expanded by 646,000 to 16,481,000. Seventy-eight per cent of this increase was attributable to the increased employment in the production of durable manufactured goods. Employment in the latter group rose by 502,000 to 9,568,000, whereas employment in nondurable manufactured goods increased by 144,000 to 6,913,000. Employment in transportation and public utilities increased by 61,000 to 4,078,000, and employment in finance, insurance and real estate grew by 74,000 to 2,202,000. The growth of employment in wholesale and retail trade was primarily accounted for by the expansion in retail trade. Employment in wholesale and retail trade increased by 209,000 to 10,598,000. Retail trade employment increased by 153,000 to 7,781,000 and wholesale trade employment increased by 56,000 to 2,817,000. The employment in service and miscellaneous occupations rose by 63,000 to 5,778,000. An increase occurred in government employment, and was entirely accounted for by the increase in state and local government employment. Total government employment rose by 116,000, thus bringing total government employment to 6,832,000 and state and local government employment to 4,668,000. Federal government employment remained constant at 2,164,000.

Rises in employment in the transportation equipment (+140,900) and the primary metals industries (+137,200) accounted for 55% of the rise in employment in the durable-manufactured goods industries. The only category of the durable goods industries (cited in Table I below) that showed a decline in employment was ordnance and accessories. Employment in ordnance and accessories declined from 151,700 in June 1954 to 132,300 in June 1955, a decline of 19,400.

There was a greater divergence of employment trends in the nondurable-goods sector of the manufacturing industries than in the durable sector. Losses of employment occurred in food and kindred products (−11,800), tobacco manufactures (−1,500), textile-mill products (−1,000) and products of petroleum and coal (−1,000). Gains in employment in the nondurable-manufactured goods industries, during the period June 1954 to June 1955, were found in apparel and other finished textile products (+58,800), chemical and allied products (+28,900), rubber products (+26,300), leather and leather products (+18,900) and paper and allied products (+18,300).

The decline in nonfarm employment for the period 1953–

was influenced by inventory liquidations, a decrease in defense expenditures for military hard goods and a reduction in outlays for producer and consumer durables. During the period June 1954 to June 1955, there was a reversal of this trend of expenditure; and the repercussions of this reversal affected nonfarm employment. During the latter period, net inventory liquidation declined and there was a subsequent rise in net inventory investment. Consumers continued to spend more for durable goods, nondurable goods and services. Investment expenditures for new construction and producer's durables (combined) rose during this period. The cutback of national security expenditures slackened, and state and local expenditures rose.

The employment indexes for manufacturing industries reflect this increase in the level of expenditures. The index (1947-49=100) of employees in manufacturing rose from 106 in June 1954 to 110 in June 1955. Using the same base, the index of total employees in nonagricultural establishments rose from 110 to 113.

Great Britain.—The working population of Great Britain (analogous to the labour force in the United States) was 23,349,000 at the end of May 1955. Two-thirds of the working population consisted of men and 7,803,000 consisted of women. At that date 22,852,000 men and women were in civilian em-

forces and women's services (30,000). Ninety-four per cent of the increase in civilian employment was accounted for by the manufacturing industries. Employment in the basic industries (mining, gas, electricity and water, transport and communication, agriculture and fishing) declined, as did employment in building and contracting. On the other hand, employment in the distributive trades and in professional, financial and miscellaneous services increased from end of May 1954 to end of May 1955.

Canada.—The civilian labour force of Canada increased from 5,413,000 to 5,537,000, during the period May 22, 1954 to May 21, 1955. The total number of people with jobs also in-

Table II.—Analysis of Numbers in Civil Employment, Great Britain

Industry or service	(in thousands)	
	May 1954	May 1955
Basic industries		
Mining and quarrying	869	866
(Wage earners on colliery books)	(710)	(706)
Gas, electricity and water	374	379
Transport and communication	1,714	1,711
Agriculture and fishing	1,069	1,047
Number in basic industries	4,026	4,003
Manufacturing industries		
Chemicals and allied trades	501	515
Metal manufacture	552	571
Vehicles	1,175	1,234
Engineering, metal goods and precision instruments	2,620	2,765
Textiles	998	970*
Clothing (including footwear)	694	682
Food, drink and tobacco	877	905
Other manufactures	1,550	1,591
Number in manufacturing industries	8,967	9,233
Building and contracting	1,456	1,440
Distributive trades	2,737	2,787
Professional, financial and miscellaneous services	4,059	4,079
Public administration		
National government service	595	582
Local government service	730	728
Total in civil employment	22,570	22,852

*Cotton, 274,000; wool, 211,000; other textiles, 485,000.
Source: Ministry of Labour Gazette (London).

Industry division and group	(in thousands)		Net change from June 1954
	June 1955	June 1954	
Total	49,336	48,200	+1,136
Mining	757	771	- 14
Metal mining	100.3	100.4	- .1
Bituminous coal	210.1	222.4	- 12.3
Nonmetallic mining and quarrying	109.7	106.6	+ 3.1
Contract construction	2,610	2,629	- 19
Manufacturing	16,481	15,835	+ 646
Durable goods	9,568	9,066	+ 502
Ordinance and accessories	132.3	151.7	- 19.4
Lumber and wood products (except furniture)	777.8	741.1	+ 36.7
Furniture and fixtures	354.9	331.9	+ 23.0
Stone, clay and glass products	549.2	509.9	+ 39.3
Primary metal industries	1,316.0	1,178.8	+ 137.2
Fabricated metal products (except ordinance, machinery and transportation equipment)	1,088.8	1,038.1	+ 50.7
Machinery (except electrical)	1,583.5	1,557.1	+ 26.4
Electrical machinery	1,108.8	1,055.0	+ 53.8
Transportation equipment	1,878.6	1,737.7	+ 140.9
Instruments and related products	313.4	310.9	+ 2.5
Miscellaneous manufacturing industries	464.3	453.7	+ 10.6
Nondurable goods	6,913	6,769	+ 144
Food and kindred products	1,507.6	1,519.4	- 11.8
Tobacco manufactures	88.9	90.4	- 1.5
Textile mill products	1,065.0	1,066.0	- 1.0
Apparel and other finished textile products	1,173.2	1,114.4	+ 58.8
Paper and allied products	547.6	529.3	+ 18.3
Printing, publishing and allied industries	805.4	797.6	+ 7.8
Chemicals and allied products	809.7	780.8	+ 28.9
Products of petroleum and coal	254.4	255.4	- 1.0
Rubber products	277.9	251.6	+ 26.3
Leather and leather products	382.9	364.0	+ 18.9
Transportation and public utilities	4,078	4,017	+ 61
Transportation	2,743	2,694	+ 49
Communication	746	741	+ 5
Other public utilities	589	582	+ 7
Wholesale and retail trade	10,598	10,389	+ 209
Wholesale trade	2,817	2,761	+ 56
Retail trade	7,781	7,628	+ 153
General merchandise stores	1,355.8	1,316.3	+ 39.5
Food and liquor stores	1,492.1	1,449.0	+ 43.1
Automotive and accessories dealers	775.1	764.8	+ 10.3
Apparel and accessories stores	589.0	583.5	+ 5.5
Other retail trade	3,569.3	3,514.4	+ 54.9
Finance, insurance and real estate	2,202	2,128	+ 74
Service and miscellaneous	5,778	5,715	+ 63
Government	6,832	6,716	+ 116
Federal	2,164	2,164	0
State and local	4,668	4,552	+ 116

Source: U.S. Department of Labor, Bureau of Labor Statistics, *Employment and Earnings*.

employment, 180,000 were wholly unemployed and 811,000 were serving in the armed forces and women's services. Approximately two-thirds of the number in civilian employment consisted of men.

The number of civilian employment increased by 282,000 from the end of May 1954 to the end of May 1955. This increase was essentially accounted for by increases in the working population (191,000), and by decreases in the number wholly unemployed (62,000) and in the number serving in the armed

creased from 5,195,000 to 5,324,000, and the number without jobs and seeking work fell from 218,000 to 213,000 during this period. On May 21, 1955, 873,000 of the civilian labour force with jobs were employed in agricultural employments, and 4,451,000 were employed in nonagricultural jobs. The index of total employment in manufacturing (1949=100) fell from 108 in April 1954 to 107 in April 1955. Employment in the manufacture of nondurable goods was stable, but the index of employment in the manufacture of durable goods fell from 118 in April 1954 to 115 a year later. The employment index in forestry (1949=100) also fell (70 in April 1954 to 68 in April 1955). On the other hand the index of employment in mining rose from 108 (April 1954) to 110 (April 1955), the index of employment in trade rose from 111 to 113, the index of employment in finance insurance and real estate increased from 126 to 132 and the index of employment in service rose from 107 to 109, during the period April 1954 to April 1955.

Australia.—The general employment index (1948=100), excluding agriculture but including forestry, fishing and trapping, rose from 111 in March 1954 to 115 in March 1955. Employment in manufacturing (1948=100), including wage earners and salaried employees, increased from 110 in March 1954 to 113 in March 1955.

France.—The general employment index (1948=100) for France, excluding agriculture and certain public services, rose from 104 in April 1954 to 106 in April 1955. Using the same base year, the index of manufacturing employment, including wage earners and salaried employees, increased from 104 in April 1954 to 105 in April 1955.

Japan.—The Japanese index of general employment (1948=100), excluding agriculture but including fishing, rose from 125 in March 1954 to 132 in March 1955. With July 1950=100, the index of manufacturing employment, including wage earners and

salaried employees decreased by one point, from 121 in March 1954 to 120 in March 1955.

Norway.—The index of general employment, excluding agriculture (1948=100), for Norway increased from 110 in April 1954 to 112 in April 1955. The index of employment in manufacturing, on the same base, and including wage earners and salaried employees, increased from 110 in April 1954 to 113 in April 1955.

Union of South Africa.—The index of general employment (1948=100) rose from 116 in 1953 to 119 in 1954. This index covers mining, quarrying, transport, manufacturing, building, construction and electricity undertakings. Using the same base year, the index of employment in manufacturing, including wage earners and salaried employees, rose from 123 in 1953 to 125 in 1954.

West Germany.—The index of general employment, excluding agriculture (1948=100), rose from 124 in March 1954 to 130 in June 1954 to 132 in Sept. 1954. The index for the year 1953 was 122. The index for employment in manufacturing (the average of June, September and December 1948=100), including wage earners and salaried employees, rose from 133 in March 1954 to 138 in June to 141 in Sept. 1954. The index for the year 1953 was 130. (See also BUILDING AND CONSTRUCTION INDUSTRY; BUSINESS REVIEW; CENSUS DATA, U.S.) (P. TA.)

Endocrinology. **Pituitary.**—The theory that the posterior pituitary hormones are elaborated in the hypothalamus has rested primarily on the demonstration in animals of an intensely staining material both in cell bodies of neurones of the supraoptic nucleus and along their axones as they pass down the supraopticohypophyseal tract to the posterior pituitary. In studies on human tissues obtained at necropsy and with the utilization of a new staining technique, strong evidence was obtained to strengthen the hypothesis that posterior pituitary lobe hormones are elaborated in the hypothalamus. Because of the distribution of the stained material and its high content of cystine, it was felt that the material could be reasonably identified with posterior pituitary hormone. The synthesis of postpituitary hormones, *i.e.*, the oxytocic and antidiuretic principles, established that these are octapeptides rich in cystine.

Attempts to clarify the role of the hypothalamus and the posterior pituitary gland in the release of adrenocorticotrophin (ACTH) were intensified during 1955. A purified preparation of vasopressin, but not oxytocin, stimulated the release of ACTH. On further purification of the vasopressin, the ACTH-releasing activity was lost. The activity was recovered in an impurity in the original vasopressin preparation. The active substance was isolated by paper chromatography.

A new though somewhat radical approach was suggested in the management of malignant diabetes in young adults. Based on the experimental evidence of the diabetogenic action of growth hormone (GH) and ACTH and on reported regression of diabetes in several cases of hypophyseal deficiency, the pituitary gland was removed. It was felt that this operative procedure might prevent the damaging sequela of malignant diabetes such as blindness and irreparable renal damage.

Adrenals.—Two new synthetic corticoid preparations, prednisone and prednisolone, were developed and found to be superior to cortisone and hydrocortisone in the management of rheumatoid arthritis and equal or superior in effectiveness to cortisone or hydrocortisone in other acute and chronic inflammatory diseases, including intractable asthma, lupus erythematosus, gout, adrenocortical hyperplasia, nephrosis, etc. Furthermore, fewer side effects were obtained with the new synthetic steroids. The structures of prednisone and prednisolone are similar to corti-

sone and hydrocortisone, respectively, except that they have additional unsaturated bond on one of the four carbon rings. Unlike the two older hormones, prednisone and prednisolone do not cause significant retention of sodium or depletion of potassium. Milligram for milligram, these new steroids were estimated to be about four or five times more potent than cortisone and hydrocortisone.

The amorphous fraction of adrenal extracts, *i.e.*, the portion remaining after removal of all known crystalline substances, was found highly effective in maintaining the life of animals after adrenalectomy had been performed. Subsequently the active principle was crystallized and the chemical structure established. This new steroid was at first named electrocortin because of its tremendous effect on electrolyte balance, but it is now known as aldosterone. This adrenal steroid differs from corticosterone in that there is an aldehyde rather than a methyl group at C-11 position. An announcement was made at the 14th International Congress of Pure and Applied Chemistry that the complete synthesis of this compound had been achieved. Synthetic aldosterone is indistinguishable chemically from the natural hormone obtained from the adrenals of cattle. Aldosterone is 30 times as effective as desoxycorticosterone in maintaining electrolyte balance and well being in patients with hypoadrenocortical function, and about one-third as effective as cortisone in causing deposition of liver glycogen and in lowering the eosinophil count in mice in which adrenalectomy has been done.

The discovery of this new steroid prompted great interest in the role of this hormone in health and disease. A hitherto unrecognized clinical syndrome was described known as "primary aldosteronism." All patients suffering from an unexplained hypokalemic (low serum potassium) alkalosis are potential candidates for adrenal surgery to combat the metabolic abnormality caused either by adrenal cortical hyperplasia or tumor resulting in excess production of aldosterone. The first case history recorded with primary aldosteronism suffered from intermittent tetany, parasthesias, chronic severe muscular weakness, polyuria, polydipsia and hypertension without edema. Laboratory studies revealed high titers of a sodium-retaining substance in the urine, low serum potassium and high sodium levels, and alkalosis. At surgery, an adrenal cortical adenoma was found and after its removal the patient's clinical symptoms and metabolic abnormality disappeared.

Thyroid.—The concept that hyperthyroidism is caused by a pituitary "thermostat" set to maintain too high a blood level of thyroid hormone, or that the pituitary becomes hyperactive and cause the thyroid in hyperthyroidism secretes an abnormal thyroid hormone that cannot suppress the pituitary, had been questioned, and new evidence was presented that hyperthyroidism is not hyperpituitarism. The new evidence suggested that an excess of thyrotropin was present in hyperthyroidism but that the intrinsic iodine-trapping mechanism of the thyroid gland, which is not under pituitary control, is deranged. The study implied that when the administration of iodides is followed by amelioration of hyperthyroidism, the result is due not to the action of iodides inhibiting the effect of thyrotropin, but rather to direct action on the overactive thyroid cells by partly inhibiting release of thyroid hormone.

Favourable reports appeared on the use of L-triiodothyronine both as a test material and in therapy. The levorotary form, L-triiodothyronine, appears to be an extremely potent, orally active hormonal substance which manifests a unique thyroid activity directly at the cellular level. It proved effective in several cases of thyroid-resistant myxedema refractory to both thyroxine and L-thyroxine and in pituitary myxedema after thyroxine extract had failed to evoke any response.

In conjunction with I^{131} tracer tests, triiodothyronine ad-

stration provided an effective method for differentiating euthyroidism from hyperthyroidism.

The use of triiodothyronine was found to have great diagnostic value, since failure of suppression of thyroidal uptake is indicative of hyperthyroidism.

Gonads.—Sperm clumping often had been noted by investigators studying semen samples in fertility surveys. Explanations for this phenomenon were many. An advance in the knowledge of testicular physiology was made when sperm agglutination in sterile men was shown to be caused by the presence of agglutinins in the seminal fluid.

Sperm agglutinins were also detected in the blood sera of the two cases under study.

Attention was drawn to a syndrome of gonadal dysgenesis with adrogenic manifestations. The syndrome was reported in two females of short stature, webbing of the neck, with hirsutism and enlargement of the clitoris. It was believed that this syndrome was a variant of Turner's syndrome, and probably represented a transition between gonadal dysgenesis and male pseudohermaphroditism.

Steroid Anaesthesia.—The possibility of using steroid anaesthesia in humans had been entertained by various investigators ever since it was shown that certain steroids produced varying degrees of depression and anaesthesia in laboratory animals. On studying a large number of water-soluble steroids to determine their anaesthetic activity, it was found that the most promising was 21-hydroxypregnanedione sodium succinate. After study on laboratory animals, it was learned that there was a wide margin of safety and that in anaesthetic doses it did not produce significant hormonal effects nor did it cause salt retention or damage any vital organ. This steroid hormone was then used in humans as an intravenous drip, and in preliminary reports it was concluded that it is a true anaesthetic agent as evidenced by its ability to control pain, obtund reflexes, produce relaxation and sleep, all without depression of vital functions.

Chromosomal Sex Detection.—The skin biopsy test for chromosomal sex as an aid to differential diagnosis in errors of sex development such as hermaphroditism and gonadal dysgenesis was greatly simplified and the accuracy increased. The use of smears from the oral mucosa circumvented the inconvenience of obtaining skin biopsies and the staining difficulties occasionally encountered. Smear preparations were easier to interpret than skin biopsies and required less experience in cytology. The characteristic female sex chromatin was clearly visible in the epitelial cell nuclei of females in the range of 20%–79% of the cells studied, while a similar chromatin mass was absent or only present in the cells of the male in the range of 0%–4%. The sex chromatin of female cells was thought to be formed by heterochromatic portions of two X chromosomes adhering to each other in intermitotic nuclei.

For reasons that were only partly understood, the XY sex chromosomes of male nuclei did not form a distinctive mass of chromatin.

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England: see GREAT BRITAIN & NORTHERN IRELAND, UNITED KINGDOM OF.

English Literature. **General.**—A courageous and large-minded attempt to survey the whole international field and delve beneath its surface was made in 1955 by Sir David Kelly in *The Hungry Sheep*. His wide diplomatic experience backed up by a study of ideas and influences led to a plea for more intermingling of spiritual values with economic motives, to check a dangerous conflict of interests leading to collapse. In something near to that conviction Jacquetta Hawkes and J. B. Priestley, examining personally two adjoining regions in America, pointed a symbolic contrast between the dignified, ancient culture of the Pueblo Indians in New Mexico and the newest, noisiest urban civilization of Texas. The latter typified the hollow craze for productivity, advertisement, debased culture and the creation of a mass mentality, for which, in *Journey Down a Rainbow*, they coined the expressive word "Admass." England had its own critics and examiners who aired some specific grievances in eloquent if controversial argument. For example, the pernicious influence of children's horror comics was strikingly urged in Fredric Wertham's *Seduction of the Innocent*; and Air Chief Marshal Sir Philip Joubert raised a storm by his allegations in *The Third Service* concerning governmental and inter-service treatment of the Royal air force. Geoffrey Gorer was on more genial territory in *Exploring English Character*, based on the results of a varied and widely circulated questionnaire.

The explorer of other countries usually allowed no firm line to be drawn between sociology and travel, or, on the other side, between his personal venture and the local scene. In an age when even the mountains and the poles are almost conquered, the writer of anything beyond a guidebook must be political or personal to earn his salt. Thus *The Dark Eye in Africa* took Laurens Van der Post back to a familiar setting to focus his knowledge and insight on the colour problem, and direct a searchlight on the obscure roots of prejudice. In contrast F. Spencer Chapman was all for *Lightest Africa*, journeying with his family party in a van. Peter Mayne examined the tangled politics of India's north-west frontier; but problems of a physical nature confronted Sir Edmund Hillary whose *High Adventure* brought the story of his mountain climbing to a climax on Everest the more compelling for its unpretentious narrative style. Veering further toward the consciously literary was Laurie Lee's *A Rose for Winter*, thinly but poetically presenting his view of Spain; and Patrick Anderson's emphatically individual impressions, in *Snake Wine*, of a Malayan university.

Individual reactions to an impermanent and alien mode of life were at the very heart of T. E. Lawrence's long-awaited memoirs of his retreat into the Royal air force. *The Mint* was generally felt to be disappointing and circumscribed in vision and observation, because Lawrence had chosen to restrict, as it were, his wisdom from seven pillars to a single post. Writers who looked back on their own natural environment and progress made a far deeper appeal. Richard Church's *Over the Bridge* had the captivation of a normal middle-class childhood vividly recalled by a poetic mind; just as C. S. Lewis, in *Surprised by Joy: the Shape of My Early Life*, gave a frank and inspiring account of all that had served to direct his spiritual progress. Two representatives of literary families wrote personal memoirs that stirred bygone coteries into uneasy life: David Garnett's lightly written *The Flowers of the Forest* showed the "Bloomsbury set" as a pallid and brittle foreground to the 1914 war, while John Lehmann, more seriously involved with his own development in *The Whispering Gallery*, moved among the left-wing intellects of the thirties.

Some more stable and significant portraiture came from biographers handling 19th-century figures; especially such disruptors of religious tradition as Darwin and Huxley who were

treated jointly by William Irvine in *Apes, Angels, and Victorians*. Several eminent women of that century were given a brave showing; after D. L. Hobman's *Olive Schreiner* and Averil Mackenzie-Grieve's *Clara Novello* came a triumphant revival of that once sensational novelist *Elinor Glyn* by her grandson Anthony Glyn. Historians tended to choose earlier periods: C. V. Wedgwood's *The King's Peace* was a finely balanced opening volume of her study of the Civil War; G. R. Elton's *England Under the Tudors* surveyed every aspect of a changing state. But a twentieth century history of equal scope and exhaustiveness was C. L. Mowat's *Britain Between the Wars*. To turn from historical periods to historic figures was to find plentiful and first-hand domestic detail of some famous diarists: *The Letters of Samuel Pepys and His Family Circle* were presented by Helen Truesdell Heath; and *The Grand Tour*, vol. ii of *The Boswell Journal*, edited by F. Brady and F. A. Pottle, lost the irrepressible traveller some affection through his callous behaviour to a dog.

Other books of the year included:

BIOGRAPHY.—E. C. Mossner, *The Life of David Hume*; Robert S. Paul, *The Lord Protector*; R. W. Ketton-Cremer, *Thomas Gray*; A. J. P. Taylor, *Bismarck: the Man and the Statesman*; Lewis Broad, *Anthony Eden: the Chronicle of a Career*; Peter Quennell, *Hogarth's Progress*; Richard Aldington, *Lawrence of Arabia*; J. C. Trewin, *Mr. Macready*; Percy Young, *Elgar, O. M.*; Robert Blake, *The Unknown Prime Minister: the Life and Times of Andrew Bonar Law, 1858-1923*; Anthony Bertram, *Paul Nash*; C. M. Maclean, *Mark Rutherford: a Biography of William Hale White*.

MEMOIRS AND LETTERS.—L. E. Jones, *A Victorian Boyhood*; Sarah Gertrude Millin, *The Measure of My Days*; W. B. Yeats, *Autobiographies*; King Peter II of Yugoslavia, *A King's Heritage*; Maurice Browne, *Too Late to Lament*; Barbara Winchester, *Tudor Family Portrait*; J. E. Norton (ed.), *The Letters of Edward Gibbon*; G. H. Healey (ed.), *The Letters of Daniel Defoe*.

LITERARY CRITICISM.—Peter Alexander, *Hamlet, Father and Son*; M. D. Parker, *The Slave of Life: a Study of Shakespeare and the Idea of Justice*; Sir C. M. Bowra, *Inspiration and Poetry*; Stephen Spender, *The Making of a Poem*; Lionel Trilling, *The Opposing Self*; F. L. Lucas, *Style*; Henri Peyre, *The Contemporary French Novel*; A. O. J. Cockshut, *Anthony Trollope: A Critical Study*; Robert Liddell, *The Novels of I. Compton-Burnett*.

TRAVEL.—Elizabeth Balneaves, *The Waterless Moon*; Nina Epton, *The Valley of Pyrene*; F. D. Ommanney, *Isle of Cloves: a View of Zanzibar*; Allan Chappelow, *Russian Holiday*.

HISTORY, SOCIOLOGY AND SCIENCE.—A. L. Rowse, *The Expansion of Elizabethan England*; David Ogg, *England in the Reigns of James II and William III*; James Bishop, *The Day Lincoln Was Shot*; Sir F. M. Powicke, *Modern Historians and the Study of History*; Guy Chapman, *The Dreyfus Case*; John Stuart Collis, *The Moving Waters*; J. S. Weiner, *The Piltdown Forgery*; Sir George Thomson, *The Foreseeable Future*.

MISCELLANEOUS.—*The Guinness Book of Records*. (S. NN.)

Fiction.—If many writers of note were absent from the fiction list of 1954, a good many reappeared in 1955, though few of them at their best. In fact, the only writer who appeared to add to an already firm reputation was I. Compton-Burnett, whose *Mother and Son*, though less sturdily constructed than some of her earlier books, showed a striking advance in the development of character and a new, more open, strain of comedy. Anthony Powell's *The Acceptance World*, shrewd and agreeable as it appeared in his continuing study of the social world between wars, left the total intention of the series still in doubt. This was the third volume of *The Music of Time*, but no sign of an architectural plan was as yet apparent. Elizabeth Bowen's *A World of Love*, an allusive, dryly romantic story of a young girl awakening from an infatuation, lacked the bite of her best work and emphasized her most notable weakness, which was to move her characters a little too far beyond the range of common earth. Joyce Cary, in *Not Honour More*, concluded his Chester Nimmo trilogy in high histrionic style, bringing his dubious statesman to a violent and ludicrous end; but the method of narration he chose for himself gave the book a singular effect of strain.

L. P. Hartley's *The Perfect Woman* suffered from a weary plot; the manner was excellent, the observation, in its oddly angled way, both narrow and deep; yet the character of the writer using women merely for his callous literary ends defeated Hartley as it had defeated others before him. Graham Greene's

thriller of political and amorous intrigue, set in Indochina, was his first novel for a long time to be almost devoid of religious motive. *The Quiet American*, though excellently constructed, vigorous and liberal in tone, had an air of belonging rather more nearly to the author's "Entertainments" than to his more serious work. Evelyn Waugh's *Officers and Gentlemen* brought abruptly to an end what was originally intended as a trilogy, in which, apparently, Waugh felt himself unable to sustain beyond a second volume. Guy Crouchback was never, perhaps, a figure interesting enough in his own right to prop up a comic epic, and the impression of *Officers and Gentlemen* was more so than more etiolated than that of *Men at Arms*. It was courageous and probably wise of the writer not to press to the end an intention which seemed to have failed its purpose.

Kingsley Amis, whose *Lucky Jim* was the most conspicuous first-novel success of 1954, marked time with his second book, *That Uncertain Feeling*. Here his highly comic verbal gift found no comic situation worthy of it, and the handling of the serious, consciously moral dénouement was something less than admirable. Nevertheless, it was plain that Amis' talent was a robust one and that he would have much more to say in the future. John Wain, a writer of Kingsley Amis' school, similarly disappointed somewhat with his second novel, *Living in the Present*, which made too raucous a protest, in terms too narrow, against the writer's concept of contemporary society; but he, too, made clear that young writers now had something new, if not always pleasing, to say.

Aldous Huxley's *The Genius and the Goddess*, though it had the flash of the writer's old nervous skill, had nothing in it to provoke or to startle.

One of the most praised novels of the year was Nigel Dennis' *Cards of Identity*, a dense, highly intellectualized satire on the personality of man in modern society and the pressures that may be put upon it. A novel only by courtesy, turgid at times, but at others brilliantly original, *Cards of Identity* was a philosophical experiment of considerable interest. P. H. Newby's first comic novel, *The Picnic at Sakkara*, amused and surprised a good many critics, and William Golding's *The Inheritors*, a construction of Neanderthal man faced with his own extinction, showed a high imaginative gift.

Other works of fiction published during 1955 included: *The Hidden River*, Storm Jameson; *A Sign of the Times*, Robert Kee; *The Guardians*, J. I. M. Stewart; *The Fall of the Sparrow*, Nigel Balchin; *The Stepmother*, R. C. Hutchinson; *The Liberator*, Gillian Freeman. (P. H. JN.)

Poetry.—During 1955, as in previous years, several well-known poets produced their *Collected Poems*. Chief among them were Stephen Spender, Kathleen Raine and William Empson. Empson's volume, in particular, was something of an event. The impact of this difficult poet on the work of certain of his juniors had been obvious for some time, but for most readers Empson was far better known as the author of such critical works as *Seven Types of Ambiguity* than as a poet.

Of new individual volumes the most impressive were *Nightfishing* by W. S. Graham and *The Tree of Idleness*, by Lawrence Durrell. Graham's previous work had been somewhat heady and undisciplined, with Dylan Thomas' influence only half-digested. In *The Nightfishing* his strongly evocative powers were still evident, but much more under control. The title poem, in particular, describing a night's work in a herring trawler, had a fine sweep and tang in marked contrast to the subdued, precise quality of much other poetry being written at this time. Durrell, a poet of more classical temper than Graham, produced probably his best book to date: sensuous, witty, rich in Mediterranean life and lore.

The volumes mentioned above, together with new collect-

by Herbert Read (*Moon's Farm*) and W. H. Auden (*The Shield of Achilles*), were probably the most important to be published during the year. Several other volumes of merit must, however, be mentioned. Laurie Lee's *My Many-coated Man* was certainly the slimmest book of the year, but what it lacked in size it certainly made up for in quality. Within his strictly limited range Laurie Lee again proved himself a lyrical poet of great charm and precision; the complete lack of any intellectual stiffening in his work, while making in some ways for thinness, was not unwelcome after the laboured utterances of some other poets. *Poems* was a first collection by Robert Conquest, a poet of wide interests, social as well as artistic, which impressed by its intelligence rather than by any great poetic power; indeed, the tone of these poems seemed almost flat at times. In *A Shot in the Park* William Plomer again showed his flair for light balladry, although, paradoxically, the most admired poem in his new book, "The Bungalows," was quite serious in mood. *A Way of Looking* was the second collection by a poet of delicate psychological perception, Elizabeth Jennings. The main weakness of her work seemed to derive from a certain lack of compelling experience, reflected in the rhythmical monotony of her poems when read as a whole. Nevertheless, her position as one of the most gifted of the younger poets was confirmed by this new collection. (See also AMERICAN LITERATURE; BOOK PUBLISHING AND BOOK SALES; CHILDREN'S BOOKS; LITERARY PRIZES.)

(Jo. C. H.)

Entomology: see AGRICULTURAL RESEARCH SERVICE; AVIATION, CIVIL; BACTERIOLOGY.

Epidemiology. The use of tissue cultures has made possible rapid strides in the epidemiology of virus diseases, both in terms of precise identification of infected persons and in the determination of the immune status of population groups. Tissue cultures have also provided the means by which poliomyelitis virus can be grown in the large amounts required for the making of a vaccine. The use of tissue cultures or virus isolation has resulted in the discovery of new viruses, whose relation to human disease remains to be explored.

In bacterial diseases, the modern antibiotics have reduced the severity of disease so much that many diseases are of comparatively little significance, in terms of human suffering, long-term complications, death or loss of time. Antibiotics may rid the patient of the bacteria causing the disease, so as to lessen considerably the need for isolation and quarantine. Many bacteria become resistant to antibiotics and scientists are busy trying to keep one step ahead by developing new antibiotics. However, the over-all effect is that antibiotics have helped to cut down some major communicable disease problems into minor problems. A third aspect of communicable diseases is the continued effort to apply methods of control, of proven value, to the major focuses of diseases. This is the responsibility of the World Health organization and of national and local governments. Application may be difficult because of insufficient funds and personnel, transportation problems and lack of public acceptance. Some of these disease problems are intimately connected with a low standard of living, which should be tackled at the same time.

The status in 1955 of certain diseases of international importance follows.

Poliomyelitis.—(The results of the field trial, conducted in 1954, of the poliomyelitis vaccine developed by Jonas Salk, and of the temporary disappointment and renewed hope for the prevention of paralytic poliomyelitis by vaccination, are reported in the article POLIOMYELITIS. They were therefore omitted from this survey.)

Cholera.—Cholera was confined to Asia. The pilgrimage to

Mecca had not disseminated the disease since the time when vaccination against the disease was made compulsory. Epidemics occurred in East Bengal, spreading to Calcutta and in Bihar and Assam. Inadequate water supplies were an obstacle to control. Other parts of India were affected to a lesser degree. The situation in China remained obscure.

Influenza.—Influenza in the winter of 1954-55 resulted mainly from virus B. The disease was mild and not very prevalent. The first outbreaks were reported from Wales and northern England in Sept. 1954, from which they spread to the rest of the country, but waned in Feb. 1955. Yugoslavia was affected from Dec. 1954 to March 1955. In Jan. 1955 an outbreak occurred in northern Netherlands, and in the next month had spread throughout the country. Parts of Germany were affected in January and February. An outbreak was reported from Helsinki in January. Austria, Norway, Sweden and Switzerland were attacked in February and March.

The first outbreak of the influenza season in North America was in Calgary, Alta., in January. Soon thereafter an outbreak took place in Ontario and scattered outbreaks occurred in parts of Oregon, Illinois, New York state and Maine. In the far east, Japan reported influenza in January and February.

In general the disease year was characterized by spotty outbreaks rather than by widespread prevalence. The disease was mild and caused very few deaths. Influenza A caused sporadic cases.

Malaria.—Progress was made in eradication campaigns. An estimated 230,000,000 people had been liberated from this danger, but about 370,000,000 more remained to be protected. The chief weapon was residual DDT spray applied to dwelling places. This does not attempt to eradicate the mosquito which is the vector but rather aims to kill infected insects before they can transmit malarial parasites to humans. Thus, while the vector might persist, eventually there would be no human reservoir and no parasite for the vector to transmit. However, the drawback to this control method is the danger that in programs of limited scope the vector might be reinfected and the whole problem might recur. Actually, eradication campaigns had progressed extremely well in many parts of the world, but some mosquitoes were developing resistance to DDT.

The Pan American Sanitary bureau sponsored a program to eliminate malaria in the western hemisphere. It was believed that eradication could be achieved in less than five years if the governments concerned would co-ordinate their activities. This high-level co-ordination was considered necessary to prevent reinfestation across national boundaries. If an intensive drive could be put on, it was felt that malaria could be eradicated before DDT resistance in mosquitoes became a serious impediment. Actually, malaria eradication programs were far advanced except in two countries, and these two had begun extensive programs. British Guiana had achieved eradication, and the problem was almost solved in the United States, Argentina, Brazil and Venezuela. Chile and Uruguay reported no malaria. There were 135,000,000 people in the malarial zones of the Americas, and protection of greater or less degree had been achieved for 105,000,000 of them; 30,000,000 had not as yet been covered by these control programs.

Malaria eradication had been excellent in Europe, with only a few cases reported from Greece (formerly severely involved), Portugal and Spain. The disease was endemic in much of Africa. The biggest problem was there and in Asia, where the problem of attempting nation-wide control was most difficult. India had begun an ambitious program, and Thailand anticipated effective control within a few years. In this part of the world only two relatively small countries, Lebanon and Ceylon, had actually achieved eradication.

Plague.—Little human plague occurred in the Americas and Africa. Europe and the Mediterranean countries had had no human cases since 1947. Asia contained the most active endemic focuses. Little was known about the situation in communist China. India continued to maintain a record of successful control by means of residual DDT sprays to kill the rat fleas. Other focuses existed in Burma, Cambodia and Java. Thailand had had no human cases since 1951.

Rabies.—Rabies was found in insectivorous and herbivorous bats in several parts of the United States. This was expected to stimulate a search for other animal reservoirs, which could lead to a better knowledge of the epidemiology of this disease and thus to more fundamental control methods than the protection of domestic animals and humans.

Smallpox.—Smallpox was rife in parts of Asia and in Africa south of the Sahara. It had, practically speaking, been eliminated from the United States. There was some doubt as to whether the handful of cases reported in the United States were actually smallpox. Central America had little smallpox. It was still widespread in parts of South America, although usually in a mild form, alastrim. In Europe there were possibly some endemic focuses in Portugal and Spain. The Pacific, including Australia and New Zealand, was free of the disease. Nevertheless, smallpox can readily be brought into countries by travellers. Several examples had occurred in Europe and Great Britain in the past few years. The most recent happened when a soldier returning from Saigon to France started an outbreak of the severe type. It was interesting that the soldier had no signs of the disease. Seventy cases developed, of whom 15 died. Many of the cases were physicians who contracted the disease from their patients. Wide-scale vaccination brought the outbreak to an end. Outbreaks of this type were rather rare, in spite of the fact that vaccination against smallpox and the maintenance of immunity by revaccination were not at a very satisfactory level. The international quarantine regulations appeared to be quite effective.

Efforts to hasten the decline of smallpox were handicapped in some areas where refrigeration facilities were lacking. It was necessary to refrigerate the glycerinated lymph smallpox vaccine to keep its potency. With the development of a dry vaccine that would remain potent for a long time without refrigeration, it now became possible to take more active steps toward the eventual goal of elimination of the disease.

Epidemic Typhus (Louse-Borne).—Typhus had been decreasing in the Americas. In Central America it was no longer a serious public health problem, because of the vaccination and delousing campaign. In western Europe only Yugoslavia reported cases. There was little in the near east and the Mediterranean coast of Africa. Iran and Ethiopia had active focuses, however, and some occurred in South Africa. The disease persisted in central and southern Asia.

Yellow Fever.—The Mexican people were expecting to be menaced within a year or so by the northward march of yellow fever. Vaccination against yellow fever had been ordered in the southern United States, and mosquito control was intensified. Yellow fever began to head north from Panamá in 1948, and by 1955 had reached Nicaragua and Honduras. It was expected that Guatemala would soon be involved. The disease had been proceeding at a rate of 160 mi. a year. This was jungle yellow fever, which spreads only in forested areas, is borne by the *Haemogogus* mosquito and attacks the monkey, but rarely man. Its danger lies in the possibility that the disease may spill over from the jungles to areas harbouring the *Aedes aegypti* mosquito, and thus give rise to urban yellow fever in which man is the principal and a frequent victim. Man can be protected by vaccine, but more fundamental control,

based on eradication of *Aedes*, is a better approach. *Aedes* eradication had been a goal since 1928. Many countries South America and the Caribbean were now free of *Aedes*. Panamá, Costa Rica and Nicaragua had also been freed. But the possible zone of jungle yellow fever extends up to southern Mexico, and *Aedes aegypti* mosquitoes are found not only in Guatemala and Mexico but in the southern third of the United States. The only other area of yellow fever was Africa. In the jungle and urban types were probably widespread there. *Aedes* had always been free.

Control of disease may be sought in a variety of ways. An unusual method, not applied as yet to human illness, was the control of screwworms which are pests of cattle. The female screwworm mates only once in its life. In Curaçao thousands of male screwworms are sterilized by gamma-rays and liberated. The matings did not result in pregnancy, the females lost their chance and the screwworm disappeared. (See also POLIOMYELITIS; PUBLIC HEALTH SERVICE, U.S.; RESPIRATORY DISEASES; TROPICAL DISEASES; VENEREAL DISEASES; WORLD HEALTH ORGANIZATION.) (H. E. H.)

Episcopal Church: see PROTESTANT EPISCOPAL CHURCH.
Eritrea: see ETHIOPIA.

Estonia. A Soviet Socialist republic, Estonia is bounded north by the Gulf of Finland, east by the Russian S.F.S.R., south by Latvia and west by the Baltic sea. Area: 17,413 sq. mi. (18,359 sq. mi. before 1940). Pop. (1954 est.) 1,200,000. Language: Estonian and Russian. Religion: Lutheran and Greek Catholic. Chief towns (pop. 1939 est.): Tallinn (cap.) 146,400; Tartu 60,100; Kohtla-Järve (1950 est.) 30,000. First secretary of the Estonian Communist party in 1955, Ivan Kabin; chairman of the presidium of the supreme soviet, August Jakobson; chairman of the council of ministers, Aleksey Müürisepp.

History.—The 1954 plan for industrial production in Estonia was reported overfulfilled by 5% and the total value of production in 1954 was 75% greater than in 1950. On Oct. 4, the first unit of the hydroelectric station on the Narva river started production. It supplied the Leningrad industrial area to the amount of about 120,000,000 kw.hr. yearly, i.e., two-thirds of Estonian total 1939 production.

Estonian agriculture in 1955 was organized in 912 kolkhozes or collective farms and 69 machine and tractor stations; more than 50% of the kolkhoz workers were women.

Despite the "thaw" in Soviet home politics nothing was known by 1955 of the thousands of Estonians deported to northern Russia and Siberia in June 1941 and after the second "liberation" of 1944-45. A Finnish newspaper reported that only Konstantin Päts, 81-year-old former president of Estonia, deported in July 1940, had been allowed to return.

In the new council of ministers formed after the Feb. 1955, election of a new supreme soviet of the Estonian S.S.R., a Russian was deputy premier and another Russian, Ivan Karpov, head of state security.

In March 1955 Archbishop Jaan Kiivit, head of the Estonian Lutheran Church, published an appeal asking for the prohibition of atomic experiments and weapons. (See also LATVIA; LITHUANIA.) (K. SM.)

See U.S. House of Representatives, 83rd Congress, Second Session, *Baltic States: a Study of Their Origin and National Development, Their Seizure and Incorporation Into the U.S.S.R.*, Third Interim Report of the Select Committee on Communist Aggression (Washington, D.C., 1955); Erika Viirsalu, *Women and Youth in Soviet-Occupied Estonia* (Stockholm, 1955).

Education.—Schools (1950): primary 1,148, pupils 142,500; second pupils 13,500; vocational, pupils 14,000. In 1953 Estonia had 7 institutions of higher education with about 10,000 students.

Finance.—Budget: (1954 est.) balanced at 1,179,168,000 roubles (1955 est.) balanced at 1,161,466,000 roubles.

Ethiopia. An independent empire of northeastern Africa, including (from Sept. 15, 1952) the autonomous province of Eritrea, Ethiopia is bounded west by the Anglo-Egyptian Sudan, northeast by the Red sea and French Somaliland and (British) Somaliland Protectorate, and southeast and south by (Italian) Somalia trust territory and Kenya. Area: about 457,722 sq.mi., including Eritrea 47,876 sq.mi. Pop. (1951 est., no census ever taken): 16,104,000, including Eritrea 1,104,000. Language: Amharic, official language; also Galla, Tigrinya, Somali, etc. Religion: Christian monophysite (in communion with the Egyptian Coptic church) 57%; Moslem 20%; other 23%. Chief towns (1951 est.): Addis Ababa (cap.) 401,000; Asmara 117,000; Harar 45,000; Dessie 35,000; Dire Dawa 30,000. Ruler, Emperor Haile Selassie I; prime minister in 1955, Aklilu Habtemariam; chief executive in Eritrea, Aklilu Asfaha Woldemikael.

History.—In 1955 the Emperor Haile Selassie I completed 25 years of his reign. A Silver Jubilee Trade exhibition was organized in Addis Ababa as part of the celebrations and attracted many visitors and exhibits from abroad. Economically the country remained on an even keel although the rate of expansion was slightly checked by the fall in world coffee prices, coffee having become the dominant export crop. During 1954–55 the value of coffee exported fell substantially below that of the previous year despite a small increase in the quantity exported. Nevertheless, the finances and economy remained in a healthy condition.

On March 1, certain areas of the Ogaden, which had been under British administration since the liberation in 1941, were transferred to Ethiopian administration under the terms of an agreement concluded at the end of 1954. Grazing rights of British-protected Somalis in the areas were confirmed and liaison arrangements between British and Ethiopian officials were set up. Objection was raised by certain of the British-protected tribes, who sought to raise the question in the United Nations on the ground that the Anglo-Ethiopian Treaty of 1897, which recognized the territory as Ethiopian, was made over the heads of the Somalis concerned.

In August, an Anglo-Ethiopian exchange of notes provided for the return to Ethiopia in 1956 of the Gambella enclave leased in 1902 to the Anglo-Egyptian Sudan for trading and administrative purposes.

Development of the empire made progress. A detailed survey was made to find a site for a new airport at Addis Ababa was completed and a survey of the port of Assab as a preliminary to its expansion was begun. Negotiations were begun with the Export-Import Bank of Washington for a loan to develop aviation facilities. A concession for rice cultivation, practically a new crop for Ethiopia, was granted to a Dutch company and work began. A new automatic telephone exchange was opened in Addis Ababa in March, and large-scale works were carried out in the city under the town planning recommendations of Sir Patrick Abercrombie. The United States "Point Four" aid in funds and staff continued, notably in education. Official trade missions visited Addis Ababa from the United Kingdom, Czechoslovakia, Poland and Egypt and a commercial *modus vivendi* was signed with Canada in June.

(F. E. St.)

Education.—*Ethiopia.*—Schools (1953–54): government primary 431, pupils 69,000; secondary and vocational 11, pupils 2,155. Teacher training colleges 2, students 500. University college and college of engineering, students 405 (including 200 at university college extension classes). *Eritrea.*—Schools (1952): primary 100, pupils 13,500; secondary and technical 16, pupils 1,367. Teachers in training 80.

Finance and Banking.—Monetary unit: Ethiopian dollar, with an exchange rate of Eth. \$2.5 to the U.S. dollar. Budget: *Ethiopia* (1953–54 est.; 1954–55 est. in parentheses): revenue Eth. \$121,340,000 (Eth. \$128,000,000); expenditure Eth. \$121,295,606 (Eth. \$108,170,341). *Eritrea* (1954–55 est.): revenue Eth. \$11,486,113, expenditure Eth. \$11,216,900. Currency circulation: (Dec. 1953) Eth. \$114,600,000, (Dec. 1952) Eth. \$94,900,000. Deposit money: (Dec. 1953) Eth. \$103,000,000,

(Dec. 1952) Eth. \$58,300,000.

Foreign Trade.—(1954) Imports Eth. \$155,180,000; exports Eth. \$174,590,000.

Transport and Communications.—*Ethiopia.* Roads (1955): first class 4,075 km.; others 10,622 km. Motor vehicles in use (1954): passenger cars 8,300; commercial vehicles 3,700. Railways (1955) 784 km. Air transport (Ethiopian Airlines, 1953) 3,129,000 km. flown; (1954) 41,350,000 passenger-km.; freight, 2,610,000 ton-km. Telephones (Jan. 1954) 4,776. *Eritrea.* Roads (1955): first class 889 km.; others 2,240 km. Railways (1955) 306 km.

Agriculture.—Main crops (metric tons, 1954): millet (Ethiopia) 1,660,000, (Eritrea, 1953) 43,000; barley 600,000; coffee 45,000; bananas 20,000; chick-peas (1952) 4,000; (1951): dry beans 275,000; wheat 100,000; maize 150,000; sesame 35,000; lentils 30,000. Livestock: cattle (Ethiopia, 1953) 21,000,000, (Eritrea, Sept. 1954) 1,150,000; sheep (Ethiopia, 1953) 19,000,000, (Eritrea, Sept. 1954) 950,000; (Ethiopia only, 1953): horses 1,000,000; mules 1,000,000; asses 3,000,000; goats 12,500,000; camels 500,000.

Ethnology: see ANTHROPOLOGY.

European Coal and Steel Community: see EUROPEAN UNITY.

European Defense Community: see ARMIES OF THE WORLD; EUROPEAN UNITY; NORTH ATLANTIC TREATY ORGANIZATION.

European Payments Union: see EXCHANGE CONTROL AND EXCHANGE RATES.

European Recovery Program: see FOREIGN AID PROGRAMS, U.S.

European Unity. On May 9, 1955, was celebrated the fifth anniversary of the founding of the European Coal and Steel Community (E.C.S.C.). The great hopes for a close integration of western Europe which were then aroused had not been fulfilled. The community was regarded as the first step toward European unity. But no second step was taken. The outstanding protagonists of this idea had lost influence in recent years: Alcide de Gasperi of Italy was dead, Robert Schuman of France was no longer in office, and Konrad Adenauer of the German Federal Republic was almost 80 years old and his position had been weakened by the setback suffered by the idea of European unity. The only part of it which was still functioning was the E.C.S.C., to which belonged France, Italy, Germany, Belgium, Luxembourg and the Netherlands.

Benelux Proposals.—Whereas France turned more and more from European to national economic solutions, the three smaller nations, Belgium, Luxembourg and the Netherlands (Benelux), urged an expansion of European integration.

At the beginning of June 1955 the foreign ministers of the six nations met in Messina, It. They elected René Mayer of France as chairman of the High Authority of the European Coal and Steel Community, succeeding Jean Monnet of France, who had resigned to dedicate himself to the furtherance of European unity. Following the lead of the Benelux countries, it was decided that further progress toward European unity should be the subject of studies which would cover problems of unification of transportation, gas and electricity, and the development of atomic energy for peaceful purposes, and even more important, the establishment of a general common market through a customs union and the harmonization of the various systems of social policy existing in the different countries. While the ministers decided to study these subjects, they did not accept the Benelux proposal for the need to delegate authority to a common executive with powers to act in the interests of all the member countries as a whole.

Several factors worked against the growth of European unity. With the war damages repaired and economic prosperity restored, the need for integration was no longer felt with the former urgency. The outwardly more peaceful attitude of the U.S.S.R. after Stalin's death seemed to remove the danger of an immediate war. Moreover, nationalism reasserted itself in Germany and in France and the struggle for the Saar inflamed na-

tionalist passions and was not conducive to the realization of European unity, which depended above all on Franco-German amity. It was frequently overlooked that Soviet policy, supported by the communist parties everywhere, was directed against the co-operation and integration of the western democracies, and that the peaceful gestures of the Soviet Union were the result of the unity of the western nations, a unity which owed much to the Soviet aggression in the years following World War II.

Britain and Europe.—France, in its growing distrust of Germany and of the latter's rapidly increasing strength, turned more and more toward Britain. At the end of 1954 an agreement was signed between Britain and the E.C.S.C. which was regarded as a model for a possible future link between Britain and a European community, a developing relationship that would grow with time. The agreement, signed on Dec. 21, 1954, became operative on Sept. 23, 1955. It established a standing council of association between the United Kingdom and the community's High Authority. Through this agency, information was to be exchanged and consultations held on matters of common interest concerning steel and coal. The council would meet alternately in Luxembourg, the seat of the High Authority, and in London. It left complete freedom to Britain, however, to determine its own policies on coal and steel and committed Britain only to the exchange of information and mutual consultation.

More important was Britain's co-operation in the military field. At the end of 1954 agreements were concluded establishing a Western European union (W.E.U.) for common military defense, consisting of Britain and the six nations of the European Coal and Steel Community. By the close margin of 287 to 260 the French national assembly voted on Dec. 30, 1954, to ratify the treaty creating the Western European Union, which was to include a rearmed Germany within the framework of the North Atlantic Treaty organization (NATO). The French government intended to broaden this co-operation by a gradual centralization of arms production on the European continent, beginning in 1957. The French premier, Pierre Mendès-France, suggested the establishment of a board, resembling the supranational High Authority of the European Coal and Steel Community, to direct the joint arms production program. He also proposed that the United States be asked to agree that all the arms production orders which it financed in the European continental member nations would require the approval of the new agency for the control of armaments, so far as they affected standardized war material. This plan was not acted upon, however, and the standardization of armaments, demanded also by NATO for its members, hardly made a start. Instead of the international arms production pool proposed by the French, the seven nations of the W.E.U. decided in May 1955 to establish a standing committee instructed to encourage agreements on "development, standardization, production and procurement of armaments" in close relation with NATO.

On March 10, 1955, U.S. Pres. Dwight D. Eisenhower in a message to the prime ministers of the seven nations of the Western European union, assured them that the United States would not reduce its ground, air and naval forces in Europe without consulting its allies. The president declared that the U.S. would be ready, if so desired, "to consult with the agency for the control of armaments of the Western European Union with the view to assisting in the achievement of its objective of controlling armament and preventing unjustified military preparations within the members of the Union." This assurance was intended to quiet French fears of too threatening a German armament.

On March 18, 1955, the German parliament completed approval of the pacts establishing the Western European union. By May 5 all the necessary ratifications of the pact were achieved.

The German Federal Republic was recognized as a sovereign state, and on May 7 the foreign ministers of the seven nations met in Paris, sitting as the Council of the Western European union, its supreme governing body. The chairmanship of the council was to rotate in bimonthly intervals. Louis Goffin of Belgium was elected secretary general of the permanent civil staff, which would have its seat in London, whereas a standing arms committee would operate in Paris in conjunction with NATO. The standing arms committee, which would have purely advisory powers, was the remnant of the original French proposal for pooling the members' arms production.

The Council of Europe.—The question was also taken up at the Paris meeting of how to co-ordinate the new military Western European union with the Council of Europe, which was inaugurated at Strasbourg, Fr., in Aug. 1949. The Council of Europe, on which 15 nations were represented, had not fulfilled the hopes which many of its friends put in it. Though it was the only existing sounding board of west European political opinion representing all political groups except the communists, it was purely an advisory body, the exact role of which in European political life had not yet been clarified. Its Consultative Assembly approved on Dec. 11, 1954, by a vote of 82 to 7 with 14 abstentions, the Paris agreements establishing the Western European union. It requested a close co-operation between the Council of Europe and the assembly envisaged for the W.E.U. Accordingly the Council of the Western European Union decided in Paris that the Assembly of the Western European Union, representing the parliaments of the member nations, should have the same membership as the Consultative Assembly of the Council of Europe, and that the two should meet in Strasbourg simultaneously.

The Problem of the Saar.—An integral part of the Western European union pact was the agreement reached between France and the German Federal Republic providing for the Europeanization of the territory of the Saar. The Consultative Assembly of the Council of Europe approved the agreement by a vote of 77 against 5 with 5 abstaining. Only the representatives of the German Socialists voted against it. The Europeanization of the Saar was being strongly opposed by the extreme German nationalists and the German Social Democrats. The chancellor of the German Federal Republic, Konrad Adenauer, a dedicated friend of European integration and of the west, achieved a full agreement with the French authorities on Franco-German economic co-operation and on the encouragement of cultural exchange between the two countries. According to the agreement, a joint commissioner would be appointed responsible to the W.E.U. who could appeal to the union's council when he believed the Saar statute had been violated either by the Saar legislature or from without. A Franco-German agreement was also reached about the joint purchase by the two governments of the Röchling steel works in the Saar. The board of directors of the Franco-German company was to be composed equally of French and German members, but the chairman would be French and would have the deciding vote. Thus the territory of the Saar would have become, if approved by the voters, a responsibility of the Western European union, until at the conclusion of the final peace treaty with Germany the question of the status of the Saar territory would be again taken up. But the popular vote of the Saar voted by a two-thirds majority on Oct. 23, 1955, rejected the European status. The vote struck a blow to European unity and to Franco-German *rapprochement*. The future of the Saar would doubtless form the subject of further Franco-German negotiations.

European Education.—Useful spade work for a future unification of Europe was being accomplished by a small number of newly created educational institutions. The oldest of these

the European college in Bruges, Belg., which was founded in 1949 and financed by the countries of the European Coal and Steel Community. It accepted only graduate students in residence according to a quota system, five each from Britain, France, Germany, Italy and Scandinavia, two from Switzerland, one each from Ireland and Greece, while three places were reserved for refugees from eastern Europe. Similar colleges were founded in Saarbrücken, where the French and the Saar governments provided a number of scholarships; in Turin, It., where the lectures were given in Italian, English and French; and in a somewhat modified form in Hamburg, Ger., where the students could pursue their undergraduate studies at Hamburg university. See also ARMIES OF THE WORLD; FOREIGN AID PROGRAMS, U.S.; NORTH ATLANTIC TREATY ORGANIZATION.)

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Events of the Year: see CALENDAR OF EVENTS, 1955, pages 1-16.

Exchange Control and Exchange Rates.

In general, world economic conditions continued to develop favourably in the last months of 1954 and the first half of 1955, and further steps were taken in various countries to relax exchange restrictions which had been imposed in response to balance of payment difficulties. These measures were often of small significance in themselves, but taken together they undoubtedly made a significant contribution to the continued increase in world trade. Nowhere was the movement more noticeable than in western Europe, where, with industrial production continuing to rise, countries such as Switzerland, Belgium and the Netherlands found it possible to bring such controls virtually to an end. In the spring and early summer, indeed, there was considerable talk of a return to conditions of currency convertibility in western Europe, and in the renewal of the European Payments union provision was made for this transition. More and more, restrictions on imports reflected a protectionist desire to shield individual sectors of the economy, and in particular agriculture, from the effects of international competition.

As the months passed, however, it became increasingly clear that the hopes for an early return to convertibility were not to be realized. With buoyant business conditions came new problems such as the threat of inflation and the consequent loss of foreign exchange reserves. This was most clearly exemplified in the sterling area and notably in the United Kingdom. In the spring the Bank of England found it necessary to support the exchange rate for transferable sterling in New York city. In July and again at the meeting of the International Monetary Fund in September, the British chancellor of the exchequer announced that no changes in the sterling exchange system were contemplated. Considering the pivotal importance of sterling, this meant that no decisive action would be taken to restore general currency convertibility.

There were few exchange rate changes in 1955. In some Latin-American countries and also, for example, in Turkey and Thailand changes amounting to depreciations were made in multiple rate structures. These changes were brought about by local rather than general causes, such as a weaker export position for an important raw material export, continuing internal inflation or both.

United States.—Again in 1955 transactions of the United States with the rest of the world had a very great influence on the world economy. U.S. imports ran at an annual rate of \$12,000,000,000 (about 15% of world imports) in the first half of

the year. Military aid, though only about half as large as in the corresponding period of 1954, was still flowing out at a rate of well over \$1,000,000,000 per annum. Furthermore, expenditures abroad by U.S. troops and tourists and outflow of U.S. private and government capital also rose sharply. As a result the United States gold stock remained virtually stationary at just below \$22,000,000,000, and other countries continued to add gold and dollars to their reserves and thus strengthen their positions. The accumulation by other countries of gold and dollars amounted to \$766,000,000 in the first half of 1955, about the same as in the corresponding period of 1954.

Except in Canada the U.S. dollar remained at a premium in the free markets around the world. In general that premium was not large. Where it was substantial, it reflected unhealthy economic conditions in the country in question rather than a disequilibrium in payments between the United States and the rest of the world.

Canada.—Canada continued to maintain freedom from exchange controls and allow the rate of exchange to be determined by the play of market forces as it had done for the preceding few years. The country's payments position remained strong. Both exports and imports rose, and the current account deficit, at \$162,000,000 in the second quarter of 1955, was \$27,000,000 less than in the corresponding period of the previous year. On the other hand the net inflow of capital continued, with increased receipts of short-term funds more than offsetting a fall in Canadian receipts of long-term capital. Gold and U.S. dollar reserves still tended to rise, though more slowly than in 1954, and stood at \$1,939,000,000 at the end of June 1955 compared with \$1,869,000,000 a year before. Reflecting these developments the exchange rate for the Canadian dollar, which stood at around U.S. \$1.03 in New York in the latter part of 1954, weakened slightly early in 1955 and in October dipped below U.S. \$1.01 for the first time in two years.

Latin America.—On the whole, exchange rates were relatively stable in Latin America in 1955. Only in countries where domestic inflation, or weakening market conditions for important export products, particularly coffee, or both, caused the balance of payments position to deteriorate were further measures of currency depreciation taken or additional exchange restrictions imposed.

With tin exports lower in volume and inflationary conditions persisting internally, the international economic position of Bolivia remained weak. Gold and foreign exchange holdings continued to fall, reaching a low of U.S. \$4,500,000, or less than one month's imports, in March 1955. In an effort to rectify the position, the scale of surcharges on imports, which varied with the degree of essentiality of the goods in question, was revised sharply upward in May 1955. Despite this, however, the free rate for the boliviano rose to 3,000 per U.S. dollar at the end of May compared with 1,465 at the end of Sept. 1954.

In Brazil, too, inflationary conditions continued and were even aggravated. At the same time buyers of coffee abroad balked at the high prices asked, and Brazilian exports dropped, particularly to the United States. The country's foreign exchange reserve position went on deteriorating, and the large accumulated commercial arrears were either refunded, in the case of U.S. dollars, or reduced by special payments agreements as in the case of the United Kingdom and Germany. Although some minor modifications were made in the exchange system in force, basically it remained the same, at least until Oct. 1955. It was characterized by an auction system for imports wherein effective rates were determined by the basic rate plus a tax plus the price of an import certificate as determined at auction. Imports were divided into several categories according to whether they were considered necessities or luxuries, and the price of import

certificates was higher for the latter than for the former. Bonuses were granted to encourage exports, with the size of the premium being least for coffee and greatest for minor exports which found it difficult to meet international competition. These bonuses also varied with the currency received. For a time the export premiums were allowed to fluctuate in accordance with the free market rate, but from Jan. 1955 fixed bonuses were re-established, first for coffee and then for other exports, and there was an appreciable shift of commodities from the less depreciated to the more depreciated rates. As a result of these changes the exchange rate applicable to exports of coffee going to the dollar area, for example, moved from 23.36 cruzeiros to 31.50 cruzeiros to the dollar late in 1954 and to 37.06 cruzeiros to the dollar in Jan. 1955. As coffee exports and the amounts of dollars offered for auction declined, so the price of import certificates rose and with it the effective import rates. The free rate, applicable in general to invisible transactions, also weakened. From 58 cruzeiros to the dollar in the second quarter of 1954 the rate fell to a low of 83 in March 1955, subsequently recovering somewhat to 71 cruzeiros per U.S. dollar in August.

Inflationary conditions also persisted in Chile, and since the peso was overvalued, the balance of payments position was severely strained. In Nov. 1954 the rate applicable to major exports and imports was raised from 110 pesos to 200 pesos per dollar. In the summer of 1955 additional changes were made, the effect of which was to depreciate the currency further by applying rates of around 300 pesos per dollar to more and more commodities. By fall 1955 this had become the rate applicable to most exports.

A sharp decline in the price of and demand for coffee caused Colombia's foreign exchange position to deteriorate substantially in the fall of 1954, and as a result the trend toward the elimination of the payments restrictions which had been evident in the past few years was at least temporarily reversed. Taxes were increased on various imports, for example automobiles, the granting of exchange for imports on order was suspended, and substantial commercial arrears accumulated. Although these were wiped out fairly quickly, imports remained high, and further graduated taxes had to be imposed on imports to discourage demand. Furthermore, to stimulate coffee exports the rate of exchange applicable to them was raised from 2.385 pesos to 2.50 pesos per U.S. dollar.

Minor changes were made in the multiple exchange rate system in effect in Ecuador. The effect of these was to restrict some imports further and to stimulate minor exports which were finding it difficult to compete in world markets.

Effective July 1, 1955, the par value of the Nicaraguan córdoba was changed from 5 to 7 córdobas per U.S. dollar. The change was, however, more formal than real since the new par value had been the basic rate for several years, and only government transactions had taken place at the 5-córdoba rate.

In Uruguay prices continued to rise though at a moderate rate. To avoid a loss in reserves some minor adjustments were made in the multiple rate system in effect. Surcharges were imposed on luxury imports and the proceeds used to subsidize high-cost exports such as rice and linseed oil.

Sterling Area.—By far the most noteworthy development in the latter part of 1954 and the first half of 1955 was the deterioration in the position of sterling. Gold and dollar reserves of the United Kingdom, which acts as banker for the whole sterling area, stood at \$3,017,000,000 at the end of June 1954. By the end of December they had fallen to \$2,762,000,000 and by the end of Aug. 1955 they were down to \$2,457,000,000, less than \$500,000,000 above the generally accepted critical point of \$2,000,000,000.

Some of the causes of the worsening of the balance of pay-

ments were temporary, such as dock and railroad strikes and uncertainty about the outcome of the general elections. Underlying it all, however, was a tendency in the United Kingdom and also in some overseas sterling area countries such as Australia, to import more than their economies could currently afford to pay for. In the first quarter of 1955 United Kingdom and Australian imports were respectively 18% and 29% above the levels recorded in the corresponding period of 1954.

The adverse movement in the sterling area's transactions with the rest of the world was reflected in a decline in sterling exchange rates. By Jan. 1955 the selling rate for Canadian U.S. account sterling—which was traded within the limits \$2.78 and \$2.82 per pound—had fallen almost to the lower limit while transferable sterling stood at around \$2.72 per pound and discount of about 3%. After gold and dollar reserves had fallen by \$82,000,000 in the month of February, the United Kingdom took decisive action. This action was noteworthy in that instead of tightening exchange restrictions as had been done in similar situations in earlier postwar years, the government in March raised the discount rate from 3½% to 4½%, tightened restrictions on domestic credit and authorized the Exchange Equalization fund to intervene to support the pound in overseas markets where transferable sterling was being traded at a discount. For the first time in a quarter of a century a threat to British financial equilibrium had been met with monetary weapons alone. Further, the action had been taken before the difficulties of the sterling area had assumed the proportions of a full-blown crisis.

Although the official purchases were reported to have cost tens of millions of dollars in the weeks that followed, the substantial official intervention does not appear to have lasted long. The exchange rate for transferable sterling rose fairly rapidly above \$2.75 per pound and to more than \$2.77 in April when spot sterling in New York had recovered to almost \$2.80. In the first half of 1955 the United Kingdom balance of payments showed a surplus equivalent to \$47,600,000. But this included \$93,000,000 in U.S. defense aid, and although it represented improvement over the figures for the second half of 1954, it was still \$414,000,000 less than the surplus recorded in the first half of 1954. Although the prices for most of the primary products of which the sterling area was a major producer remained stable, it was not yet clear whether the measures taken by the government would be sufficient.

Among the other sterling area countries the deterioration in Australia's balance of payments was noteworthy. As a result of lower wool exports and a sharp rise in imports, stemming mainly from a high rate of investment and an expansion of consumer credit, the current account deficit was £A96,000,000 in the second half of 1954 compared with a surplus of £A54,000,000 in the corresponding period of 1953. The current account deficit with the dollar area almost doubled, and Australia drew substantial amounts from the sterling area dollar reserves. Currency controls alone were insufficient to correct the situation, and certain public works were postponed, while a stricter import licensing policy was also put into effect.

The only exchange rate change in the sterling area took place in Pakistan when on July 31 the par value of the rupee was changed from Rs. 3.309 per U.S. dollar to Rs. 4.762 per U.S. dollar. Unlike practically all the rest of the sterling area countries, Pakistan had not devalued in Sept. 1949. The new value of the rupee represented a devaluation of 30% which brought Pakistan's currency into line with the par values established in the rest of the sterling area almost five years before.

Continental Europe.—As in 1954, international economic conditions were on the whole very favourable in western Europe. Production and trade continued to expand, sometimes extror-

apidly, and prices in general remained stable. In the circumstances it was not surprising that there were no significant changes in exchange rates, that further progress was made to relax exchange controls in many countries and that discrimination against imports from the dollar area was diminished. In only one major country, Turkey, did conditions deteriorate. There were no important developments in the exchange systems of eastern Europe or the Soviet Union.

Belgium had long been one of the leaders in the drive for convertibility. In 1954 that country had taken important measures to free capital movements. Residents of all other E.P.U. (European Payments union) countries, for instance, were allowed to purchase securities traded in Brussels (including dollar securities), the proceeds being placed in special financial accounts and being freely transferable among residents of the E.P.U. countries. On April 1, 1955, these facilities were extended to all nonresidents of the Belgo-Luxembourg Economic union, including those of dollar area countries. A month later residents of Belgium or Luxembourg, who were already authorized to trade in nondollar currencies and in dollar securities in a free market, were permitted to put certain current and capital transactions in dollars through the free market, and nonresidents were allowed to convert their financial accounts into dollars in the Brussels free market. In practice this made the Belgian and Luxembourg francs, in the case of such capital transactions, convertible for residents and nonresidents at free market rates.

The international economic position of France improved in the course of 1955, and foreign exchange reserves rose from \$1,136,000,000 at the end of Sept. 1954 to \$1,754,000,000 at the end of May 1955. This spectacular rise overstated the improvement in underlying conditions somewhat, however, for U.S. offshore purchases and other forms of military aid still supplied a very substantial amount of dollars. French costs of production often appeared high, and confidence in the franc was still shaky. This was emphasized in the late summer and fall when the aggravation of unrest in North Africa and the concomitant political difficulties in France brought the black market rate to more than 390 fr. per U.S. dollar in early October, a higher level than had been quoted for several years.

West German exports continued to expand rapidly, as they had done ever since the postwar currency reform, and the balance of payments remained favourable. As a result of the measures taken in 1954 to relax controls on imports, however, the rise in gold and foreign exchange reserves slowed down, and these stood at \$2,868,000,000 at the end of June 1955 compared

with \$2,359,000,000 a year before. Official statements continued to emphasize the importance of a return to convertibility, but the measures taken to relax exchange restrictions were relatively minor.

In Greece significant progress was made in the liberalization of exchange restrictions. Most of the remaining export taxes imposed when the drachma was devalued in 1953 were removed, and by October there remained only the tax on exports of certain categories of olive oil, which resulted in an effective rate of dr. 27 per U.S. dollar compared with the official rate of dr. 30. Tourist allowances were also raised slightly, and discrimination against imports from the dollar area was reduced to insignificance.

The international financial position of the Netherlands remained strong. Its foreign exchange reserves stood at around \$1,300,000,000 throughout the year. They no longer rose because the previous improvement had made it possible to relax import and exchange restrictions applicable to transactions with the dollar area as well as other countries. As a result the Netherlands treated the dollar area and other countries almost alike. As regards capital transfers, U.S. and Canadian residents were allowed, as from Aug. 1, 1955, to repatriate holdings by converting their balances on capital accounts directly into dollars. As a result of the greater confidence in the Netherlands' exchange rate and economic outlook, there was a very substantial inflow of dollar capital to buy securities of Dutch companies, and this was largely used to make advance payments on external debt of the government.

Turkey, where financial conditions were weak in 1954, was almost the only country on the continent of Europe where the situation worsened significantly in 1955. The money supply continued to rise rather sharply, as a result both of a budget deficit and of the expansion of credit to business. Imports remained at a rather high level despite the imposition of more stringent restrictions, and the deficit in the balance of payments was financed to a significant extent by short- and medium-term suppliers' credits. Curb rates for foreign currencies went on declining, the U.S. dollar standing at 8.7 liras in August compared with 6.3 a year before and with the official rate of 2.80 liras.

Middle East.—With royalties from oil production continuing to rise and prices of other exports stable, economic conditions in the middle east as a whole improved in 1955, and there were practically no significant changes in exchange systems.

In Egypt cotton prices and domestic wheat production rose, and it was possible to relax exchange restrictions somewhat.

Arrangements to pay for imports with "export pounds" were terminated, procedures governing certain dollar and Swiss franc payments were liberalized, and exporters were allowed greater freedom to use their earnings to purchase imports.

With oil production getting under way again after the settlement of the dispute with the Anglo-Iranian Oil company, and with U.S. aid payments coming in again, the foreign exchange position of Iran improved, and further measures were taken to raise the exchange value of the rial, which had deteriorated significantly, and to unify the

Exchange Rates of Selected Countries
(In cents per unit of foreign currency)

Country	Unit quoted and type of exchange	Annual average rates			Monthly average rates, 1955			
		1938	1953	1954	January	April	July	August
Argentina	Peso							
	Basic	32.60	20.00	20.00	20.00	20.00	20.00	20.00
	Preferential	—	13.33	13.33	13.33	13.33	13.33	13.33
	Free	—	7.20	7.20	7.20	7.20	7.17	7.17
Australia	Pound	389.55	224.12	223.80	221.92	222.83	221.91	222.04
Austria	Schilling	—	3.86	3.86	3.86	3.86	3.86	3.86
Belgium	Franc	3.38	2.00	2.00	2.00	1.99	1.99	1.99
British Malaya*	Dollar	—	32.60	32.64	32.54	32.67	32.54	32.58
Canada	Dollar	99.42	101.65	102.72	103.50	101.40	101.55	101.50
Ceylon	Rupee	—	21.05	21.02	20.84	20.93	20.85	20.86
Denmark	Markka	—	0.44	0.44	0.44	0.44	0.44	0.44
France	Franc	2.88	0.29	0.29	0.29	0.29	0.29	0.29
Germany (Fed. Rep.)	Deutschmark	—	—	23.84†	23.84	23.83	23.73	23.73
India	Rupee	36.59‡	21.05	21.02	20.84	20.93	20.85	20.86
Indonesia	Pound	—	281.27	280.87	278.52	279.65	278.50	278.67
Mexico	Peso	22.12	11.61	9.05§	8.01	8.01	8.01	8.01
Netherlands	Guilder	55.01	26.34	26.38	26.35	26.31	26.17	26.13
New Zealand	Pound	392.35	278.48	278.09	275.76	276.88	275.74	275.91
Norway	Krone	24.57	14.02	14.01	14.01	14.01	14.01	14.01
Philippine Republic	Peso	—	49.68	49.68	49.68	49.68	49.68	49.68
Portugal	Escudo	4.43	3.49	3.49	3.49	3.49	3.49	3.49
South Africa	Pound	484.16	280.21	279.82	277.48	278.61	277.45	277.62
Sweden	Krona	25.20	19.32	19.33	19.33	19.33	19.33	19.33
Switzerland	Franc	22.87	23.32	23.32	23.33	23.33	23.33	23.33
United Kingdom	Pound	488.94	281.27	280.87	278.52	279.65	278.49	278.66

Note: Includes only currencies regularly quoted in New York during 1955. Averages of certified noon buying rates for cable transfers. *Beginning Aug. 27, 1951, quotations on the Straits Settlements dollar were discontinued and quotations on the Malayan dollar substituted.

†Based on quotations beginning April 1, 1954.

‡Including Pakistan.

§The Mexican peso was devalued, effective April 19, 1954, from a par value of 8.65 to 12.50 pesos per U.S. dollar.

rate structure. In Feb. 1955 the rates applicable to most exports and to noncommercial transactions, 82 and 78 rials per dollar, respectively, were both fixed at 75 rials per dollar. The major import rate was changed from 84.5 to 79.5 rials per dollar in February and to 76.5 rials to the dollar in August.

In Israel black market rates for the Israeli pound fell in response to the improved commodity supply position and the slowing down of wage and price increases. From July on, residents, who had previously been obliged to convert foreign exchange receipts into Israeli pounds immediately, were allowed to keep deposits in foreign currencies with authorized banks.

Far East.—In response partly to improved prices for rubber and tin and partly to a substantial fall in imports, Indonesia's foreign exchange position improved in 1955. The exchange system was modified significantly in July. The system of import rights given to exporters as an incentive was abolished. Imports were reclassified into four categories ranging from essentials to luxuries and were subjected to varying levies. Thus effective exchange rates were established for imports ranging from 11.48 rupiahs per U.S. dollar for essentials to 45.90 for luxuries. In September imports of luxuries were shifted to auction rates.

The foreign exchange position of Japan also improved in 1955, and as a consequence the retention quota system, which had been introduced in 1953 to encourage exports, was modified. From March 1955 the percentage quota of export proceeds which exporters were allowed to retain for their own use was reduced from 10% to 5%.

Korea became a member of the International Monetary fund but no par value was fixed. The official exchange rate of 180 hwan per dollar was maintained, but free market rates were considerably lower. From Aug. 15 a rate of 500 hwan per U.S. dollar was applied to currency purchases by U.S. forces and in determining the value of U.S. goods sent to Korea under the aid program.

Primarily because imports rose and exports of commodities such as sugar declined, Philippine foreign exchange reserves fell to around \$190,000,000 early in 1955 compared with about \$250,000,000 a year earlier. In the circumstances, and particularly to avoid a large budget deficit, the 17% tax was maintained until August on all purchases of foreign exchange except those for the import of essentials. Thereafter it was replaced by a special levy on imports which had the same effect.

In response to a deterioration in the balance of payments an exchange certificate system was introduced in Formosa (Taiwan) in March 1955. The buying rate of NT\$15.55 per dollar was retained, but exporters were in addition given an exchange certificate which could be sold to importers in the market at a fixed price. The exchange certificate rate was fixed at NT\$21.55 per U.S. dollar.

With the world market outlook for rice, its principal export, remaining unfavourable, Thailand undertook in Jan. 1955 far-reaching revisions in its rice export procedures, the net effect of which was to increase the proportion of exchange which the exporter retained for sale in the free market and thus to introduce a mixed rate involving a depreciation of the baht from 12.45 to more than 16 baht per U.S. dollar. In August the entire proceeds of rice exports were required to be sold in the free market and a further depreciation took place, the new rate, 21.90 baht per dollar, thus being in line with those other exports to which the free rate was already applicable. (See also GOLD; INTERNATIONAL MONETARY FUND; INTERNATIONAL TRADE; TARIFFS.)

(A. STE.)

Exhibitions: see FAIRS AND EXHIBITIONS; SHOWS.

Exploration and Discovery. During the year 1955 the outstanding voyage of ex-

ploration was that of a party aboard the U.S.S. "Atka." voyage made by this ship was for the purpose of exploring possible locations for United States bases in the antarctic, to occupied during the International Geophysical year, 1957-58. To do this, the "Atka" first went to Wellington, N.Z., and from there straight south to the antarctic continent. It first touched the Ross sea ice, close to the old site of Little America. Considerable changes had taken place in this region since it was last visited. Great parts of the ice barrier had broken away and drifted out to sea. The Bay of Whales had ceased to exist. The site of the former Little America, which at one time had been reached from the sea on the ice, was now next to the sea, and the ice had broken away completely, including approximately half of Little America IV of 1947.

The expedition next circumnavigated almost half the antarctic continent. They went through the Bellingshausen sea, close to the Palmer Land peninsula, and into the Weddell sea. There they again touched land at Coats Land. They followed the coast along the Queen Maud Land coast to Admiral Byrd bay, which is almost exactly at longitude zero, and thence went north again through the South Atlantic to Buenos Aires, Arg., and returned to the United States. They reported seeing a tabular iceberg of enormous extent, perhaps 50 mi. in length, floating in the Pacific sea. The ship carried extensive scientific equipment, including bathythermographs, cosmic ray equipment, meteorological instruments, other oceanographic instruments, as well as ionospheric equipment. In this latter field, especial emphasis was laid on the search for "whistlers" which are thought to be signals originated by lightning which travel along lines of magnetic force away from one hemisphere, and then are reflected back from the other hemisphere. The voyage of this ship was the first important reconnaissance of Antarctica for several years. The ship, accompanied by two others, returned to the antarctic in late 1955.

During the summer of 1955, an icebreaker operated by the Canadian government circumnavigated the North American continent. The ship left Halifax, N.S., went to Hudson bay, then north skirting the ice around the Boothia peninsula, spent some time in the vicinity of the north magnetic compass pole, then through the northwest passage into the Beaufort sea. The ship carried a number of scientists, who made observations on the fields of aurora, cosmic rays, oceanography and many other disciplines on the voyage. The ship returned via Bering strait south in the Pacific, through the Panama canal and north to Halifax.

The world's third highest mountain, and perhaps the most difficult to surmount, was successfully climbed on May 25 by a party led by Charles Evans. Kanchenjunga, a peak in the eastern Himalayas near Darjeeling, India, 28,146 ft. in altitude, has long been regarded as one of the world's most difficult ascents. Several expeditions had attempted it in the past, and several people had been killed on it. The British party that succeeded was numbered among its members several, including the leader, who were on the successful Everest expedition two summers earlier.

University peak, 15,030 ft. high and North America's highest unclimbed mountain, near the Alaska-Yukon border, was climbed by the John McCall memorial expedition on July 4. The expedition, consisting of six men, also made a first ascent of near McCall peak.

In the Chugach range, Alaska, Robert C. West, Jr., and West and Jim Maxwell participated in an expedition led by Lawrence Nielsen of Springfield, Mass. The party carried out scientific studies and explorations, were turned back at 11,000 ft. by bad weather on Mt. Witherspoon (the highest there), succeeded in ascents of three nearby peaks of 10,000-11,000 ft. elevation.

The Logan mountains, Northwest Territories, were visited



"NORTH POLE-5," Soviet ice floe research station set up in the arctic in April 1955

uly by Arnold Wexler, Sterling Hendricks, Don Hubbard, Dave Vernays and Ray D'Arcy, who made 16 first ascents. The mountains, just above 9,000 ft., are spectacular granite spires with granite walls rising 4,000 to 6,000 ft. above their valleys. The expedition entered and left the area by chartered plane.

Thomas A. Mutch and Joseph E. Murphy, Jr., on June 8 climbed Istoru Nal (24,271 ft.), a peak in the Hindu Kush, the range of mountains at the western end of the Himalayas. The expedition was called the Princeton Mountaineering Club Expedition to the Hindu Kush and also included Maj. Ken Bankala of the Pakistan army. Base camp was set up at 15,000 ft. on the Tirich glacier during the last week of May. Four camps were established above base, the highest being a little over 22,000 ft. With the exception of Minya Konka (24,900 ft.) climbed by Terris Moore's party in west China in 1932, this was the highest summit to be reached by Americans.

Bradford Washburn, director of the Boston Museum of Science, led a trip to Alaska from the middle of March to the middle of April 1955 to finish the ground survey details for his map of the McKinley area, to be published under the joint auspices of the Boston Museum of Science and the Swiss Institute for Alpine Research. The party of five camped on the upper Ruth glacier which was reached by plane from Talkeetna.

Mt. Makalu, Nepal, 27,790 ft., was climbed by a French expedition under the leadership of Jean Franco.

Charles Hitchcock, director of the American Geographical Society and secretary of the Explorers club, and William Phelps, Jr., conducted an exploratory expedition to the interior of Venezuela. This expedition continued the survey and ornithological work done in previous expeditions to this little-known area.

A report, not officially confirmed, stated that a party of six headed by Orlando Reney Braro had reached the summit of Los Yajas de Salado in the Andes on the Argentine-Chilean frontier and determined the altitude of that peak to be 327 ft. higher than Aconcagua.

A new archaeological expedition from Princeton (N.J.) university was about to start operations in Serra Orlando in Sicily, Italy, led by Erik Sjöqvist, former head of the Swedish Academy in Rome. It would be joined by four graduate students on a rotating basis, to train young scholars. The site promised to be an important new one and to contribute valuable new data about Greek history in this area.

An expedition from the American Museum of Natural History, New York city, uncovered important new material of an archaeological nature at Poverty Point, on Bayou Macon, 5 mi. N.E. of Epps, Louisiana. James A. Ford and Junius B. Bird of the museum and S. Neitzel of the Louisiana State Parks commission reported that this was the oldest known village of the

advanced Stone Age Indian people, between 800 and 400 B.C. Several mounds were found and excavated, and artifacts were found. The people used bird effigies, and made jewelry of quartz and jasper, as well as bolas of hematite.

An expedition of the Academy of Natural Sciences of Philadelphia, Pa., left for Peru, to study the aquatic life of the Amazon. The expedition would work at Iquitos and Tingo Maria. It was headed by Ruth Patrick, curator of limnology, and was accompanied by zoologists and entomologists.

The floating island of ice in the Arctic ocean, T-3, was reoccupied by a party of three U.S. air force scientists, who planned to continue scientific studies already started in the area between northern Canada and Greenland. The island was abandoned on May 14, 1954, when it floated to a point near the northern tip of Ellesmere Island, N.W.Terr. It was then considered too close to a fixed weather station to be of value as a weather-reporting station. The new party was interested primarily in scientific research. The scientists planned to make ice thickness and ocean depth measurements as well as meteorological, oceanographic, auroral and other observations.

Sharat K. Roy, chief curator of geology at Chicago Natural History museum, went to El Salvador to conduct an expedition to study Central American volcanoes and to collect specimens of volcanic products. He had been engaged in these studies for several years, and planned to conclude his work in El Salvador in 1955 and extend his activities to volcanoes in Nicaragua.

Waldo L. Schmitt, head curator of zoology, U.S. National museum, directed an expedition sponsored by the Smithsonian institution that was investigating the invertebrate fauna of the Belgian Congo, with special emphasis on the mites and ticks, as well as their plant and animal hosts. The crustacean fisheries operated by the natives in the extensive Congo river system and tributaries were also to be studied. The party included Edward Baker of the Entomology Research branch of the U.S. department of agriculture, who was particularly interested in the mites of importance or potential importance to agriculture in the United States, and Roy Lyman Sexton of Washington, D.C., a medical consultant who had previously conducted surveys for the government on the health of native populations. His son, Roy L. Sexton, Jr., chief of the photolaboratory at Walter Reed Medical centre, accompanied the expedition as microphotographic specialist.

New techniques for exploring the ocean bottom were put into use during the summer of 1955, in the Mediterranean. The French navy's research vessel, the "Elie Monnier," spent some time testing new methods for obtaining core samples of the bottom, and exploring the canyons around Corsica. J. Boucart of the Laboratory of Submarine Geology at the Sorbonne, Paris, was the scientific director.

The French vessel "Calypso," under the direction of Capt. J. Cousteau, also conducted a research voyage, studying principally the biological life along the coast and adjacent to Greece. H. Edgerton of the Massachusetts Institute of Technology, Cambridge, accompanied the vessel, principally to test new undersea photographic equipment.

The British submarine "Acheron" made a set of gravity determinations along the ocean floor on the route from England to Ceylon, going via the Mediterranean and returning around the Cape of Good Hope.

An arctic expedition left the U.S.S.R. to make oceanographic, magnetic and meteorological observations at and near the north pole. The expedition was led by N. A. Volkov of the Arctic Research institute.

An expedition led by R. J. Braidwood of the Oriental institute of The University of Chicago gathered much archaeological material in Iraq, especially around Jarmo. Samples of wood for radiocarbon dating were obtained, and bones, artifacts and pottery were uncovered. The expedition showed that goats had been domestic animals 7,000 years ago. Further evidence was found that overgrazing was already practised by early people and deforestation was noted. (See also ANTARCTICA; ANTHROPOLOGY; ARCHAEOLOGY; CARTOGRAPHY; COAST AND GEODETIC SURVEY, U.S.; INTERNATIONAL GEOPHYSICAL YEAR, 1957-58; NATIONAL GEOGRAPHIC SOCIETY; OCEANOGRAPHY.) (S. A. K.)

Explosions: see DISASTERS.

Export-Import Bank of Washington.

Established in 1934 as a District of Columbia banking corporation, the Export-Import bank was reincorporated as an independent agency of the United States government by the Export-Import Bank act of 1945 and operates under that act as amended. The basic purpose of the bank, as stated by the act of congress, is to aid in financing and to facilitate the exports and imports of the United States. During 21 years in pursuit of this objective the bank had authorized loans or guarantees in 65 countries in a total amount of \$7,200,000,000. A total of \$5,000,000,000 had been disbursed of which \$2,700,000,000 was outstanding at the close of the 1955 fiscal year.

The first half of the calendar year 1955 witnessed a continuing uptrend in Export-Import bank financing. During the first six months of 1955, 115 credits totaling \$336,700,000 were authorized, bringing the total of new credits authorized during the fiscal year to \$628,300,000. The bank continued its practice of assisting exporters on a case-by-case basis. In addition, the bank undertook, in appropriate cases, to establish credit lines for exporters under the terms of which they were apprised in advance, in fairly specific terms, how far the bank would be willing to go in financing their exports to specific countries. As of June 30, 1955, the bank had authorized 90 exporter credit lines in the total amount of \$144,670,000.

In financing exports upon application of the United States exporter, whether on a case-by-case basis or under a line of credit, the bank generally required the exporter to participate to the extent of 20% of the sales price and required the buyer to make an advance payment of varying percentages but usually amounting to at least 20%. The bank then agreed either to guarantee or to purchase the remaining 60% without recourse to the exporter; that is, the exporter had no obligation or liability to the bank for the portion financed or guaranteed by the bank.

The bank continued to receive and, in appropriate cases, to approve requests of foreign entities and governments for credits to finance the acquisition of United States materials, equipment

and services for developmental projects to be undertaken abroad. Such loans were considered one of the most important contributions the bank could make to an expanding world economy. Not only did they support the United States economy, policy generally but they contributed to economic and political stability abroad and thereby created expanding markets for United States exports. (S. Sd.)

Exports: see AGRICULTURE; INTERNATIONAL TRADE. See also under various countries.

Eye, Diseases of the. With the tremendous progress in the conversion of atomic energy to useful controlled power production, hundreds of thousands and eventually millions of workers potentially will be exposed to nuclear radiations. It is important to recognize the early signs of radiation injury for the protection of employees. A recent study of the survivors of atomic bomb explosions in Japan in 1945 revealed small opacities in the lenses of the eyes that developed two to ten years following the exposure to nuclear radiations in persons who showed no other signs of radiation damage. The changes did not lead to blindness in a significant number of cases and were increasing very slowly, if not at all. From these studies, it is readily apparent that the human lens is extremely sensitive to nuclear radiations, and the earliest signs of damage from that source to human life may be detected by examination of the eyes.

In 1955 the results of treatment of trachoma (granuloma of the lids) in North American Indians by a new antibiotic proved effective; treatment by antibiotics that had been found more effective in some cases had failed to produce a cure. Erythromycin cleared the symptoms of the disease in the inflammatory stages where sulfonamides used in the usual manner had failed to halt the disease. This was probably another instance of the acclimatization of viruses to antibiotics and evidence of change in the strains of disease producing organisms.



PHOTOGRAPHIC REPRESENTATION of the visual sensation of a person suffering from tubular, or "gun barrel," vision, a form of hysterical blindness in which sight is impaired in the periphery of the visual field. The photograph appeared in 1955 as part of a series showing from "within" the problems of persons with common forms of impaired sight.

Retinitis pigmentosa, a disease of the eye which had been formerly considered hopeless, was found to respond to treatment by Dicumarol, a drug that had been used mostly in treatment of vascular disease. This indicated that retinitis pigmentosa may be the result of vascular disease rather than of cell regeneration on an hereditary basis.

Ocular tuberculosis was being treated by use of Isoniazid, an expensive drug, combined with antibiotics and cortisone, with encouraging results according to a recent survey of several clinics. The combination of drugs must be varied according to their respective effects, as a fixed dosage could not as yet be established.

Colour sense in children does not vary according to sex up to the age of eight years. Above this age differentiation according to sex is found, and the percentage of anomalies is in accordance with statistical findings in adults. In advanced age a deterioration of the colour sense could be ascertained above 60 years of age both in males and females. This defect is more marked in people with low grade of intelligence (25%) than in subjects with high academic education (18%). In advancing age anomalies of perception of red and green occur which cannot be explained by changes occurring in the lens. (W. L. BE.)

Facsimile: see TELEGRAPHY.

Faeroe Islands (FAERÖERNE). A self-governing part of the kingdom of Denmark, the Faeroe Islands are situated in the North Atlantic between Iceland and the Orkney Islands, about 200 mi. northwest of the latter. Area: 1,400 sq.mi.; there are 21 islands of which 18 are inhabited. Pop.: (1950 census) 31,781; (1954 est.) 33,000. Language: Faeroese, akin to Icelandic rather than to Danish. Religion: Lutheran. Capital, Thorshavn, on the island of Stromo, pop. 10,950, 5,607. Governor general in 1955, C. A. Vagn-Hansen.

History.—At the election to the Lagting (parliament) on Nov. 8, 1954, the Sambands (Conservative) party gained 7 seats (last election 7), the Folkeflokkurin (Conservative Independence party) 6 seats (8), the Tjodveldisflokkurin (Republican Left-wing Independence party) 6 (2), the Social Democrats (6), the Selvstyre (moderate Home Rule) party 2 (4) and independents 1 (0). The new Landsstyre (government), formed by the Sambands party, the Folkeflokkurin and the Selvstyre party, had to put an end to a curious quarrel at Klaksvig.

Since 1951 Oluf Halvorsen had been serving as a temporary physician at the Klaksvig hospital. Because of a dispute with the Danish Medical association Halvorsen was dismissed, but when on April 21, 1955, the Danish governor tried to enforce the decision he was driven back to his ship in the harbour of Klaksvig by some of the inhabitants who wished to retain Halvorsen's services; they were encouraged by the Republican party to use force. The governor then asked for police assistance from Denmark, and 100 policemen were sent from Copenhagen to Thorshavn, the Faeroese capital. At the same time Viggo Kampmann, the Danish minister of finance, flew to the islands. He succeeded in reaching an agreement, under which Halvorsen could leave Klaksvig and another temporary physician would be appointed for six months. When, however, representatives of the governor arrived at Klaksvig on Sept. 28 to install a permanent physician, they were again attacked by followers of Halvorsen, and the Republicans demanded "the Danes out of the islands." In the end the permanent physician was appointed and Danish policemen, again requested from Copenhagen, landed at Klaksvig and arrested the rioters.

In May the Danish Folketing voted Kr. 6,100,000 for loans to Faeroese industries and guaranteed a Kr. 10,000,000 loan to Faeroese municipalities. (H. LN.)

Fairs and Exhibitions. United States and Canada.—

Records for attendance were shattered at many of the state fairs of the United States and the provincial exhibitions of Canada in 1955 and most of the regional and district fairs also had some of the best seasons in their histories. The excellent results were attributed to the generally prosperous condition of the countries, coupled with a steady improvement in attractions—both exhibits and entertainment—offered by the fairs. In all of the larger fairs the practice of booking "name" attractions from the movies, television and stage had been greatly extended, and it paid off handsomely.

Exhibits in every department kept pace with the general expansion, but entertainment undoubtedly was the chief factor in bringing people to the fairs.

Again leading all fairs on the continent was the Canadian National exhibition at Toronto. Its attendance of 2,809,500 in 14 days was only a little less than the 1954 all-time high. In the United States the Texas state fair at Dallas, with attendance of more than 2,000,000, and the Los Angeles county fair, Pomona, Calif., with more than 1,000,000, were the highest in attendance. In 1955, the Minnesota state fair, St. Paul, registered 1,008,101 attendance in its 10 days. This placed Minnesota in second place in attendance for a 10-day period, Pomona's fair running for 17 days.

As agricultural fairs, those at Pomona and St. Paul topped all others. From an entertainment standpoint, Dallas was the best. It had four college football games, an auto show, a Broadway stage show (for which \$4.50 top was charged), the National Tipica orchestra from Mexico City, and numerous other attractions. Illinois state fair, Springfield, reported attendance of 950,000, but of this number more than 200,000 paid no admission. Fairs which drew 500,000 or more included Michigan state fair, Detroit, 786,758; California state fair, Sacramento, 852,303; Pacific National exhibition, Vancouver, B.C., 750,792; Indiana state fair, Indianapolis, 590,000; Ohio state fair, Columbus, slightly more than 500,000; Missouri state fair, Sedalia, 542,175; Iowa state fair, Des Moines, 505,000. The Wisconsin state fair, Milwaukee, usually among the leaders, was hard hit by polio and attendance was down nearly 50%. Kansas Free fair, Topeka, drew 492,000; Central Canadian National exhibition, Ottawa, 431,797; Exposition Provinciale, Quebec, Can., 360,000; Eastern States exposition, Springfield, Mass., 413,552; New York state fair, Syracuse, 462,000; Mid-South fair, Memphis, Tenn., 362,000. (NA. G.)

Great Britain and Other Countries.—During 1955 the following shows and exhibitions attracted much attention:

U.S. EXHIBIT BUILDING at the 1955 industrial fair held in Paris, Fr.



Agriculture and Horticulture

- May 25— Royal Horticultural society's spring show, Chelsea, Eng.
- May 25—²⁸ Royal Ulster show at its permanent show ground, at Balmoral, near Belfast, Ire.
- June 1-4 Bath and West and Southern counties show, Launceston, Eng., the show's first visit to Cornwall for 42 years.
- June 21-24 Royal Highland show, Edinburgh, Scot.
- June 22-25 Royal Counties show, Horsham, Eng., the first visit to Horsham since 1889.
- July 5-8 Royal Agricultural Society of England's show, Wollaton Park, Nottingham, under presidency of the Duke of Portland. Show occupied 166 ac. and cost £165,000. Total attendance 185,527.
- Aug. 6 Bicentenary show of Brecon Agricultural society, Newton Park, Eng.

Industry

- March 1-²⁶ *Daily Mail* Ideal Home exhibition, Olympia, London. Record attendance of 1,315,431.
- May 2-13 British Industries fair, Olympia, London, and Castle Bromwich, Birmingham.
- July 5-16 10th International Printing Machinery and Allied Trades exhibition (IPEX), Olympia, London. The first printing exhibition in Britain since 1936. The 338 exhibitors included 40 from 9 countries.
- Aug. 26-^{Sept. 3} National Radio and Television exhibition, Earl's Court, London, opened two days late because of Electrical Trades union strike.
- Sept. 5-11 The 16th flying display and static exhibition of the Society of British Aircraft Constructors, Farnborough, Eng. Public days attracted 239,000 visitors (300,000 in 1954).
- Oct. 19-29 International Motor show, Earl's Court, London. Final attendance figure was 516,811, including 13,750 (a record) from overseas.

Miscellaneous

- June 1-11 Atoms for Peace exhibition at South Bank, London, jointly presented by the U.S. information service and the U.K. Atomic Energy authority. The exhibition later visited Belfast, Glasgow, Newcastle, Edinburgh, Leeds, Liverpool, Manchester, Sheffield, Nottingham, Birmingham, Cardiff, Bristol and Southampton. Nearly 36,000 attended in London.
- June 1-10 Aluminum centenary exhibition, Royal Festival hall, London.
- June 8-23 Antique Dealers' fair, Grosvenor house, London.
- July 10-16 Soho fair, London. A festival of arts, craft, food and drink.
- Sept. 2-^{Oct. 14} 5th International exhibition of book design, National Book league, London.
- Oct. 3-8 Five Centuries of British Timekeeping exhibition, Goldsmith's hall, London.
- Oct. 13 Steuben Glass exhibition, in London; first to be held in Europe.

Other Countries

- May 14-³⁰ Foire de Paris attracted 3,782,825 visitors including about 100,000 from abroad.
- June 1 U.S.S.R. Agricultural exhibition attracted more than the 8,000,000 visitors in 1954.
- June 14-19 21st Paris Salon de l'Aéronautique, Le Bourget, Fr.
- June 10-^{Aug. 28} "H55", at Helsingborg, Swed. Mainly concerned with Swedish industrial arts but included architecture, building, education, shipping and electricity.
- June 25-^{July 10} 2nd International Textile exhibition, Brussels, Belg., opened by King Baudouin.
- July 3 24th Poznan fair, Pol., visited by more than 1,300,000 persons.
- Aug. 8-20 1st International Exhibition of the Peaceful Use of Atomic Energy, Geneva, Switz., held in conjunction with conference on same subject. There were 140 exhibitors from manufacturers of eight countries.
- Oct. 8-13 Frankfurt Book fair, 1,150 publishers exhibited 48,500 books. On one day 100,000 attended.
- Oct. 6-17 42nd Salon de l'Automobile, Paris, attracted 1,100,000 people—a new record. A new Citroen model aroused enormous interest.
- Oct. 29-^{Dec.} Indian Industries fair, New Delhi, Ind., was the largest industrial exhibition held in Asia. It cost more than Rs. 50,000,000. (See also SHOWS.) (A. J. Kd.)

Falk Foundation, Maurice and Laura: see SOCIETIES AND ASSOCIATIONS, U.S.

Falkland Islands.

British colony (East and West Falkland and adjacent islands) and dependencies in the South Atlantic. Dependencies: (1) South Georgia (1,450 sq.mi., four whaling stations; permanent pop. about 700) with South Orkney (240 sq.mi.) and South Sandwich (130 sq.mi.) and (2) South Shetland (1,800 sq.mi.) and Graham Land (on Antarctic mainland). Area of colony: 4,618 sq.mi. Pop.: (1946 census) 2,439; (1953 census) 3,630, mainly of British descent and Protestant. Only town, Stanley (cap.), pop. 1,135. Governor in 1955, O. R. Arthur.

History.—Work began during 1955 at Stanley on plans to

improve the water supply, drainage and roads, and attention was also given to road communications with isolated farms.

Two new bases were established in the Falkland Island dependencies, at Anvers Island in the Palmer archipelago and Horseshoe Island off the west coast of Graham Land. The number of bases thus became eight and the Norwegian vessel "Norsel" was chartered to help the royal research ship "J. Biscoe" in their maintenance. An aerial survey of Graham Land by Hunting Airways on behalf of the British government was begun in 1956. The expedition ship "Oluf Sven" sailed for Antarctica in October with the main party and a helicopter board.

Great Britain made a direct approach to the International court at The Hague about Chile's and Argentina's challenge to British sovereignty in the dependencies. Both rejected recourse to the court, established further bases, and legislated to "incorporate" all or most of the area of the colony and dependencies into their respective countries. (J. J. Ty.)

Education.—(1954) Four schools, pupils 340; also 9 itinerant teachers.

Finance and Trade.—Currency: sterling with local notes. Budgets: *only* (1953-54 actual): revenue £241,741, expenditure £221,931; (1954-55 est.) revenue £285,142, expenditure £284,648. *Dependencies* (1953-54 est.): revenue £265,064, expenditure £263,882. Foreign trade (including dependencies, 1954): imports £3,460,000; exports £5,120,000. Principal exports: wool, hides and skins, guano, whale oil, whale meat meal.

Famines: see AGRICULTURE.

Farm Co-operatives: see CO-OPERATIVES; FARM CREDIT SYSTEM.

Farm Credit System.

Farmers and their co-operatives the year ended June 30, 1955, obtained \$2,400,000,000 in loans from the organizations of the operative Farm Credit system supervised by the Farm Credit administration. This compares with \$2,200,000,000 the preceding year.

The system operates through 12 farm credit districts and includes 1,100 national farm loan associations, 498 production credit associations, 12 federal land banks, 12 production credit corporations, 12 federal intermediate credit banks and 13 banks for co-operatives including a Central Bank for Cooperatives located in Washington, D.C.

Farmers' investment in the system reached a new high. Farmers and their co-operatives owned \$198,000,000 in capital stock in the system on June 30, 1955, compared with \$187,000,000 year before. All the national farm loan associations and the federal land banks were entirely farmer owned, as well as 8 of the production credit associations. Farmers' marketing, purchasing and service co-operatives owned 11% of the capital stock of the 13 banks for co-operatives. The Farm Credit Act of 1955, approved Aug. 11, 1955, provided a plan for the banks for co-operatives to gradually become completely owned by farmers' co-operatives using their services.

The 12 federal intermediate credit banks and the 12 production credit corporations are completely government owned. During the year, the amount of government capital in the system declined slightly from \$244,500,000 to \$243,900,000.

Farmers' and farmer co-operatives' investment in capital stock has grown because of the large increase in loans. Each farmer-borrower buys capital stock in his local national farm loan association equal to 5% of his loan. Each farmer who borrows from a production credit association must own capital stock equal to 5% of his loan. Farmers' co-operatives borrow from the banks for co-operatives are also required to own stock in the banks.

Farm Mortgage Loans.—Farmers obtained 57,000 farm bank loans for \$403,000,000 through the 1,100 national farm loan associations during the 1955 fiscal year. This was the

amount in any year except 1934—the peak of the emergency financing. It represented 15% more loans and 34% more credit extended than in the previous year. At June 30, 1955, farmers had 350,900 loans outstanding for \$1,400,000,000.

To obtain funds to finance loans, the land banks in the year ended June 30, 1955, had outstanding bonds totalling \$1,100,000,000. These bonds are not guaranteed in any way by the U.S. government. The balance of their loan volume was financed with the banks' own funds and borrowings from commercial banks totalling \$83,000,000.

Farmers repaid more than \$178,000,000 on their land-bank loans in the year. Of this, \$103,000,000 represented scheduled principal and interest payments. The balance was made up of partial or full repayments ahead of time.

Farmer-borrowers received \$3,700,000 in dividends on their stock in their national farm loan associations. This represented an additional substantial saving made by obtaining their credit co-operatively.

Production Credit.—Farmers obtained 272,000 loans for \$1,300,000,000 from their 498 production credit associations in the year ended June 30, 1955. The number of loans was up about 2% from the previous year and the amount was 8% larger. On July 31, 1955, farmers had loans outstanding for \$18,700,000, the highest at any time since the system was organized in 1933. Funds to make loans are obtained primarily by discounting farmers' notes with the federal intermediate credit banks.

The 479,000 members of production credit associations on June 30, 1955, owned capital stock in their associations amounting to \$96,000,000, up \$2,400,000 from a year before.

During the year, 65 more associations became completely farmer owned, bringing the number so owned to 419 or 84% of the total. The capital stock of the production credit associations owned by the government, through the 12 production credit corporations which supervise the associations, was reduced to \$2,100,000. This may be compared with a peak of \$90,000,000 that the government had invested in these associations in the mid-1930s.

Farmer-owned stock, plus accumulated earnings of nearly \$8,000,000, represented almost 99% of the total net worth of the associations.

Farmer-members of 121 associations received \$792,000 in dividends on their stock in the associations. The preceding year members of 86 associations received dividends of \$592,000. Members of 30 dividend-paying associations also received patronage refunds amounting to \$418,000.

The 419 completely farmer-owned production credit associations paid \$2,136,201 state and federal income taxes during the year.

Credit for Co-operatives.—Farmers' marketing, purchasing and business service co-operatives borrowed \$500,000,000 from the 13 banks for co-operatives in the year ended June 30, 1955, about 2% more than in the preceding year. Of this amount, 50% was for operating capital, 26% to store commodities and 24% for buildings and equipment.

Part of the funds to finance the banks' loans was obtained from the investment market through the sale of consolidated debentures totalling \$70,000,000. Debentures are not guaranteed in any way by the U.S. government.

On June 30, 1955, 2,129 farmers' co-operatives had loans outstanding for \$317,000,000. This was the largest number of borrowing co-operatives at any time since the banks were established in 1933.

For the year ended June 30, 1955, the 13 banks paid \$1,553,000 in federal franchise taxes.

Federal Intermediate Credit Banks.—During the year, the 12 federal intermediate credit banks extended credit amounting to \$1,900,000,000 to production credit associations, other financing institutions, the banks for co-operatives and farmers' marketing and purchasing co-operatives.

These banks obtained loan funds from investors by selling consolidated debentures. The banks had \$793,000,000 of debentures outstanding on June 30, 1955, and sales of debentures in the year totalled \$1,000,000,000. These debentures are not guaranteed in any way by the U.S. government.

The intermediate credit banks paid \$461,116 in franchise taxes to the government for the fiscal year 1955. (R. B. T.)

Farmers Home Administration. Farmers continued to make good use of the loans and other assistance offered through the Farmers Home administration, an agency in the U.S. department of agriculture. Loans accompanied by appropriate technical assistance were made for operating, purchasing, enlarging, developing and improving farms, and for meeting emergency credit needs of farmers who, because of drought, floods or similar disasters, needed a supplemental source of credit to continue normal operations.

About 135,200 farm families received this financial assistance through the 12-month period ending June 30, 1955.

Only farmers unable to get suitable credit from private or co-operative sources were eligible for the aid. The agency's approvals of loan applications were based on the policy of supplementing rather than competing with private credit.

A large proportion of the loans were made to young farmers, including veterans, who were establishing better farm setups and whose greatest needs were for adequate credit and some help in developing sound systems of farming and adopting efficient farm management practices. Veterans receive preference for most types of loans.

A total of 70,700 farmers borrowed production and subsistence loans amounting to \$133,591,000. The purpose of these loans was to make efficient use of their land and labour resources. This amount included loans to farmers already indebted to the agency. They used the loans to purchase livestock, feed, seed, fertilizer, equipment and other farm and home operating needs and to permit necessary adjustments for efficient family farm enterprises.

Progress made by 13,431 farm families who paid their production and subsistence loans in full in 1954 and continued to farm was analyzed during the 1955 fiscal year. The analysis reflected the value of the operating loan program. The average farmer in this group used Farmers Home administration credit four years. During that time, his net worth increased from \$4,907 to \$8,375, and his working capital from \$2,860 to \$5,187. Those listed as owners or part owners increased from 51% to 64%.

A marked increase in participation in the insured loan program in the year ending June 30, 1955, by private lenders resulted in 2,909 farmers receiving farm-ownership loans totalling \$31,933,000, all from insured loans advanced by private lenders and used to buy and improve or enlarge farms. Another 1,466 farmers obtained farm-ownership loans made from appropriated funds and totalling \$18,999,000.

The volume of insured loans made during the year was 80% greater than in any previous year.

Private lenders also began advancing insured loan funds for the new soil and water conservation loan program during the year. First loans for this program were made in Oct. 1954. This program, succeeding the former water facilities loan program, helped 2,930 individuals and associations carry out measures for soil conservation, water development and use, permanent pasture

development, and drainage. The insured loans totalled \$15,468,000. In addition, direct loans for the same purposes from appropriated funds to 744 individuals and associations totalled \$4,021,000.

In designated areas where emergencies caused need for supplemental agricultural credit, loans were made to 53,941 farmers for a total of \$69,595,000. The loans helped farmers who suffered losses from drought, storms and other disasters continue their normal operations.

Special livestock loans, in the amount of \$19,404,000, were made to 2,514 established producers and feeders (except commercial feed lot operators) to buy feed and replacements and to pay other expenses of maintaining normal livestock operations. Authorization for the special livestock loan program was established in July 1953 for a period of two years. At the expiration of that period in July 1955, the authorization was extended for an additional two years.

Total principal and interest payments by borrowers on all types of loans during the fiscal year ending June 30, 1955, amounted to \$275,927,000.

(R. B. McL.)

Farm Income: see AGRICULTURE.

Farm Machinery: see AGRICULTURE.

Farm Population: see CENSUS DATA, U.S.

Fashion and Dress: see SHOE INDUSTRY; WOMEN'S FASHIONS.

Fats and Oils: see VEGETABLE OILS AND ANIMAL FATS.

Faure, Edgar (1908—), French politician, was born at Béziers, Hérault, Aug. 18, 1908. He became premier of France for the second time on Feb. 23, 1955. He studied Russian at the Paris École des Langues Orientales, later graduating from the Paris faculty of law and practising in the capital. Entering politics, he joined the Radical party. During World War II he remained in Paris and took part in the resistance movement, joining General Charles de Gaulle's French Committee of National Liberation at Algiers (1943-44). In Dec. 1945 he was appointed assistant delegate of the French government at the Nuremberg trial of war criminals. On Nov. 10, 1946, he was elected deputy to the national assembly from the Jura *département* and was re-elected on June 17, 1951. From Feb. 1949 he served as secretary of state of finance in two successive cabinets. He became minister of the budget in July 1950 in the first Plevin cabinet and kept this portfolio in the following third Queuille cabinet. From Aug. 1951 to Jan. 1952 he was minister of justice in the second Plevin cabinet. He was briefly premier from Jan. 18 to Feb. 29, 1952. Not invited to join the Pinay and Mayer ministerial *équipes*, he returned to power in June 1953 as minister of finance in the Laniel cabinet, keeping this portfolio in the Mendès-France cabinet (June 18, 1954-Feb. 5, 1955). On Feb. 23 he formed a government based on a centre-rightist coalition (the 21st of the fourth republic) and was confirmed as premier by 369 votes against 210. He took part in the Geneva conference of the Big Four Powers (July 18-23). His government was defeated on Nov. 29, but he dissolved the national assembly and announced new elections. For this his former friend Mendès-France staged on Dec. 1 his exclusion from the Radical party.

FBI: see FEDERAL BUREAU OF INVESTIGATION.

Federal Bureau of Investigation. The Federal Bureau of Investigation, the investigative arm of the United States department of justice established in 1908 by Attorney General Charles J. Bonaparte, is charged with the investigation of certain specific federal

laws and the collection of evidence in such cases. It has jurisdiction over more than 140 federal investigative matters. A fact-gathering agency, the FBI neither evaluates the results of investigations nor makes prosecutive recommendations.

FBI headquarters is located in Washington, D.C. The 52 field offices of the FBI are located in major cities throughout the United States and in Hawaii, Puerto Rico and Alaska.

The investigative activities of the FBI include the fields of domestic intelligence and general crime. The FBI's domestic intelligence responsibilities include the correlating and disseminating of information bearing upon the nation's security interests of agencies of the executive branch of the federal government. In meeting these responsibilities, the FBI has the basic objectives: (1) to identify subversive elements within the United States and secure intelligence data concerning their activities and future objectives; (2) to obtain and disseminate security information vital to other federal agencies; and (3) to secure legal evidence of violations of federal laws.

Although the full effect of FBI investigations in the security field cannot be adequately measured by arrests and convictions, it is noted that 21 additional Communist party leaders were arrested during the 1955 fiscal year, and trials of Communist party leaders charged with violating the Smith act resulted in 18 verdicts of guilty. Sixteen of these persons were found guilty of conspiring to teach and advocate the overthrow and destruction of the United States government by force and violence. The remaining two were convicted under the membership provisions of the Smith act. From 1948, when 12 members of the national board of the Communist party were indicted, through June 1955, 131 Communist party leaders were arrested on Smith act charges, and 90 were convicted in federal court; however, two of these were granted new trials.

During the 1955 fiscal year, the FBI conducted investigations concerning a number of organizations which had been cited as subversive by the attorney general under executive order 10450. Additionally, facts concerning other groups were reported to the department of justice so that determination might be made as to their character. The facts gathered by the FBI concerning subversive organizations are promptly reported to the department of justice and to other interested agencies of the federal government. The FBI does not cite organizations as subversive nor does it recommend that such citations be made.

The magnitude of the FBI's domestic intelligence operations is evidenced by the fact that 84,725 security matters were received for investigation in the 12-month period ending June 30, 1955, an increase of more than 10,800 over the preceding year. Additionally, considerably more than 1,000,000 requests from other government agencies for security-type information were handled during the 1955 fiscal year.

In addition to the intensive efforts of the FBI in the field of domestic intelligence, the volume of investigations and accomplishments in the general investigative field continued to be high.

Convictions in cases investigated by the FBI during the 1955 fiscal year totalled 10,615, as compared with 10,511 during the previous fiscal year. These convictions represented 96% of the persons who were brought to trial in FBI cases. Sentences imposed totalled 29,296 years, 3 months and 26 days.

Fines, savings and recoveries in cases investigated by the FBI during the 1955 fiscal year totalled \$59,664,535. In addition, Renegotiation act claims adjusted in favour of the government totalled \$5,588,587. Included in the property recovered in cases investigated by the FBI were 14,254 automobiles.

Upon request, the services of the FBI laboratory and the identification division are available without cost to law enforcement agencies and to other federal government agencies. Du-

the 1955 fiscal year, the FBI laboratory received 27,664 requests for assistance involving 133,724 scientific examinations of 118,398 specimens of evidence, as compared with the 126,518 examinations conducted in fiscal 1954.

In the course of the 12-month period ending June 30, 1955, 175,694 fingerprint cards were received for retention in the files of the identification division. These fingerprint cards were received from 12,704 contributors and represented an average receipt of more than 20,000 fingerprints per working day. Fugitives identified through fingerprint comparisons totalled 13,491. As of June 30, 1955, the identification division had 135,990,686 fingerprint cards in its files, representing approximately 71,000,000 persons.

The FBI, upon request, co-operates with local law enforcement agencies in special training programs held at the FBI National Academy in Washington, D.C., and in police training schools conducted on a local level throughout the nation. With the completion of its 55th session in June 1955, the FBI National Academy had graduated 2,984 men representing police agencies in every state in the United States, Alaska, Hawaii, Puerto Rico, the Canal Zone and several foreign nations. In addition, the FBI participated in 2,315 police training schools held on a local basis.

As a further co-operative service to law enforcement, the FBI publishes the *FBI Law Enforcement Bulletin* and the *Uniform Crime Reports*. The *FBI Law Enforcement Bulletin*, a monthly publication, serves as a medium for the exchange of ideas between law enforcement agencies. The *Uniform Crime Reports* bulletin, published annually and semiannually, is a statistical analysis of local crime. (See also CRIME; JUVENILE DELINQUENCY; POLICE; SECRET SERVICE, U.S.) (J. E. H.)

Federal Communications Commission.

Figures released by the Federal Communications commission in 1955 indicated that more than 90% of the U.S. population was within reception range of at least one television station, and that about 75% lived in areas served by two or more stations. At the end of the fiscal year 1954-55, 582 commercial TV stations were authorized by the FCC, as compared with 573 at the close of the preceding fiscal year.

Radio and television authorizations of the FCC as of Sept. 30, 1955, are shown in Table I, and authorization by the commission in the nonbroadcast services are shown in Table II. The total number of individual radio transmitters—fixed, portable and mobile—employed in the broadcast and nonbroadcast services on that date was estimated to be in excess of 800,000.

National Defense Activities.—The FCC continued its extension of CONELRAD (control of electromagnetic radiation), a program designed to confuse potential enemy aircraft which might in wartime try to use commercial radio signals to get their navigational bearings. The participating stations in the program—numbering about 1,300 at the end of the fiscal year 1954-55—switch rapidly to different frequencies so that beams cannot be followed.

Table I.—Radio and TV Stations in the U.S., Sept. 30, 1955

Service	Authorized	Licensed	On Air
Commercial TV	581	144	473
National TV	34	1	15
Commercial radio (standard)	2,884	2,757	2,771
Commercial radio (FM)*	555	521	538
National radio (FM)*	131	121	124
Total	4,185	3,544	3,921

*Frequency modulation.

Table II.—Nonbroadcast Radio Authorizations in U.S., Sept. 30, 1955

Airline	52,908	Amateur	139,628
Aviation	44,183	Common carrier	2,001
Industrial	26,357	Experimental	661
Public safety	19,153	Other	2,704
Land transportation	21,608		

Other national defense projects of the FCC were cloaked in secrecy by security rules. The commission established a priority system for telephone-telegraph communications to be put into effect immediately in case of national emergency.

International Frequency Allocations.—The FCC completed its domestic implementation of provisions of the Geneva, Switz., agreement of 1951 in so far as they applied to mobile, amateur, fixed, aeronautical and maritime mobile transmitters. Under the Geneva agreement, 65 nations, including the U.S., agreed to consult with each other before allocating new frequency bands for radio services. During 1954-55, U.S. representatives attended 10 international conferences and meetings on radio.

Monitoring and Research.—Aided by mobile units, the FCC discovered a total of 105 illegal radio transmitters throughout the U.S. in the fiscal year 1954-55. District offices of the commission investigated about 18,000 complaints of interference with reception. At the commission's instigation, local committees had been set up in 412 communities to investigate TV interference.

The commission also continued its research into technical means of reducing man-made interference with radio transmission and reception.

Telephone and Telegraph.—During the fiscal year 1954-55 the FCC granted 126 wire-line and 381 microwave licences for long-distance telephone circuits. No important telephone rate changes (supervised by the FCC) were authorized during the year. Effective July 15 and Aug. 1, 1954, however, Western Union (the only domestic U.S. telegraph carrier) increased its rates to yield an estimated increase of \$10,000,000 in the company's annual revenue. Later in 1954 rate increases for domestic press messages and for telegraph messages to Canada were authorized. (See also RADIO AND TELEVISION; TELEGRAPHY; TELEPHONE.)

Federal Deposit Insurance Corporation.

In the fiscal year July 1, 1954, to June 30, 1955, there were five cases in which disbursements by the Federal Deposit Insurance corporation were necessary to protect depositors of insured banks. Disbursements in these five cases totalled \$3,100,000 and there remained unpaid claims of \$79,619.

From the beginning of deposit insurance until June 30, 1955, the corporation had disbursed \$333,000,000 to protect depositors of 427 distressed insured banks. This consisted of \$331,400,000 for protection of depositors and \$1,600,000 to facilitate termination of liquidations. The banks involved held approximately 1,400,000 accounts with deposits of about \$563,000,000, of which about 0.5% was lost to depositors. Liquidation of assets by the corporation had resulted in recovery of about nine-tenths of its total disbursements.

On June 30, 1955, the assets of the corporation totalled \$1,717,189,827, of which \$1,711,528,619 consisted of obligations of the United States government. Liabilities totalled \$126,649,160. The excess of assets over liabilities, known as the deposit insurance fund, amounted to \$1,590,540,667. This fund represented accumulated assessments and investment income in excess of losses and expenses in the past.

As of Dec. 31, 1954, the 13,541 insured banks held deposits totalling \$203,194,531,000. Based on studies made in the past, it was estimated that 55.3% of this total, or \$112,431,000,000, was insured. On that date the deposit insurance fund of \$1,542,697,382 was equal to 1.4% of estimated insured deposits.

The board of directors of the Federal Deposit Insurance corporation was composed in 1955 of H. E. Cook, chairman; Ray M. Gidney, comptroller of the currency, vice-chairman; and Maple T. Harl. (E. H. CR.)

Federal Housing Administration: see HOUSING.

Federal Income Tax: see TAXATION.

Federal Land Banks: see FARM CREDIT SYSTEM.

Federal Power Commission.

Natural Gas.—The Federal Power commission during the 12-month period ended June 30, 1955, issued certificates authorizing construction of 4,927 mi. of natural gas pipelines and compressor units aggregating 259,000 h.p., costing \$465,324,175. They were designed to add nearly 1,750,000,000 cu.ft. to the daily delivery capacity of the transmission systems in the United States, and would benefit 114 cities of 50,000 population or more in 22 states and the District of Columbia, as well as numerous smaller communities. Since Feb. 7, 1942—the date the certificate provisions of the Natural Gas act became effective—the FPC had authorized more than 64,000 mi. of pipelines and nearly 4,400,000 h.p. in compressor units. These facilities were estimated to cost approximately \$4,852,000,000 and were designed to add more than 23,500,000,000 cu.ft. of daily delivery capacity to the nation's individual gas pipeline systems.

As a result of the U.S. supreme court decision of June 7, 1954, in the Phillips Petroleum company case, the commission assumed jurisdiction over sales of natural gas in interstate commerce for resale made by independent producers. During the fiscal year, 6,047 applications for certificates were filed by independent producers, of which 1,093 were disposed of by the commission.

During the 12 months ended June 30, 1955, wholesale natural gas rate increase applications totalling approximately \$92,099,600 annually, filed by 22 pipeline companies, were acted upon by the commission. Of this amount, \$89,736,800 was suspended and \$2,362,800 accepted.

At the beginning of the year there was a backlog of \$131,250,800, making a total of \$220,987,600, in suspended rates requiring commission action during the year. Of this amount, \$19,113,900 was disallowed as not justified, \$31,832,800 was permitted to become effective and \$35,340,300 was permitted to be withdrawn by the companies. Including the carry-overs and the sus-

pensions in 1955, there was a backlog on June 30, 1955, \$134,700,600, \$133,629,600 of which was in effect under but awaiting the commission's determination of the amounts to be allowed, and \$1,071,000 was still under suspension.

During the fiscal year, 10,978 rate filings were received from independent producers, including 2,633 rate increases totalling \$30,888,356, of which 124 amounting to \$12,145,189 were suspended and 2,509 amounting to \$18,743,167 were allowed.

Electricity.—During the year ended June 30, 1955, the commission placed under license 1,135,000 kw. of hydroelectric generating capacity, representing an investment of approximately \$289,936,000. A total of 103 applications were filed and 11 cases were completed. In the last 14 years the commission has placed under license 6,495,300 kw. of hydroelectric generating capacity, representing an estimated cost of \$1,646,554,000. As of June 30, 1955, there were 650 FPC licenses in effect involving a total installed capacity of 7,346,000 kw. and a claim for estimated cost of \$2,440,000,000.

Electric utility generating plants in the United States produced a total of 503,228,956,000 kw.hr. during the year ended June 30, 1955. This amount was the largest on record to that date and 11% above the utility output for the year ended June 30, 1954. Combined utility and industrial production in the year ended June 30, 1955, reached 578,630,152,000 kw.hr., 10.1% from a year earlier.

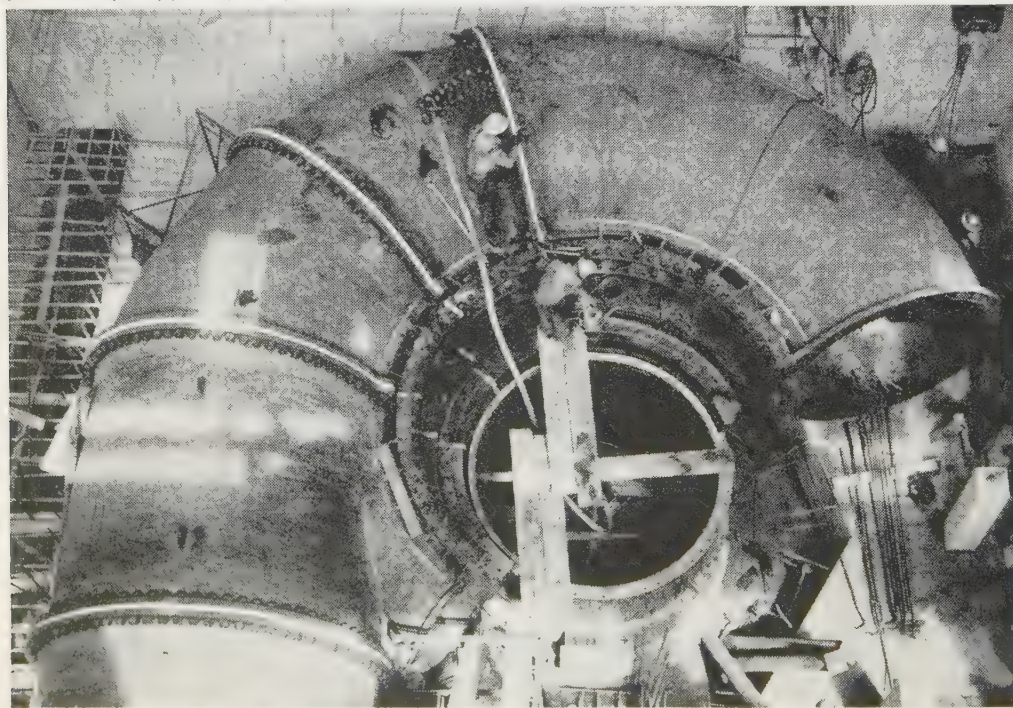
Total installed capacity of utility generating plants on June 30, 1955, was 107,617,233 kw., including the net addition of 12,308,260 kw. or 12.9% in the 12-month period ended on that date. Industrial generating capacity was 16,085,165 kw. As of June 30, 1955, while the nation's total utility and industrial generating capacity reached 123,702,398 kw. as of June 30, 1954.

For the year ended June 30, 1955, electric utility thermal plants burned 128,493,301 tons of coal, 1,165,122,059,000 cu.ft. of gas and 71,418,586 bbl. of fuel oil. These quantities were higher than those of the previous year by 10.1% for coal and 6.7% for gas, while the use of oil was 3.6% less.

Water-Power Potentials.—Federal Power commission studies of water-power potentials indicated that, including projects under construction or authorized, the total undeveloped water power of the United States was approximately 83,000,000 kw.

which, if developed, would be capable of generating about 362,000,000,000 kw.hr. annually. Of this undeveloped power 54%, or about 44,000,000 kw. was west of the continental divide, with 37%, or about 31,000,000 kw., in the north Pacific area, of which about 27,100,000 kw. was in the Columbia river drainage system. Of the remainder, California had about 9,000,000 kw., or about 9.5% and the Colorado river basin 5,200,000 kw., or about 6.3%. The Missouri river basin had about 8,700,000 kw. of undeveloped water power, or about 10.5% of the United States total. The largest concentration of undeveloped power east of the Mississippi river was in the north Atlantic drainage area extending from the St. John river in Maine to the Rappahannock river in Virginia, v

INSTALLATION OF SCROLL CASE for generating unit in the powerhouse of the Palisades, Ida., power project, July 1955



about 7,100,000 kw., or about 8.6% of the national total.

(See also ELECTRICAL INDUSTRIES; GAS, NATURAL AND MANUFACTURED; PUBLIC UTILITIES.)

(J. K. K.)

Federal Reserve System.

During the year the federal reserve system of the United States pursued a policy of credit restraint, moving by degrees from an objective of active ease in Nov. 1954 to one of firm restraint at the end of 1955. The progressive tightening of monetary policy matched the transition from sharp recovery from slight recession early in 1955 to rapid and broadening expansion and in turn to capacity production and threatened inflation late in the year.

Free Reserves.—A measure of the extent of credit restraint provided by the course of free reserves of member banks. That is, excess reserves minus borrowings from federal reserve banks. These were about \$650,000,000 in Nov. 1954, when the policy objective of the federal reserve system was still that of active ease. By July 1955 free reserves were about \$90,000,000; in Nov. 1955 they had declined further to a minus \$550,000,000. The change from Nov. 1954 to Nov. 1955 resulted from an increase in member bank borrowing of more than \$900,000,000 and a decrease of about \$300,000,000 in excess reserves. The impact of this tightening of reserve positions was heightened by the decline during the year in holdings of short-term government securities by money market banks.

Open Market Operations.—Open market operations of the federal reserve system in a framework of increasing reserve needs of member banks played an extremely important role in 1955. All changes in the total system portfolio resulted from transactions in treasury bills, either bought outright or under purchase agreements. Open market operations were of assistance to banks in adjustment of their reserve positions as a result of temporary shifts in deposits and seasonal fluctuations in loans and money in circulation. In Jan. and Feb. 1955 the federal reserve sold or redeemed \$1,300,000,000 of government securities, primarily for the purpose of absorbing reserve funds made available by the seasonal return of currency from circulation and the reduction in required reserves associated with the seasonal deposit decline. In the last three months of the year the federal reserve made substantial purchases of treasury bills to provide some of the reserve funds made necessary by the seasonal outflow of currency into circulation and the higher required reserves resulting from the seasonal deposit increase. Throughout the year the open market operations resulted in a steady tightening of bank reserve positions. For instance, in October and the first half of November the federal reserve banks bought almost \$500,000,000 of treasury bills, yet demands for reserve funds were so strong that free reserves dropped \$200,000,000 as a result of a substantial increase in member bank borrowing.

Thus open market policy and discount rate policy complemented each other in increasing the cost and restraining the supply and availability of reserve funds.

Discount Rate.—Four times during the year the federal reserve banks raised the discount rate, that is, the rate on advances to member banks secured by obligations of the United States or discounts of eligible paper or advances thereon to member banks. Effective on various dates from April 14 to May 14 the 12 regional banks raised the discount rate to $1\frac{3}{4}\%$ from $1\frac{1}{2}\%$ rate which had prevailed since April and May 1954. Between Aug. 4 and 12 the discount rate at 11 reserve banks was raised to 2%, while the increase at the Federal Reserve Bank of Cleveland was to $2\frac{1}{4}\%$. In turn, between Aug. 26 and Sept. 13, the other reserve banks raised their discount rate to 2%. Starting on Nov. 18, there was a fourth round of increases

to $2\frac{1}{2}\%$.

This brought the discount rate to the highest level it had reached since 1933.

Effective Feb. 15, the board of governors revised its regulation A to restate and clarify the guiding principles which are observed by the federal reserve banks in making advances and discounts. It was noted that access by member banks to federal reserve discount facilities is granted as a privilege of membership in the federal reserve system in the light of these principles.

During the year no changes were made by the board of governors in member bank reserve requirements, emphasis being placed rather on open market operations and discount rate policy. Member bank reserve requirements remained at the level set in the summer of 1954, that is, on net demand deposits, 20%, 18% and 12% at central reserve city banks, reserve city banks and country banks, respectively, and on time deposits, 5% at all member banks.

Acceptance financing by United States banks had recently had some revival, and the federal reserve had an interest in the continued development of a broad market for such credit instruments as a means of facilitating trade. Starting in April 1955 the Federal Reserve Bank of New York, under direction of the federal open market committee, made modest purchases of acceptances from dealers, the first purchases since 1951. Some were outright and some were made under repurchase arrangements with dealers for limited periods.

The largest amount held by the federal reserve, however, did not exceed \$22,000,000.

Margin Requirements.—Twice during 1955 the board of governors of the federal reserve system raised margin requirements for credit extended by brokers and banks to finance new purchases and short sales of stock exchange securities. After having been at 50% since Feb. 1953, margin requirements on stock market credit were increased to 60%, effective Jan. 5, and from 60% to 70%, effective April 23. In testimony before the senate committee on banking and currency, the chairman of the board of governors stressed that the objectives of the federal reserve system in regulations concerning stock market credit were to permit adequate access to credit facilities for security markets to perform their basic economic functions and to prevent the use of stock market credit from becoming excessive.

It was stated that the responsibility of the board of governors did not relate to the price of stocks and that margin requirements are not and cannot be cure-alls for stock market excesses or abuses. (See also BANKING; CONSUMER CREDIT.)

(J. K. L.)

Federal Trade Commission.

The preservation of free and fair business competition in the United States is the function of the Federal Trade Commission. This is a bipartisan five-man commission appointed by the president and confirmed by the congress. It has quasi-judicial powers and is assisted by a staff of about 600, comprising principally lawyers, economists and statisticians. It administers the Federal Trade Commission act, the Clayton Antitrust act (which includes the Robinson-Patman and Anti-merger amendments), the Export Trade act, the Wool Products Labeling act, the Fur Products Labeling act and the Flammable Fabrics act. The FTC also has duties under the Lanham Trade Mark act.

The commission's work is devoted principally to correcting monopolistic and deceptive practices. It also plays a major role in guiding industry toward fair competition through trade practice conferences. These conferences adopt commission-approved

rules for proper competitive conduct.

Having completed a major reorganization of the commission begun in 1953, Chairman Edward F. Howrey resigned, and Pres. Dwight D. Eisenhower appointed John W. Gwynne to replace him as administrative head of the agency. The reorganization had succeeded in its major objectives of speeding the commission's case work and eliminating a backlog of old cases. It also had achieved increased compliance activity following a check of outstanding orders. By the year's end, more than a third of the 4,000 orders had been checked for current compliance.

The reorganized commission staff, with all investigative work centered in one bureau and all trial work in another, was able during fiscal 1955 to bring 36 antimonopoly complaints, an increase of nearly 30% over the ten-year average covering 1944 to 1953. Thirty cease and desist orders against monopolies were issued, an increase of 40% over the 1944-53 average. In the antideceptive field, the 125 complaints issued represented nearly a 50% increase and the 82 cease and desist orders a 9% increase over the average for 1944-53.

The commission's orders against illegal competitive activity ranged from those against individual merchants who misrepresented to the public the quality of their merchandise to prohibitions breaking up price-fixing conspiracies involving entire industries. These actions most frequently are initiated as a result of complaints from the public and from injured competitors of the predatory firm. They also can be requested by congress or undertaken on the commission's own initiative.

Outstanding actions during the fiscal year included two investigations—misrepresentation of health and accident insurance and the rising rate of corporate mergers. As a result of the insurance study, the FTC brought complaints against 31 companies charging that their advertising promised greater benefits to the insured than the policies actually offered.

Antimerger work increased in tempo with the naming of a task force to pursue the problem free of routine procedures. Screening of current mergers was well underway at the year's end, and two complaints had been issued by June, with others under study.

Among the other major cases undertaken were those alleging: price fixing by certain importers of twine and rope; restraint of trade by certain paint and wallpaper distributors charged with inducing manufacturers to confine sales to "recognized dealers"; price fixing by certain members of the Alaskan salmon canning industry; unlawful conspiracy by certain tobacco firms to limit warehousing in a tobacco trading centre; and exclusive dealing by eight major ice cream manufacturers doing a \$400,000,000-a-year business.

Orders to cease and desist were issued in a wide variety of cases such as those involving false claims for the merits of drugs and vitamins, household appliances, correspondence schools and flowering shrubs. A large group of cases brought against furriers and garment sellers failing to describe accurately the products they sold.

Significant during the year was the initiation of a service to advise and consult with small businessmen.

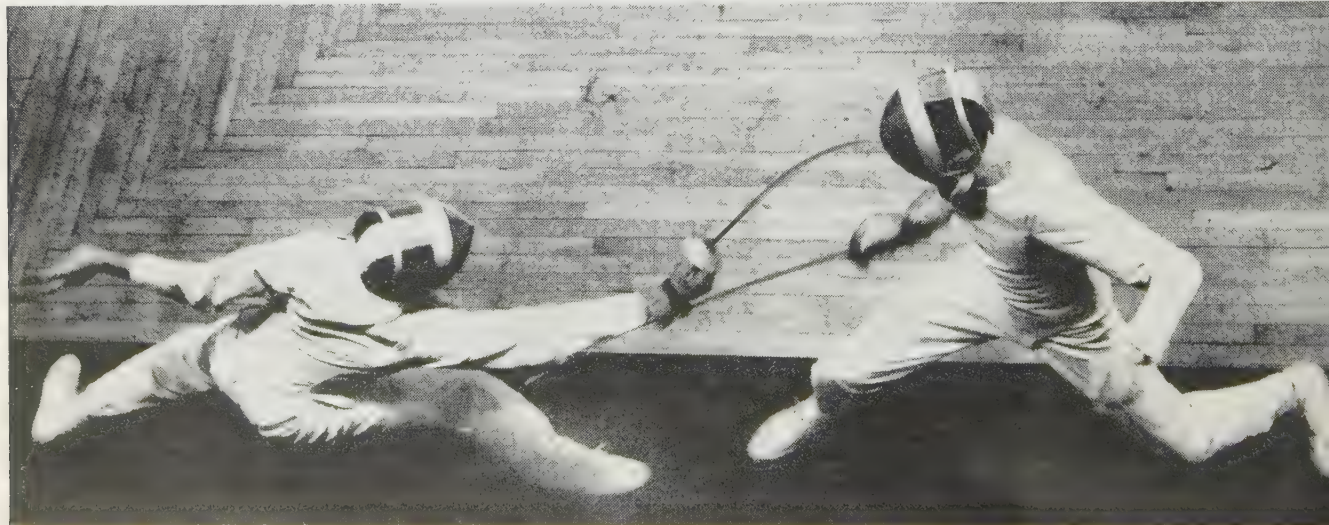
In addition to Chairman Gwynne, commission members were Lowell B. Mason and Sigurd Anderson, all Republicans; Robert T. Secrest and William C. Kern, Democrats. Kern was the first former staff member to become a commissioner in the FTC's 41-year history. (J. W. GE.)

Federated Malay States: see MALAYA, FEDERATION OF SINGAPORE.

Fencing. The 1955 fencing season in the United States climaxed with the national championships held in New York city, June 9-17. Albert Axelrod of the Salle Santelli, New York, won his first national foil crown. Former champion Daniel Bukantz of the Fencers club, New York city, and Silvio Giolito of the New York Athletic club were second and third. A new champion was also crowned in the *épée* when Abram Cohen of the Fencers club of New York defeated his clubmate Frank Bavuso in a fence-off for the title. The defending titleholder Sewell Schurtz, U.S. navy, was third. The sabre crown was won by a comparative newcomer, R. Richard Dyer of Salle Csizar, Philadelphia, Pa., who defeated Sol Gorlin of the Salle Santelli in a fence-off for the title. Jose R. de Capriles of the Fencers club was third. Maxine Mitchell of the Hollywood Athletic club was the only successful defending champion to make a clean sweep of the final round. A newcomer to the women's finals, Louise Knabb of the Salle Santelli, was second and her teammate Eve Siegel was third.

The foil team championship was won by the Fencers club of Salle Santelli second, and the New York Athletic club third. The Salle Santelli won the *épée* team championship, with a team of U.S. navy officers second and the Fencers club third. The sabre team championship was successfully defended by the Salle Santelli. The Fencers club was second and the Philadelphia division third. The Fencers club won the three-weapon team title with Salle Csizar second and the Salle Santelli third. The women's team was won by the Salle Santelli, Southern California division was second and Northern California division was third.

QUALIFYING MATCH of the 1955 Intercollegiate Fencing association championships, March 12, at New York city. Opponents were S. Schneider (left) Harvard university and F. Zechlin of the U.S. Naval academy



The midwest championships were held in Cleveland, O., May -8. The foil championship was won by Herman Velasco, Central Illinois division. Albert Wolff of Kentucky won the *épée* crown, the sabre title was won by James Campoli, Michigan, while Judy Goodrich of Michigan took the women's foil title.

The southwest championships were held at Fort Bliss, Tex., also in May. James Parker of the Gulf Coast division won the oil title; Arnold Mercado, Gulf Coast division, the *épée*; Bruce urch of Arizona won the sabre, and Waneen Wyrick of the Gulf Coast division took the women's championship.

The Pacific Coast championships were held in San Francisco, Calif. Gerard Biagini of the Olympic club won the foil individual title, the *épée* title was won by George Siebert of the cavaliers, Southern California division, and the sabre championship was won by Daniel De La O of the Olympic club. Maxine Mitchell successfully defended her women's title. The Olympic club took the foil team championship and the Los Angeles Athletic club the *épée* and sabre team. The women's team championship was won by the Southern California division.

(W. A. Dw.)

Fertilizers: see AGRICULTURE; CHEMISTRY; CO-OPERATIVES; TENNESSEE VALLEY AUTHORITY.

HA (Federal Housing Administration): see HOUSING.

iction: see AMERICAN LITERATURE; BOOK PUBLISHING AND BOOK SALES; CANADIAN LITERATURE; ENGLISH LITERATURE; FRENCH LITERATURE; GERMAN LITERATURE; ITALIAN LITERATURE; JEWISH LITERATURE; LATIN-AMERICAN LITERATURE; LITERARY PRIZES; RUSSIAN LITERATURE; SPANISH LITERATURE. **igs:** see FRUIT.

ji. Fiji is a British colony of 322 islands (106 inhabited) in the Pacific ocean. Total area: 7,040 sq.mi., including main islands Viti Levu (4,011 sq.mi.) and Vanua Levu (2,137 sq.mi.), and Rotuma dependency (18 sq.mi.), 400 mi. to north. pop.: (1946 census) 259,638; (June 1954 est.) 333,000 including Fijians 44%, Indians 48% and Europeans 2.6%. Religion: Fijians are Christian (80% Methodist); Indians, 88% Hindu and 12% Moslem. Capital: Suva, on Viti Levu, pop. (1946 census) 25,513. Governor in 1955, Sir Ronald Garvey.

The governor of Fiji is also governor of Pitcairn ex officio, and is responsible for the general exercise of British protection in Tonga (*q.v.*).

Pitcairn.—This is a British colony by settlement. Area: 2 sq.mi. Pop. (Dec. 1953 est.) 143, Anglo-Polynesians descended from "Bounty" mutineers. Dependencies: Oeno, Henderson and Phoenix islands (total area 17 sq.mi.). Religion: Seventh-Day Adventist. Chief magistrate in 1955, John Christian.

History.—Three important reports were published in Fiji during 1955: one by a commission of inquiry into methods of crime investigation; another on a soil survey of Viti Levu; and a third by the director of education making proposals for educational developments. The governor, under an amendment to the letters patent, was empowered to appoint a speaker for the legislative council.

The new buildings of the Fiji museum were opened in Suva botanical gardens. A yaws control project was carried out with assistance from the World Health organization. In January a new central nursing school was opened. (J. J. Ty.)

ne Arts: see ARCHITECTURE; DANCE; MUSIC; THEATRE.

Finland. An independent republic of northern Europe, Finland has an area of 130,119 sq.mi., including the Åland Islands. Pop. (1950 census) 4,029,803; (1955 est.) 4,232,000. Capital: Helsinki; pop. (1950 census) 369,380; (1954 est.) 396,343. Other cities (1954 estimates): Turku

(Åbo) 107,519; Tampere (Tammerfors) 107,577; Lahti 46,822. Language and nationality: 90% Finnish, 10% Swedish. Religion: Lutheran Christian. President in 1955: Juho K. Paasikivi. Prime Minister: Urho Kekkonen.

The Åland Islands, a Swedish-populated archipelago belonging to Finland, lie to the southwest at the mouth of the Gulf of Bothnia. Area: 581 sq.mi. Pop. (1950 census) 21,690. Chief town: Mariehamn; pop. 3,273.

History.—Urho Kekkonen returned to the premiership Oct. 20, 1954, but the tense and insecure balance of forces in Finnish politics continued to threaten the stability of the government. A crisis in December almost upset the new regime, and it was again endangered in March because of a strike of government employees for higher wages. But Kekkonen rode out these storms and others, and the approach of the presidential election, to be held in Jan. 1956, came to supersede other issues. Paasikivi was a possible choice to succeed himself, despite the fact that he would be 85 at the beginning of a new six-year term; he was probably the only man on whom a large majority of the people could unite. Kekkonen became the candidate of the Agrarian party, but strong opposition expressed itself against him as a person. Other candidates named were Karl A. Fagerholm by the Social Democrats; Ralf Toengren by the Swedish party; Eero Rydman by the Progressives; Sakari Tuomioja by the Conservatives and Freethinkers; and Eino Kilpi by the Socialist Union and the Communists.

When the U.S.S.R. defeated Finland in 1944 it took the Porkkala peninsula, much of it less than 20 mi. from Helsinki, as a naval base; the 50-yr. lease was confirmed by the treaty signed in Paris in 1947. The strip was about 20 mi. long and 4 to 10 mi. wide. Not only was it uncomfortable to have a foreign base on Finnish soil, but a main railway ran across the area, and windows had to be shuttered tightly on every train that passed through. In June 1955 the U.S.S.R. agreed to ease some of the restrictions, because nothing but birch forest could be seen anyway. In mid-September a delegation of Finns went to Moscow, the party including Paasikivi, Kekkonen, and Defense Minister Emil Skog. The Russians pleased the Finns and startled the world by announcing that they would yield their lease and return Porkkala to the Finns, withdrawing their forces within three months. The Finns agreed to extend for 20 years the treaty of friendship they had signed with the Russians in 1948. In Finland some bitterness arose because of the secrecy preceding the negotiations, and because of the failure to get frontier rectifications in the east.

This had been the only Soviet base on clearly foreign, non-satellite soil. Immediately after the signing of the agreement the Soviet representatives in the United Nations called upon the United States and the other western powers to match this gesture by abandonment of their bases on foreign territory. The western states showed no intention to equate Porkkala with the NATO (North Atlantic Treaty organization) bases in Europe, but the Russians made good propaganda out of their move.

Many of the smaller German plants which the Russians had taken over after the war proved unprofitable, and since 1953 were being sold. The Russians kept the larger plants and concentrated their interests in service industries. They granted the Finns a long term loan and agreed that if the Finns would build a refinery the U.S.S.R. would supply them with 98% of their petroleum needs. This practically froze out the western oil companies, whose business had already fallen off in four years from 70% to 4% of Finland's consumption. Among important orders from the U.S.S.R. was that for a 22,000-ton icebreaker to be built in Finland. For development of woodworking and electric power plants Finland borrowed \$12,000,000 from the International Bank for Reconstruction and Development. Ex-

ports showed an upward trend, and the economy of the country appeared more stable than in most of the period since the end of World War II. (F. D. S.)

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Education.—Schools (1953-54): primary 6,402, pupils 541,770, teachers 22,817; secondary 345, pupils 114,901; vocational 473, pupils 31,054, teachers 3,284; folk high schools, etc. (1952-53) 179, pupils 52,374, teachers 1,068. Teachers' training colleges (1953-54 primary) 14, students 2,456, teachers 201. Universities and graduate schools 15, students 15,355, professors, lecturers and other teachers 1,210.

Finance and Banking.—Monetary unit: markka, with an official selling rate of 231 markkaa to the U.S. dollar. Budget (1955 est.): revenue 224,000,000,000 mk.; expenditure 231,000,000,000 mk. Internal debt (Mar. 1955) 50,700,000,000 mk., external debt 61,600,000,000 mk. Currency circulation (Feb. 1955) 50,100,000,000 mk., (Oct. 1954) 48,400,000,000 mk. Bank deposits (Feb. 1955) 36,400,000,000 mk., (Oct. 1954) 36,300,000,000 mk. Gold and foreign exchange (Jan. 1955) U.S. \$243,900,000.

Foreign Trade (1954).—Imports 150,982,000,000 mk.; exports 156,542,000,000 mk. Main sources of imports: U.K. 18.8%; U.S.S.R. 17.8%; German Federal Republic 6.7%; Netherlands 6.5%; France 6.1%; United States 4.6%; Sweden 4.5%. Main destinations of exports: U.K. 22.5%; U.S.S.R. 21.5%; German Federal Republic 7.4%; United States 5.8%; France 4.7%; Netherlands 4.5%. Chief exports (1954): wood 40%; wood pulp 19%; paper 21%.

Transport and Communications.—Roads (1953): 63,460 km. Motor vehicles in use (1954): cars 62,000; commercial vehicles 50,800. Railways (1954): 5,046 km., of which state 4,859 km.; passenger-km. (1953) 2,029,000,000; freight, ton-km. (1954) 3,848,000,000. Navigable inland waterways (1953): 49,900 km. Merchant shipping vessels (Apr. 1955): 588; total tonnage 728,805. Air transport (1954): passenger-km. 94,507,000; freight, ton-km. 873,600. Telephones (Jan. 1954) 408,531. Licensed radio receivers (1953) 908,000.

Agriculture.—Main crops (metric tons, 1954): wheat 249,000; rye 137,000; barley 265,000; oats 830,000; beet sugar (raw) 38,000; potatoes (1953) 1,379,000. Livestock (Sept. 1954): cattle 1,885,000; sheep 908,000; pigs (June 1953) 434,365; horses (June 1953) 338,669; reindeer (1953) 151,523. Fisheries: (1953) 62,100 metric tons.

Industry.—Electricity production (1954) 5,642,000,000 kw.hr. Raw materials (metric tons, 1954): pig iron 74,610; crude steel 176,330; copper, smelter 27,820; pyrites (1953) 800,000. Forest products (cu.m., 1953): sawn softwood 4,055,000; sawn hardwood 60,000; plywood (1954) 345,000; (metric tons, 1954): cellulose 1,590,000; mechanical pulp 878,000; board and fibre 275,000; (1953) newsprint 448,000; paper other than newsprint 267,000.

Fires and Fire Losses. For the first time in five years, fire losses in the United States showed a decrease. The total fire loss estimate for 1954 was \$1,016,915,000. This was an approximate decrease of \$5,000,000 from the 1953 total. This favourable record continued into 1955. For the first eight months of 1955, losses totalled \$602,474,000, which represented a decrease of 0.2% from the first eight months of 1954.

Fire continued to take its toll of human life. The estimate was an annual loss of 11,000 lives. Of this group, 20% were under the age of 5.

The total number of fires during 1954 approximated 1,993,000. Of these 774,660 were building fires. This was an increase of 47,600 over 1953. Although the number of building losses increased, the dollar loss decreased 1.5%. The three leading causes of fires in buildings during 1954 were smoking and matches, electrical wiring and defective or overheated cooking and heating equipment. Incendiary fires resulting from arson attempts continued at the usual rate.

The giant fire of 1955 was the spectacular oil refinery fire at Whiting, Ind. The loss exceeded \$10,000,000. It is interesting to note that in 1954 there were 313 large-loss fires. This was an all-time high in the history of recorded fires. (See also DISASTERS; FORESTS.)

(L. J. A.)

Fisheries. The world's oceans, rivers, lakes and ponds yield an annual catch of nearly 60,000,000,000 lb. of fish, crustaceans, molluscs, etc., according to information released in 1955 by the Food and Agriculture Organization of the United Nations. Detailed data assembled by FAO for the year 1953 showed that about half the world catch was made by Asian countries and somewhat more than one-fourth by European nations. North American countries accounted for 13% of the

total and African countries 6%.

The world fish production was estimated to be more than 20% larger than in the period immediately prior to World War II, according to the FAO report. Herrings, sardines and chovies provided the largest single catch with a yield of 14,300,000,000 lb., 24% of the estimated total world catch of all species. In Europe the annual prewar catch of all species was about 12,100,000,000 lb. By 1953 it had grown to an estimated 18,000,000,000 lb., up 3,700,000,000 lb., or 31%. The North American catch of about 7,600,000,000 lb. was about 10% greater than in 1938. African countries were estimated to have produced about 1,000,000,000 lb. of fish in 1938; the catch in 1953 amounted to an estimated 3,400,000,000 lb., an increase of more than 225%. South American countries also showed a sharp gain from 600,000,000 lb. in 1938 to about 1,300,000,000 lb., an increase of 117%. Australia and New Zealand stepped up their fish production from a pre-World War II annual total of 150,000,000 lb. to 220,000,000 lb. Available figures for Asia do not show such remarkable increases, despite the great need for increased food in that area. However, Japan, the world's greatest fishing nation, caught more fish than ever before, 10,000,000,000 lb. in 1953, compared with 7,900,000,000 lb. in 1938.

The marketing of the catch varied widely in various parts of the world, because of differences in technological progress and distributive facilities. Of the estimated total world catch of about 60,000,000,000 lb., 41% was marketed fresh, 26% was cured and 15% was used for reduction into fish meal and oil. In Africa, however, only 11% of the catch was marketed fresh while 19% was canned and 58% was used for reduction. North America, distribution was much more even, 27% being marketed fresh, 23% used for reduction, 22% canned, 15% frozen, 11% cured and 2% used for other purposes. In Europe three processes accounted for most of the catch: 40% was marketed fresh, 25% was cured and 24% was used for reduction.

A new chapter in the history of fisheries was written during April and May 1955 when the first World Conference on Fisheries Conservation was held in Rome, Italy. Delegates from 60 nations and observers from 6 nations attended. General agreement was reached by the conference on the objectives of conservation; that conservation measures should be based on scientific and technical facts; on the types of research that should be included; and on the general principles upon which international conservation conventions should be based. It was generally agreed that most of the international conservation problems of fishery resources not covered by existing conventions could be handled by international agreement through use of established types of conventions, provided that nations fishing the same resources accept the responsibility of co-operating with each other in research and, where necessary, in the regulation of these resources.

Following the World Conference on Fisheries Conservation the International Law commission at Geneva, Switz., spent several weeks considering the problem of the breadth of territorial waters and related topics. The subject was discussed under the headings, "Regime of the High Seas" and "Regime of the Territorial Sea." These are matters of extreme importance, since there is wide divergence of opinion among nations with respect to the extent of territorial jurisdiction over the fishery resources. Some nations claim that the limit of territorial waters is 3 miles while others claim jurisdiction up to 200 miles. Articles agreed upon by the commission were submitted to member nations for comment and observations preparatory to submission to the general assembly of the United Nations.

A major problem of the fishing industry is the violent fluctuation that occurs in the supply of certain fish. Recent instances of these fluctuations include the almost complete disappearance

herring from the north coast of Iceland and the decline in herring production on the west coast of North America from an average of more than 1,000,000,000 lb. annually in the years 1934 to 1944 to less than 10,000,000 lb. in 1953. In an effort to understand and foresee these fluctuations, the United States Fish and Wildlife Service, at the request of the Pacific Science Association, inaugurated in 1955 a study of established systems of meteorological observations in the eastern, northern and tropical Pacific ocean. The work was to be of a pioneering nature in three fields of science—fishery biology, oceanography and meteorology. The ultimate purpose of the project would be to discover the natural laws governing fluctuations in abundance of commercial fisheries. Recent advances in oceanography and meteorology suggest that the abundance of fish may be greatly affected by large-scale changes in the weather pattern. If the study of ocean-wide events, as they may be related to worldwide weather fluctuations, should disclose the causes of major fishery fluctuations, then it might be possible to predict future fluctuations.

Fishery research in the United States was expanded materially in 1955 as a result of passage of the Saltonstall-Kennedy Act in 1954. This act provided that 30% of the customs duties collected on imports of fishery products into the United States during the period from July 1, 1954, to June 30, 1957, be made available to the fish and wildlife service for use in promoting trade in domestically produced fishery products. Expenditures in any one year may not exceed \$3,000,000. New and expanded programs undertaken with these funds during 1955 included exploratory fishing and gear development; technological research; biological research; educational, market development and economic projects; and the collection and publication of fishery statistics.

Norway's cod fishery in the Lofoten waters was disappointing again in 1955, yielding slightly less than 50,000 short tons, about the same as the 1954 record low. For many years the annual catch of cod in those waters amounted to about 80,000 tons. The 1955 Norwegian winter herring fishery, one of the world's oldest fisheries, yielded a catch of more than 2,000,000,000 lb., only 300,000,000 lb. less than the record 1954 production. The Norwegian brisling sardine catch, during the first half of 1955, totalled approximately 69,200,000 lb., about one-half the catch for the same period in 1954. The 1955 catch for the first six months was the poorest in years. Canned brisling sardines are an important dollar-earning item for Norway. The small catch made it difficult to meet the demand for these fish in the United States, where an extensive advertising campaign had been under way since 1952.

Reduced packs of sardines were also reported from the east coast of North America. The Canadian pack, to mid-Aug. 1955, totalled only 674,000 cases (100 $\frac{1}{4}$ -drawn cans of 3 $\frac{1}{4}$ oz.) compared with 2,223,000 cases for the same period in 1954. Production in the United States amounted to 717,000 cases up to Aug. 20, 1955, compared with 2,285,000 cases for the same period in 1954.

The Japanese high-seas salmon catch increased spectacularly in 1955. The salmon fleets engaging in this fishery (14 mother ships, each with about 25 catcher boats) caught 57,758,000 lb. of salmon up to Aug. 5, shortly before the season ended. In 1954 the high-seas salmon catch amounted to 20,494,000 salmon. (See also MARINE BIOLOGY.)

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Shing: see ANGLING.

Flax: see LINEN AND FLAX.



FLOODWATERS at Putnam, Conn., Aug. 20, 1955. Burning building in centre was a magnesium plant which caught fire after flood waters hit the boiler area

Floods and Flood Control. The most destructive flood that ever occurred in the United States in terms of physical damage caused was experienced in 1955. It occurred in August in six northeastern states: Connecticut, Massachusetts, Rhode Island, New York, New Jersey and Pennsylvania. It caused a reported 191 deaths. Preliminary estimates of direct property damage totalled \$1,600,000,000. These estimates, made by the army's corps of engineers on the basis of state and local information, gave the following breakdown by states: Connecticut, \$900,000,000; Massachusetts, \$400,000,000; Rhode Island, \$170,000,000; Pennsylvania, \$150,000,000; New Jersey, \$41,000,000; and New York, \$11,000,000. These estimates were subject to revision upon receipt of more complete information. It was pointed out that the estimates were for direct property damage only and did not include other damages such as loss of industrial production, loss of employment and transportation delays.

This great amount of damage, concentrated in a relatively small and highly developed area, was caused by continuous, heavy rains associated with Hurricane "Diane" as it moved up the Atlantic coast. Less than a week earlier the same general area had suffered heavy precipitation as Hurricane "Connie" moved northward. The heavy rains accompanying Hurricane "Connie" soaked the ground and brought many streams to medium-high stages. When Hurricane "Diane" struck, concentrating its record rainfall into two days, the combination of adverse conditions caused an unprecedented rate of runoff and high velocity flows. The result was a flood with terrific erosive effect, which left total destruction in its wake rather than normal high-water damage.

National attention was again directed to the same six-state area in October, when heavy rains fell over most of the area stricken by Hurricane "Diane." Connecticut was again the worst sufferer.

Hurricane "Diane" floods were followed by prompt and wide-

spread disaster recovery activity on the part of federal, state and local authorities, under the general leadership of the Federal Civil Defense administration. Many agencies were enlisted in the effort to put the stricken communities back in operation as soon as possible. The corps of engineers, in addition to its usual responsibilities for flood relief under its flood control functions, was given the mission of discharging Federal Civil Defense administration responsibilities with respect to removal of debris, health and safety hazards, and temporary restoration of public facilities.

Within a matter of hours, the army engineers mobilized key military and civilian personnel from the corps of engineers' nation-wide organization and deployed them to key points in the stricken northeastern area, to organize and expedite action in the disaster recovery program, supplementing corps of engineers personnel regularly stationed in the area. Bailey bridges, centrifugal pumps, generators and other equipment were rushed to the area.

A further phase of the approach by the corps of engineers to the flood problem called for a vigorous prosecution of flood control improvements authorized by congress which were needed to improve permanent flood protection. The entire program of authorized federal flood control works in New England, which bore the brunt of the "Diane" damage, had a total estimated cost of about \$331,000,000. Appropriations up to fiscal year 1956 totalled \$72,000,000. The location of the "Diane" flooding in southern New England was such that many projects that were completed had no effect upon it. However, the dams and other structures which had been completed within the area affected by the flood were 100% effective. The entire authorized program would not have prevented the floods but would have greatly reduced the damages. Consequently, it was felt that the presently authorized flood control plans for New England rivers should be completed as soon as possible.

Still another phase of the corps of engineers approach to the problem contemplated a review of flood control plans to ascertain what projects and measures could be devised to supplement presently authorized projects. The unprecedented nature of the 1955 storm demanded a most thorough review to ensure that all possibilities of protection and damage reduction were considered.

Before Hurricane "Diane" struck, the corps of engineers had been given the task of collaborating in a study of the behaviour of hurricanes and to determine possible means of preventing or minimizing loss of life and damage to property resulting from them. The study, authorized by congress following the disastrous Hurricane "Hazel" of 1954, was being made in co-operation with the weather bureau and other agencies concerned. The corps of engineers planned to prosecute this study vigorously to the maximum extent permitted by appropriated funds. (See also AGRICULTURE.) (S. D. S.)

Florida. The extreme southeastern state of the United States, Florida was admitted to the union in 1845 as the 27th state. It is called the "Sunshine state" and sometimes the "Peninsula state." Area: 58,560 sq.mi., of which 4,208 sq.mi. is water surface. Population: (1950 U.S. census): 2,771,305 of whom 1,813,890 were urban dwellers and 957,415 were rural; 2,166,047 were white and 605,258 were nonwhite. The 15 cities of more than 25,000 people in 1950 were: Miami 249,276; Jacksonville 204,517; Tampa 124,681; St. Petersburg 96,738; Orlando 52,367; Miami Beach 46,282; Pensacola 43,479; West Palm Beach 43,162; Fort Lauderdale 36,328; Lakeland 30,851; Daytona Beach 30,187; Tallahassee (the capital) 27,237; Gainesville 26,861; Key West 26,433; Panama City 25,814. On July 1, 1955, the state population was estimated at 3,364,000.

History.—The state elective administrative officers in 19 whose terms were to expire in Jan. 1957 were Leroy Collins governor; R. A. Gray, secretary of state; Richard W. Erwin attorney general; C. M. Gay, comptroller (resigned April 1955, and Ray E. Green was appointed to complete the term office); J. Edwin Larson, state treasurer; Thomas D. Bailey superintendent of public instruction; Nathan Mayo, commissioner of agriculture.

The state legislature in 1955 proposed eleven amendments to the state constitution to be voted on at the general election Nov. 6, 1956. In brief, these were as follows: (1) revising Article V relating to the judicial department, the most important change being the establishment of district courts of appeal; (2) providing for home rule in Dade county; (3) abolishing the court of record in Escombia county and vesting all its jurisdiction in the circuit court of that county; (4) provisions relating to regular and extra sessions of the legislature whereby members of the legislature may extend the regular session beyond the 60 days' period, and providing also for extra sessions called by members of the legislature; (5) relating to apportionment of the senate and house of representatives (the 1955 legislature was called into extra session by the governor to consider reapportionment of the legislature, but a deadlock prevented any action); (6) providing for two judges of the criminal court of record in Duval county; (7) abolishing the office of county special tax school district trustees, and transferring their duties to the county board of public instruction; (8) providing for the appointment of the county superintendent of schools in Duval, Sarasota, Dade and Pinellas counties by the county board of public instruction; (9) abolishing the office of county solicitor in Dade county, and transferring the duties to the state attorney of the judicial district in which Dade county is situated; (10) relating to fees and compensations of county officers of Escombia county; (11) authorizing the legislature to establish civil service systems and boards for municipal, county and state employees, and for municipal, county and state officers not elected by the people or appointed by the governor.

Other important acts of the 1955 legislature included the creation of a Florida Constitution Advisory commission to report to the 1957 legislature; the appropriation of \$8,600,000 for the construction of a teaching hospital in conjunction with the medical and nursing schools at the University of Florida. Apropos of the U.S. supreme court decisions relating to public school racial segregation, the legislature enacted a statute whereby county boards of public instruction are authorized and directed to provide for the enrolment in the public schools of children qualified for admission and who apply for enrolment; the creation of a citizens tax council to study the state's tax structure and submit its report for the 1957 legislature; creation of a community college council to study and make recommendations for the establishment of community colleges in anticipation of a huge increase of college students; an act for the establishment of the Northeast Florida mental hospital; an act for the establishment of the South Florida Industrial School for Boys; an act to appropriate \$4,196,652 for capital outlay at the four junior colleges of the state; an act providing for dental, medical and nursing scholarships; the creation of a council on mental health in Florida; an act to create a merit system of personnel administration and to establish a state personnel board, and a merit system council under the personnel board; an act for the revision of the state's retirement systems, and creating a new plan of retirement for teachers; an act to provide for automobile drivers' education in the public secondary schools; an act to establish the Northeast Tuberculosis sanatorium in Union county.

Education.—Enrolment in the public schools for the year 1954-5

ades 1 through 12 was as follows: white, 544,562; Negro, 153,214; total, 697,776. Kindergartens: white, 3,446; Negro, 262; total, 3,708. Junior colleges (grades 13 and 14): white, 2,325; Negro, 191; total, 2,516. The total enrolment in the public schools of Florida in 1954-55 was 704,000. There were 1,218 elementary and 465 secondary public schools, 61 kindergartens and 5 junior colleges in the state, of which there were 807 white and 411 Negro elementary schools, 320 white and 15 Negro secondary schools, 57 white and 4 Negro kindergartens and 4 white and 1 Negro junior colleges. These schools had instructional staffs exclusive of 203 supervisors) of 24,195 teachers and 1,034 principals, of whom 18,773 teachers and 790 principals were employed in schools for whites, and 5,422 teachers and 244 principals were employed in schools for Negroes.

Social Insurance and Assistance, Public Welfare and Related Programs.—Florida disbursed for state welfare through the state welfare board \$56,277,360.9 in 1954-55. From grants by the federal government the state received in 1954-55 for old-age assistance \$25,554,238.56; dependent children \$11,291,372.55; aid to the blind \$1,149,883.00; total \$37,995,441.11. Disbursements for old-age assistance were \$38,154,495.56; dependent children \$13,461,328.00; and for the blind \$1,686,150.50; total \$53,301,974.06. Administrative and other welfare services amounted to \$3,025,762.03 which included \$1,417,280 federal funds. The total addition to the unemployment compensation fund was \$10,839,126.14 while the gross unemployment benefit payments were \$11,406,947.32 with net benefit payments of \$11,333,331.

The parole commission had an appropriation for 1955-56 of \$301,500. The state supports tuberculosis hospitals at Orlando, Tampa, Tallahassee and Lantana, and the appropriation for the Tuberculosis board for 1955-56 amounted to \$4,800,000. The Tuberculosis board was authorized by the 1955 legislature to establish the Northeast Tuberculosis natorium in union county. The state also supports hospitals for the sane at Chattahoochee and Arcadia, the Florida farm colony for the feeble-minded at Gainesville, and the Florida School for the Deaf and Blind at St. Augustine. The appropriations for these institutions for 1955-56 were \$8,075,711, \$2,135,131 and \$950,502 respectively for operation; \$1,518,200, \$2,250,000 and \$860,000 respectively for capital outlay.

The population of the state prisons and other institutions as of Aug. 1, 1955, was as follows: state prison at Raiford 2,250; Glades state prison farm at Belle Glade, 318; Industrial school for boys at Marianna, 19; Industrial school for white girls at Ocala, 123; Industrial school for Negro girls at Forest Hill, 126; the Apalachee Correctional institution at Chattahoochee, 224; the state hospital at Chattahoochee and Arcadia, 104; the farm colony at Gainesville, 1,012.

Communications.—The total highway and street mileage in the state at the end of the year 1954 was 55,050 mi., of which 25,132 mi. were paved and 4,008 mi. were constructed of gravel or stone. Disbursements for the calendar year 1954 were \$73,167,496.86 for construction and \$14,399,756.64 for maintenance. The state road department's budget for the year 1955 amounted to \$169,202,940 for construction and \$10,323,391 for maintenance. Florida had in 1955 approximately 5,000 mi. of railroad exclusive of yard tracks.

Banking and Finance.—The total revenue receipts for the state of Florida for the fiscal year ending June 30, 1955, amounted to \$418,330,113.82.

Table I.—Principal Crops of Florida

Crop	Indicated 1955	1954	Average 1944-53
Oranges, bu.	10,952,000	9,200,000	7,966,000
Apples, bu.	960,000	1,080,000	665,000
Pears, tons	93,000	84,000	63,000
Peaches, lb.	34,528,000	32,941,000	24,748,000
Almonds, lb.	23,000	25,000	—
Walnuts, Irish, bu.	10,178,000	9,786,000	5,698,000
Almonds, sweet, bu.	650,000	638,000	767,000
Almonds, lb.	63,800,000	44,550,000	60,206,000
Sugar cane, short tons	1,191,000	1,281,000	1,163,000
Oranges, boxes	91,000,000	88,400,000	63,090,000
Apples, boxes	4,600,000	5,100,000	4,550,000
Peaches, boxes	38,000,000	34,800,000	31,440,000

Source: U.S. Department of Agriculture.

Table II.—Principal Industries of Florida

Types of industry	All employees 1953	Salaries and wages 1953 (in 000)	Value added by manufacture 1953 (in 000)	Value added by manufacture 1952 (in 000)
Food and kindred products	26,246	\$74,625	\$204,440	\$116,734
Tobacco manufactures	8,921	19,736	33,696	36,669
Textile and allied products	10,800	42,557	120,282	107,081
Printing and publishing industries	—	—	—	38,964
Chemical and allied products	5,700	18,680	41,582	—
Transportation and auxiliary	965	4,528	—	—

*Withheld because the estimate did not meet publication standards, either on the basis of the associated standard error of estimate or on the basis of a consistency review.

Source: U.S. Department of Commerce, Annual Survey of Manufactures, 1953.

Table III.—Mineral Production of Florida

Rate in Mineral Production of Mines (In short tons, except as noted)				
	1952		1953	
	Quantity	Value	Quantity	Value
Coal	198,000	\$ 2,072,000	258,000	\$ 2,952,000
Petroleum (bbl.)	591,000	—	543,000	1,030,000
Phosphate rock	1,031,000	54,086,000	1,045,000	56,525,000
Sand and gravel	4,155,000	3,848,000	3,731,000	3,199,000
Clay	7,837,000	9,578,000	9,429,000	11,309,000
Other minerals	—	13,294,000	—	17,321,000
Total	—	\$82,878,000	—	\$92,336,000

*Value included with other minerals.

Included in these sums were \$80,331,123.63 from gasoline tax, \$74,026,996.80 from sales and use tax, \$32,451,756.36 from beverage tax, \$20,252,629.36 from cigarette tax, \$32,709,203.55 from motor vehicle licences. The state expended \$39,803,282.13 for education in the fiscal year ending June 30, 1955. The outstanding revenue bonds as of June 30, 1955, were: for the Florida State Improvement commission \$72,909,500 and for the board of control which supervises institutions of higher education \$13,010,000. On June 30, 1955, there was a total balance in the state treasury of \$127,547,726.45 with outstanding warrants of \$20,243,463.87. On June 30, 1955, there were within the state 79 active national banks with total deposits amounting to \$2,031,089,000, and 154 state banks and trust companies with deposits of \$1,064,000,000. There were also 8 industrial banks with deposits of \$10,844,006. These represented total deposits of \$3,105,933,006, a gain of \$387,817,414.71 in the fiscal year.

Agriculture.—On Jan. 1, 1955, the livestock resources of the state were as follows: 1,376,000 beef cattle and calves; 167,000 milk cows; 519,000 swine; 3,000 sheep; 22,000 horses; 20,000 mules.

The total income from the sale of agricultural commodities for the year 1954 was \$546,963,000. Income from the sale of cattle and hogs amounted to \$53,510,000; poultry and eggs \$29,696,000; dairy products \$41,624,000; truck crops approximately \$129,466,000; citrus \$188,580,000; greenhouse and nursery products \$23,802,000; and from field crops: tobacco \$24,900,000; potatoes \$14,619,000; corn \$1,144,000; sugar cane for syrup \$987,000; sugar cane for sugar \$11,138,000; cotton \$4,841,000; and peanuts \$4,301,000.

Manufacturing and Business.—Income paid to the people of Florida in 1953 amounted to \$4,586,000,000. The number of people employed in manufacturing plants in Florida as of Jan. 1955 was 138,800 according to a report of the Florida Industrial commission. On April 1, 1955, there were 300,000 telephones in service in Florida as compared with 250,000 in 1953 and 100,000 in 1946.

(A. N. P.)

Mineral Production.—Table III shows the tonnage and value of Florida minerals in 1952 and 1953 (preliminary) whose value was \$100,000 or more. In 1953, Florida was first among the states in the production of phosphate rock and zircon, and second in ilmenite. It is the only state that produces rutile. It ranked 27th in the value of mineral output in 1953, with 0.64% of the U.S. total.

Flour: see BAKING INDUSTRY; WHEAT.

Folsom, Marion Bayard (1893—), U.S. government official and business executive, was born on Nov. 23 at McRae, Ga. He studied at the University of Georgia, Athens, and at Harvard university and worked for the Eastman Kodak company at Rochester, N.Y., of which he became treasurer and member of the board of directors. During World War I he was an army quartermaster officer with the American Expeditionary forces. Pres. Franklin D. Roosevelt appointed Folsom a member of his advisory council on economic security (1934-35) and of the federal advisory council on social security (1937-38). During World War II he held several federal and regional advisory appointments dealing with problems of manpower and employment.

Under Pres. Dwight D. Eisenhower Folsom became undersecretary of the treasury in 1953. Following the resignation of Oveta Culp Hobby as secretary of health, education and welfare in 1955, Eisenhower appointed him to that cabinet post.

Food and Agriculture Organization: see AGRICULTURE.

Food and Drug Administration: see DRUG ADMINISTRATION, U.S.

Food Supply of the World: see AGRICULTURE.

Football. The rules committee of the National Collegiate Athletic association, meeting in New York, N.Y., in Jan. 1955, made several minor changes in regulations for the intercollegiate sport. A more liberal substitution rule, permitting a man removed from the line-up after starting any quarter to re-enter the game once during that quarter, was adopted. In 1954, players leaving a contest were not allowed to return in the same period except during the last four minutes of the second and fourth quarters. The chief benefit of the change is that it allows the removal of an injured player for examination without his being lost for an entire period. Another change permits a man kneeling to hold the ball on placement attempts to kick, pass or advance the ball. Under the former regulation he was limited to holding the ball for the kicker. A third innovation makes any lineman an eligible forward pass receiver only



MAX BOYDSTON, college All-Star end, snaring a long pass as he is tackled by Tom Jones of the Cleveland Browns in the first quarter of the game, Aug. 12, 1955. The All-Stars upset the favoured professional champions, 30-27

when he is on one end of the scrimmage line when the play starts and he is not outflanked by a teammate. The so-called "hideout" play, in which a man would attempt to hide near a sideline and take a pass, was virtually eliminated by a ruling that all players must be within 15 yd. of the ball when it is spotted and ready for play.

Roundup of 1954 Collegiate Season.—Ohio State, with nine victories in all, gained the western conference (Big Ten) laurels for the 1954 season and earned the right to play in the Rose Bowl. U.C.L.A. won nine games and clinched the Pacific Coast conference crown when it routed Southern California, 34-0, before a crowd of 102,548 persons. However, having played in the previous Rose Bowl game, U.C.L.A. was ineligible to represent its group in the 1955 battle and the defeated Trojans were selected.

Oklahoma, perennial Big Seven champion, won 10 decisions and extended its streak to 19. Having played in the Orange Bowl Jan. 1, 1954, Oklahoma could not represent the Big Seven a second straight year and Nebraska got the nod. Yale and Cornell shared the Ivy league laurels. Other leading conference champions were Mississippi, Southeastern; Arkansas, Southwest; Wichita, Missouri Valley; Denver, Skyline; Montana State, Rocky Mountain; Duke, Atlantic Coast; West Virginia, Southern; Texas Tech, Border; San Francisco State, Far Western; Prairie View, Southwestern.

Notre Dame, in its first season under Coach Terry Brennan, lost only to Purdue, 27-14, early in the campaign. Navy took seven out of nine games and won the Lambert trophy, symbol of the unofficial Eastern crown. The Middies climaxed their drive with a 27-20 triumph over Army before more than 100,000 at Philadelphia's Municipal stadium on Nov. 27, 1954. Harvard won the Big Three title for the first time since 1941 when it upset favoured Yale, 13-9. The South's All-Stars beat the North, 20-17, in the Shriners' benefit contest at Miami, Fla., on Dec. 25, 1954, and the Blues turned back the Grays, 14-7, at Montgomery, Ala.

Navy, playing in its first bowl game, provided one of the features of the Jan. 1 (1955) battles when it routed Mississippi, 21-0, before 82,000 in the New Orleans Sugar Bowl. Ohio State rolled over Southern California, 20-7, before 89,191 in Pasadena's rain-soaked Rose Bowl. Other New Year's day contests resulted as follows: Georgia Tech 14, Arkansas 6 (Cotton);

Duke 34, Nebraska 7 (Orange); Texas Western 47, Florida State 20 (Sun); Skyline All-Stars 20, Border All-Stars (Salad); U.S. Air Force 21, Marines 14 (Rice); Fort Jackson 26, Shaw Air Force Base 21 (Palmetto); Fort Ord 36, Fort Hood 0 (Shrimp). The East's All-Stars triumphed over the West, 13-12, in the thirteenth annual Shrine benefit contest at San Francisco. The game produced record net profits of \$240,300. The South beat the North, 12-6, in the sixth senior bowl battle at Mobile, Ala., on Jan. 8, and a team of U.S. all-stars halted Hawaiian all-stars, 33-13, in the Hula Bowl at Honolulu on Jan. 10.

1955 College Campaign.—Unbeaten Oklahoma was named No. 1 team of the nation in the final poll of writers and broadcasters by the Associated Press and thus won the Father J. Huether O'Donnell trophy, symbol of the championship. The Sooners scored 10 straight victories in 1955 to extend their winning streak through 29 games. Michigan State, with an 8-1 record, ranked second and Maryland, with 10-0, was third. Others in the first ten were U.C.L.A. (9-1); Ohio State (7-2); Texas Christian (9-1); Georgia Tech (8-1-1); Auburn (8-1-1); Notre Dame (8-2); and Mississippi (9-1). Ohio State retained the Big Ten championship, but Michigan State was selected for the Rose Bowl trip. Michigan State furnished one of the season's upsets by routing Notre Dame, 21-7. Michigan State's only loss in nine starts was to Michigan, 14-7. Maryland, with 10 triumphs in a row, extended its winning streak through 15 contests. U.C.L.A., the Pacific Coast conference champion, lost only to Maryland, 7-0. Navy, headed for Eastern honours and a bowl bid, was upset by its service rival Army, 14-6, at Philadelphia on Nov. 26. A new service academy made its gridiron debut Oct. 8 when the United States Air Force Academy freshmen turned back the Denver university freshmen, 34-18, at Denver. Among the group champions of the year were the following: Oklahoma, Big Seven; Princeton, Ivy; West Virginia, Southeastern; Rhode Island, Yankee; Mississippi, Southeastern; Coe, Midwest; Texas Christian, Southwest; Texas Tech, Border; Idaho State, Rocky Mountain; Missouri Valley, Missouri Valley Intercollegiate Athletic association; Colorado A.&M., Skyline; Miami (Oxford, O.), Mid-American; Detroit and Wichita (tie), Midwestern; Missouri Valley Conference.

The college All-Stars furnished a pre-season upset when they conquered the Cleveland Browns, 1954 champions of the National league, by 30-27 before a crowd of 75,000 at Soldier Field in Chicago, in August. The victors' 30 points was a record for college players in the series.

Hall of Fame.—Sixteen players and five coaches were elected

the sport's Hall of Fame in 1955. Coaches chosen were Wallace Wade, Matty Bell, Bernie Bierman, E. N. Robinson and George E. Little. Players voted in were Cliff Battles, West Virginia Wesleyan, halfback; Paul Des Jardien, Chicago, centre; William (Beattie) Feathers, Tennessee, halfback; A. R. Flowers, Georgia Tech, halfback; Clinton Frank, Yale, quarterback; Bob Rayson, Stanford, fullback; John Kilpatrick, Yale, end; Leroy Mercer, Pennsylvania, fullback; David O'Brien, Texas Christian, quarterback; Elmer Oliphant, Army, halfback; Clarence (Ace) Parker, Duke, back; David Shreiner, Wisconsin, end; Fred Wootton, Alabama, tackle; Harry Smith, Southern California, guard; Clarence Spears, Dartmouth, guard; Alex Wojciechowicz, North Carolina, centre.

Lehigh turned back Rutgers, 21-14, in the sixth annual Hall of Fame game played at Rutgers stadium in New Brunswick, N.J., Oct. 22, 1955. It marked the fifty-second meeting of these Fiddle Three rivals.

Professional Football.—Cleveland's Browns furnished the major surprise of the 1954 campaign in the National league by defeating the favoured Detroit Lions, defending champions, 56-10, in the title play-off at Cleveland on Dec. 26, 1954. Otto Graham passed for three touchdowns, pitched out for another and tallied three himself as a crowd of 43,837 looked on. Early in 1955, U.S. teams moved to obtain agreements with Canadian clubs to end the "raids" on playing material. On Feb. 24, the Washington Redskins and Calgary Stampeders signed a pact, and on April 3 the Western Interprovincial Football Union of Canada amended its bylaws to prevent any of its clubs from signing any player under contract or option in the National Football league. On April 30, a federal court decree awarded a \$100,000 judgment to the Chicago Bears against the Hamilton (Ont.) Tiger-Cats in a player-raid case. The suit was settled out of court. As the National league teams neared the end of their 1955 schedules Cleveland was leading the Eastern conference, with Washington still in the running, while Los Angeles, the Chicago Bears, Baltimore and Green Bay remained in a tight race for Western conference honours.

Canadian Football.—Edmonton's Eskimos retained the Grey Cup, symbolic of professional supremacy in Canada, by defeating the Montreal Alouettes, 34-19, on Nov. 26, 1955. A record play-off crowd of 39,417 gathered in the Empire stadium at Vancouver, B.C., saw Edmonton become the first Western team to win the cup final in two successive seasons. Edmonton had captured the cup in 1954 by subduing the favoured Alouettes, 25-21, at Toronto on Nov. 27. The University of Toronto was the intercollegiate senior title winner of 1954. Proctor academy at Andover, N.H., defeated Westmount High of Montreal, 7-5, in their seventh annual meeting at Montreal in 1955. The victors gained a 7-0 lead in the first half, played under U.S. rules. The second half was governed by Canadian regulations. (T. V. H.)

Great Britain, Commonwealth and Europe.—*Association football.*—The world cup competitions of 1950 and 1954 and several international matches in this period showed how far behind the vastly improved standard now set by the best European and South American sides the British national teams had fallen and in the 1954-55 season great efforts were to be made to remedy matters. All went well up to a point: Ireland, Wales, the German side badly weakened by illness, and Scotland were beaten, Scotland indeed losing at Wembley for the first time since 1934. But England's summer tour against France, Spain and Portugal was disastrous, bringing defeats in Paris and Porto and a draw in Madrid.

It was generally agreed that most modern British professional footballers did not work as hard or as enthusiastically as many foreigners, and this was borne out by the poor standard of many football league games. The advent of Eurovision, moreover,

enabled many to see the best continental football. Total attendances at Football league games fell by 2,000,000 as patrons could sit at home and watch sports on television and the lowest charge for admission was increased from threepence to two shillings. But in continental countries crowds increased and many huge stadiums were under construction; Spain now had three grounds holding more than 100,000 spectators.

In the English home program Manchester City's combined attacking method proved successful, for although they lost 1-3 to Newcastle United, 1951 and 1952 cup final winners, in the league they finished seventh, having in recent years been in danger of relegation. Chelsea celebrated its 50th season by winning the Football league title for the first time and also the competitions in which their Reserves, A team, and Juniors competed.

Rugby Union.—The season was overshadowed by two coming tours, that of the British Isles in South Africa in the summer of 1955 and that of South Africa in New Zealand in 1956. Both British and New Zealanders were much divided in their opinions as to how they could beat South Africa. The British after the home internationals decided to pick a dangerous and attacking back division and take the best available forwards, mostly Welsh and Irish, from some rather moderate packs.

The British back division, largely based on the English one, played beautifully in every international game at first, but failed to ram its advantage home. Wales had to win at Paris after a defeat in Edinburgh to tie with France for the unofficial championship. France day in and day out had the best side of the five countries. Scotland had a most welcome revival, beating Ireland for the first time in 20 years, and almost held England at Twickenham. Ireland had a disappointingly erratic side.

Rugby League.—When Great Britain, France, Australia and New Zealand competed in France in November for the first world cup, the matches were conducted in an excellent spirit. A young and largely new British team made up for the loss of the rubber in Australia by beating Australia and New Zealand, drawing with France, and then beating France in the play-off. The English professional clubs mostly had a poor season financially and much poor football again was seen in Northern league games. Warrington, the holders, were as good as in the previous year after a poor start and beat Oldham in the final. B. Bevan, their great Australian wing, brought his total of tries to more than 500, a record. Oldham had no such outstanding individual but they achieved much by good teamwork and were a trifle unlucky not to win a single trophy. (For U.S. association football see SOCCER.) (L.A. M.)

Ford Foundation: see SOCIETIES AND ASSOCIATIONS, U.S.

Foreign Aid Programs, U.S. The year 1955 marked the completion of ten years of postwar foreign aid by the United States government. Having had bipartisan support during most of its history, the policy of granting substantial foreign aid was continued by the Republican administration that came to power in 1952, and by late 1955 seemed to have established itself as a continuing part of U.S. defense and foreign policy.

Tables I and II summarize U.S. foreign aid over the decade, showing the shift since the Korean war. The figures cover all forms of foreign aid, including not only the major sums provided through the Economic Cooperation administration and its successor agencies, but also such items as the large recovery loans provided in the immediate postwar years, lend-lease settlement credits, relief shipments, loans by the Export-Import bank, and contributions to aid through international agencies, including capital subscribed to the International Monetary fund and the International Bank for Reconstruction and Develop-

Table I.—Foreign Grants and Credits of the
United States Government, 1946–1955
(Billions of dollars; fiscal years, ending June 30)

	Postwar Decade 1946–1955	Pre-Korea 1946–1950	Post-Korea 1951–1955	1954	1955
Total aid	51.3	26.3	25.1	5.2	4.5
Net grants	40.3	17.0	23.4	4.1	4.5
Net credits	11.0	9.3	1.7	1.1	–0.02
Western Europe and dependent areas					
Total aid	33.4	17.9	15.5	3.0	2.4
Net grants	26.7	10.8	15.9	3.2	2.5
Net credits	6.7	7.1	–.4	–.2	–.1
Near East and Africa					
Total aid	4.3	1.4	3.0	.7	.6
Net grants	3.8	1.1	2.7	.7	.5
Net credits . . . . .	.5	.2	.3	.03	.1
Other Asia and Pacific					
Total aid	10.2	4.8	5.4	1.2	1.2
Net grants	9.5	4.5	5.1	1.1	1.3
Net credits . . . . .	.7	.3	.3	.1	–.02
Latin America					
Total aid	1.2	.3	.9	.3	.15
Net grants . . . . .	.5	.1	.4	.1	.1
Net credits . . . . .	.8	.2	.5	.2	.05
Other					
Total aid	2.2	1.8	.4	.07	.1
Net grants	2.1	1.7	.4	.08	.1
Net credits . . . . .	.1	.1	.01	–.01	–.01
Reverse grants and returns on grants	1.5	.9	.6	.1	.1
Principal collected on loan repayment	3.4	1.3	2.1	.5	.5
Grants converted into loans	2.3	1.3	1.0	1.0	0.0

Figures may not add exactly because of rounding.

Notes: The sums shown are net, i.e. grants are shown after deducting reverse grants and returns on grants; credits are shown after deducting repayment of principal but not interest.

Conversion of grants to credits, shown in the last line, is ignored in breakdown by countries.

Greece and Turkey are included in Near East. "Other" includes eastern Europe, international organizations, and unspecified sums.

Source: U.S. Department of Commerce, *Survey of Current Business*, Oct. 1955, pp. 11, 12.

Table II.—Military and Economic Aid Provided by
the United States Government, 1946–55

(Millions of dollars; fiscal years, ending June 30)

	Postwar Decade 1946–1955	Pre-Korea 1946–1950	Post-Korea 1951–1955	1954	1955
All countries					
Military grants	14,663	1,363	13,300	3,521	2,543
Other aid	36,673	24,897	11,776	1,711	1,927
Western Europe and dependent areas					
Military grants	9,028	45	8,984	2,362	1,570
Other aid	24,380	17,894	6,486	623	802
Near East and Africa					
Military grants	1,885	518	1,367	382	286
Other aid	2,432	846	1,586	294	329
Other Asia and Pacific					
Military grants	3,375	797	2,578	714	623
Other aid	6,779	3,975	2,802	502	622
Latin America					
Military grants	224	—	224	45	43
Other aid	1,008	343	665	246	102

Figures may not add exactly because of rounding.

Notes: Sums are given on a net basis.

"Other aid" includes cash payments made to help other governments support their military efforts and also supplies, such as food and clothing, that went directly to troops.

Source: U.S. Department of Commerce, *Survey of Current Business*, Oct. 1955, pp. 11, 12.

ment. For a number of technical reasons, some of which are mentioned in the notes to the tables, specific figures must be used with caution, but the tables accurately reflect the main characteristics and trends of foreign aid. The division between military and other aid is sometimes rather arbitrary. Because the figures show actual utilization of aid which takes place some time after money is appropriated by congress, the tables understate the shift in emphasis in recent years toward aid for Asia.

Aid in Fiscal 1955.—During the twelve months ending June 30, 1955, the United States made new grants to foreign countries totalling \$4,486,000,000 and provided new credits to the sum of \$443,000,000. Repayment of the principal of earlier loans plus returns on certain grants and reverse grants to the U.S. reduced the total net aid for the year to \$4,469,000,000. This was almost \$800,000,000 less than the aid utilized in the previous fiscal year and the smallest figure since fiscal 1951.

Direct military aid, in the form of weapons, munitions, aircraft, etc., came to \$2,543,000,000, nearly 57% of total aid. This was about \$1,000,000,000 less than in fiscal 1954 when military aid accounted for more than two-thirds of the total. However, this drop did not accurately reflect the extent to which U.S. aid was used for military purposes. The official fig-

ure for "other grants and credits" includes substantial sums paid to other governments for the support of their military effort and also supplies such as clothing, food and fuel that went directly to troops. More than \$600,000,000 was given for the direct support of troops during the year, the largest part, \$434,000,000, going to France to help defray the cost of the war in Indochina. Subsequently similar, though smaller payments were made to Laos, Cambodia and South Vietnam for the same purpose and to build up their defensive strength. Payments of this sort help to account for the rise in "nonmilitary" aid from \$1,711,000,000 in fiscal 1954 to \$1,927,000,000 in fiscal 1955. The largest other constituent of this total was "defense support," a type of payment comparable to the "economic aid" of earlier years, but justified on the ground that it enabled recipient countries to maintain greater military strength than their economies could have borne without aid.

Western European nations and their dependencies received about three-fifths of the purely military grants. This was about the same share as in previous years, although the value of aid was nearly \$800,000,000 less than in fiscal 1954. The \$1,500,000,000 of aid used in this way included the U.S. share of the North Atlantic Treaty organization (NATO) infrastructure program—mostly airfields, pipeline and storage facilities and telecommunications network—as well as transactions intended to strengthen the military power of specific NATO countries and also Spain and Yugoslavia. Eastern and southern Asia, the area receiving the next largest amount of aid, the bulk of it going to Korea, Formosa, the Philippines, Thailand and Pakistan. The near east, including Greece and Turkey, was the third area of importance for military aid, but like the others showed a decline from fiscal 1954. Since European countries provide defense for some areas outside western Europe, whether in their colonies or otherwise, the official figures on the allocation of military aid do not exactly reflect the actual geographical distribution of the use of this aid.

Principally because of the large payments to France, western Europe's share of so-called nonmilitary aid was larger than in the previous year. Outside France, only Spain and Yugoslavia received larger sums in fiscal 1955 than in the previous year. Britain was the second largest recipient, after France, but here again the largest part of the aid was a direct contribution to military strength, in this case to assist in aircraft production. Nonmilitary aid to the near east increased in fiscal 1955, with Iran becoming the largest recipient. Deliveries to Turkey were the next largest, and Egypt, Jordan and Libya also got more than in the previous year. While Greece and Israel were in third and fourth places among the recipients of U.S. aid in the region, the amounts they received fell compared with the previous year.

In the far east, Korea was the largest recipient, getting a contribution to reconstruction of \$207,000,000 compared with \$152,000,000 the year before. The Chinese government on Formosa received aid totalling \$76,000,000, the same as the year before. Japan, which had made substantial use of U.S. credits in fiscal 1954, repaid \$29,000,000 during fiscal 1955 and received \$7,000,000 in grant aid. In southeast Asia the largest payments went to Laos, Cambodia and South Vietnam, mostly for direct support of their armies. India was the next largest recipient with \$64,000,000, compared with \$30,000,000. Pakistan's military aid fell from \$83,000,000 in fiscal 1954 to \$30,000,000 in fiscal 1955, but that country also received military aid from the United States. Aid to Latin America fell from \$246,000,000 in fiscal 1954 to \$102,000,000 in fiscal 1955, largely because of a sharp decrease in credits that had been advanced in the previous years to ease Brazil's foreign exchange difficulties.

The Mutual Security act of 1954 required that \$350,000,

of the aid appropriations be used to finance the sale of agricultural surpluses. The Agricultural Trade Development and Assistance act of 1954 provided that an additional \$700,000,000 be used in the same way over three years. The farm surpluses are sold for foreign currency which may then be used to provide aid to foreign governments, for instance by being loaned back to them or by being spent, in agreement with the foreign government, for the purchase of aid goods for that country or another. Only when the currencies are actually used do these transactions appear in the foreign aid accounts. During fiscal 1955, the Foreign Operations administration negotiated sales for \$467,000,000 worth of agricultural surpluses, comprising \$250,000,000 worth of cotton, \$147,000,000 of grains and \$24,000,000 in fats and oils. Added to the sales made under a similar provision in the previous fiscal year, the total came to about \$700,000,000. Sales under the Agricultural Trade Development and Assistance act during fiscal 1955 totalled \$361,000,000, comprising \$124,000,000 worth of cotton, \$135,000,000 worth of grain and \$40,000,000 of tobacco. The largest part of the sales was to western European countries. Actual deliveries of surplus farm products during fiscal 1955 produced \$362,700,000 in foreign currencies. Of this sum, \$102,100,000 was used for grants, credits and offshore procurement under the aid program, and \$14,600,000 was used to finance U.S. government operations abroad. The remaining sum, combined with similar funds accumulated during the previous year, left the U.S. government at the end of the fiscal year with almost \$400,000,000 in foreign currencies, of which \$235,800,000 was in western Europe, \$98,000,000 in the far east and south Asia, and \$56,500,000 in the near east.

Appropriations for Fiscal 1956.—In a message of April 20, Pres. Dwight D. Eisenhower asked congress to appropriate \$3,530,000,000 for foreign aid in fiscal 1956, substantially more than had been appropriated the year before. (The sum was later reduced to \$3,408,000,000 by a cut in the military request; see Table III.) Less than half the money requested was to be for military assistance, including direct support of foreign troops. This was nearly \$500,000,000 less than had been appropriated for this purpose the year before when military items accounted for more than 70% of the appropriation. The president asked for an increase of defense support and other economic aid, putting special emphasis on Asia. No economic aid was planned for the original Marshall plan countries; in Europe, only Yugoslavia, Spain and Berlin would receive general economic help. Technical assistance was also budgeted for a larger sum. Additional money for technical assistance and economic development would come from the \$200,000,000 the president

Table III.—United States Foreign Aid Appropriations
Fiscal Years 1955 and 1956

	(Millions of dollars)		
	Appropriations for fiscal 1955	Executive requests for fiscal 1955	Appropriations for fiscal 1956
Military aid	1,988	1,595	1,022
Economic aid	616	1,186	1,182
Technical assistance			
Bilateral	105	146.5	127.5
United Nations	10	24	24
Organization of American States	1.5	1.5	1.5
Total	116.5	172	153
Refugees and migrants	10.0	85	78
UNICEF (UN children's fund)	12.5	14.5	14.5
Ocean freight	4.4	15	15
Contingency fund	—	100	100
Asian development fund	—	200	100
Other programs	34.9	40	38.4
Total	2,781	3,408	2,703

Figures may not add exactly because of rounding.

Notes: "Military aid" includes direct forces support. "Economic aid" includes defense support, development assistance, and funds for Berlin.

The appropriation for the UN technical assistance program covers the U.S. contribution to the end of calendar 1956.

Source: U.S. 84th Congress, First Session, House Report No. 912; Public Law 208.

requested for an Asian development fund, to be used over three years. The president also asked for larger sums for refugees, including a contribution to the UN program for Arab refugees from Palestine, and a substantial increase in the money earmarked for ocean freight to facilitate the sale of surplus agricultural goods. Not included in the aid budget was \$35,168,000 appropriated in June as the U.S. share of the capital subscription to the International Finance corporation, a new affiliate of the International Bank for Reconstruction and Development that would provide capital for economic development.

The Mutual Security act of 1955 had a relatively smooth passage in congress. The senate passed the bill on June 2 (59-18), authorizing larger expenditures than the president had requested. The house acted favourably on June 30 (273-128). On July 7 the senate and house approved the conference report reconciling the two bills, and the next day the president signed the act. The appropriations bill encountered more difficulties. The house committee on appropriations became exercised about "the chaotic fiscal situation surrounding the administration of this program," as it had the year before. In particular, it was critical of last-minute action by the department of defense to obligate large sums before the end of the fiscal year. Arguing that the existing pipeline of undelivered military equipment plus some new money would suffice to maintain the level of the program, the committee cut \$420,000,000 from the appropriation for military assistance. It also halved the authorization for the Asian Development fund from \$200,000,000 to \$100,000,000 and cut smaller sums from all other major items. The administration made no attempt to restore these cuts during the floor debate and the bill passed the house (251-123) on July 11 carrying about \$650,000,000 less than the sum authorized by the earlier act. The senate appropriations committee restored the

LOADING DREDGE turned over to the Philippine department of public works by the U.S. International Cooperation administration in 1955. The dredge was to be used for flood and river control construction





BRITISH JET FIGHTERS of the type purchased by the U.S. from British manufacturers for delivery to the royal air force. Four hundred sixty-five planes, at a cost of \$140,000,000, were ordered in an effort to build up British production

full cut made by the house in the military aid item, and most of the other sums as well. The senate passed this bill (62-22) on July 22, with slight changes and the two versions went to conference to see what could be done about the discrepancy of about \$567,000,000. Before the conference met, the defense department reported that it had discovered that \$302,000,000 thought to have been spent was still available. The conferees agreed to permit the use of these funds for military assistance and the senate acquiesced in the house's original cut, so the appropriation bill as passed reduced military assistance by about \$118,000,000. The other discrepancies were compromised and the conference bill, appropriating \$2,703,000,000 and authorizing the use of a further \$61,000,000 in unobligated balances from previous aid appropriations, passed both houses on July 28 by voice vote. The department of commerce estimated that the carry-over of undelivered aid from previous appropriations came to \$11,300,000,000 at the end of fiscal 1955.

Administration.—The Mutual Security act of 1954 provided that the Foreign Operations administration should go out of existence on June 30, 1955. In April the president announced that as of that date he would transfer the FOA's affairs to "a new semi-autonomous organizational unit" within the state department, the International Cooperation administration (ICA). It was to administer economic aid and technical assistance under a director responsible to the secretary of state. The latter was to co-ordinate all mutual security programs and make arrangements with the secretary of defense "for effectively co-ordinating mutual security programs" carried on by the defense department, namely military aid. To head the new agency, the president appointed John B. Hollister of Cincinnati, Ohio.

The view that foreign aid would play a continuing part in U.S. foreign policy received more official support during 1955 than it had before. In his letter announcing creation of the ICA, the president noted that many had regarded the FOA "as merely a temporary unit of government" whereas it was widely recognized "that the functions and the need for co-operative development of economic and military strength among the free nations are continuing and integral parts of the fabric of our international relations." (See also BUDGET, NATIONAL; INTERNATIONAL TRADE.)

(W. DD.)

Foreign Economic Policy, Commission on: see **TARIFFS**
Foreign Exchange: see **EXCHANGE CONTROL AND EXCHANGE RATES.**

Foreign Investments. Foreign investments expanded vigorously in 1955, as in the previous year, encouraged by generally prosperous world conditions. Early in the year monetary authorities in several European countries began to take steps to counter growing inflationary pressures, which were already causing difficulties in their international trade. Although this was a matter of concern for some United States investors, the establishment of a more peaceful atmosphere appeared to be generating the most widespread interest in foreign investment since the 1920s. European investors continued to invest in U.S. corporate stocks in 1955, and were also making substantial investments in Canada, Latin America and other countries.

U.S. Investments Abroad.—The value of U.S. private investments in foreign countries expanded by a record \$2,800,000,000 in 1954 to reach a total of \$26,600,000,000 on Jan. 1, 1955. In the first six months of 1955 there was a gain of about \$1,000,000,000, indicating a considerable reduction from the 1954 rate of increase.

Most of the change was connected with lower capital outflows for short- and medium-term credits, and reduced borrowing from the United States market by Canada and the International Bank for Reconstruction and Development.

Outflows of direct investment capital were about \$325,000,000 in the first half of 1955, which was somewhat lower than the 1954 amount for the same period. However, the many new ventures being planned or already initiated would call for continuous investment at a high level for some time to come.

Direct Investments.—American business was expanding abroad in 1955 in a great variety of enterprises and in nearly every part of the non-communist world. From the end of 1949 to the beginning of 1955 approximately \$10,500,000,000 was invested in foreign branches and subsidiary companies, companies with a total of \$4,000,000,000 invested from 1919 through 1949. Much of the postwar investment was made in spite of widespread economic and political disorder, and helped to establish entirely new levels of production in many countries.

The United States government took a number of actions in 1955 designed to encourage foreign investments. Probably

most important was a renewed effort to gain congressional approval of reduced taxes on income from foreign sources. Introduced as H.R. 7725 on July 29, the bill provided, in general, that specified business income from foreign sources should be taxed at a rate 14 points lower than the rate applied to domestic corporate income, and that income from foreign branches would not be taxed in the United States until remitted. In August the president signed the bill providing for United States participation in the International Finance corporation, an affiliate of the International Bank for Reconstruction and Development. The United States was to subscribe \$35,168,000 into the \$100,000,000 capital of the organization, which would invest in private enterprises along with private investors and would serve to bring together investment opportunities and prospective investors.

Hearings began in September before the senate antitrust and monopoly subcommittee on a proposal by government agencies that congress should create a new government agency to grant limited exemptions from anti-trust laws for private foreign investment arrangements. The agency would provide advance rulings on proposed undertakings, thus eliminating certain uncertainties as to the application of the laws which may have deterred some investors.

Canada continued to absorb about half of all United States direct foreign investments, raising the total to considerably more than \$6,000,000,000 by the middle of 1955. Canada's natural resources were being developed very rapidly, but as few explorations were carried out it became evident that unappreciated reserves far exceeded those being brought into production. United States companies were especially attracted to Canada by the liberal tax concessions to many types of mining enterprises, as well as by other assistance given by the Canadian government. Among the developments in 1955 was the announcement by the American Metal Co. that reserves of various types on its Heath Steele mines properties in New Brunswick were much larger than earlier estimates and several million dollars were to be spent on milling and other facilities. Early in the year the Marmora, Ont., mine of the Bethlehem Steel Co. began production and shipment of high-grade iron concentrates, after a three-year period of development costing more than \$50,000,000. A new copper source in northwest British Columbia was under development on a 50-50 basis by a Canadian company and Newmont Mining Corp., a U.S. company. About 30,000,000 tons of ore were indicated, and development would require the construction of a railroad. Investments in copper and other minerals were greatly encouraged by the steep price rises taking place in 1955.

Other developments in mining in Canada included a major copper-nickel discovery in the Ungava bay area in northern Quebec by a company owned 50% by Hanna Iron Ore Co., a joint development of a columbium-tantalum ore body at Oka near Montreal at a cost of \$3,000,000 to \$4,000,000 by Molybdenum Corp. of America and Kennecott Copper Corp., an investment of \$7,500,000 by Philip Carey Manufacturing Co. to develop large deposits of asbestos in Quebec, and continued expansion of productive facilities at the great iron ore mines which were still far below their potential output. Early in the year Aluminum, Ltd., largely financed in the United States, announced plans for a \$190,000,000 expansion of its huge facilities at Kitimat, B.C., which would double the smelting capacity already installed or un-

der construction. Output was sold largely in the U.S. and Canada and the raw material was obtained from properties developed in Jamaica, B.W.I.

U.S. investments in Canadian petroleum resources continued at an annual rate of about \$200,000,000, both to expand existing facilities and to carry out further exploration and development of newer areas. A great many United States companies were taking part in the intensive development, and it appeared that great additional amounts of capital would be required to bring the properties into production. The construction of pipelines to distribute the already available output of oil and natural gas was further delayed by failure to reach agreements on financing and other factors.

U.S.-owned manufacturing plants in Canada continued to expand with the country and constituted the leading field for investment, with a value of more than \$2,550,000,000 in 1955. Literally dozens of new enterprises were inaugurated in the year, including plans by International Paper Co. to enter the shipping container field with a new plant near Montreal, a new electronics plant by RCA Victor Co. at Renfrew, Ont., further expansion by Motorola Canada Limited, a new \$5,000,000 to \$6,000,000 insulating board plant to be built at North Bay, Ont., by Johns-Manville Corp., a new enterprise, formed by Canadian Pittsburgh Piping Co. to fabricate special piping equipment, the completion by Linde Air Products Co. of a new plant to manufacture welding and other apparatus, and the final stages of a two-year expansion by Chrysler Corp. at a cost of \$50,000,000, to double its Canadian output.

Investments in Canada in chemicals and related products were especially noteworthy in 1955, and included plans by Hooker Electrochemical Co. to construct an \$11,000,000 chlorine-caustic soda plant, a \$6,000,000 plant near Montreal to be built by an affiliate of W. R. Grace & Co. to manufacture catalysts for oil refiners, a new \$10,000,000 plant to be built by the Ethyl Corp. at Sarnia, Ont., as the first producer of tetraethyl lead in Canada, an explosives plant costing several million dollars to be built by du Pont of Canada near North Bay, Ont., a \$3,000,000 plant program by Dow Chemical Co. of Canada to increase output of ethylene, Canadian Chemical company's new Edmonton, Alta., plant to produce industrial chemicals, a building program costing several million dollars by Charles Pfizer & Co. to manufacture antibiotics in Ontario, a new \$2,000,000 laboratory being built by Parke, Davis & Co., a \$15,000,000 plant in Quebec to be built by National Lead company's Canadian subsidiary to produce titanium pigment, and a \$5,000,000 plant at Sarnia built by Imperial Oil, Ltd., to produce a new petroleum wax.

United States direct investments in Latin America continued to increase in 1955, but the rate of growth was lower than in most postwar years and was probably not higher than the \$220,000,000 increase recorded for 1954. Uncertainties about the immediate economic and political future of Argentina, Brazil and Chile and some other countries tended to discourage investment, but on the other hand there was much evidence of con-

Table I.—Value of United States Investments Abroad, Jan. 1, 1954, and Jan. 1, 1955

Type of Investment	(in billions of dollars)		Jan. 1, 1955						
	Jan. 1 1954 Total	Total	Western Europe	Western European dependencies	Other Europe	Canada	Latin-American republics	Other countries	International institutions
Total	39.6	42.2	14.4	.7	.3	9.7	8.7	4.5	3.9
Private	23.8	26.6	4.8	.6	†	9.7	7.7	3.2	.5
Long-term	22.3	24.4	4.1	.6	—	9.5	6.7	2.9	.5
Direct	16.3	17.7	2.6	—	†	5.9	6.3	2.3	—
Foreign dollar bonds	2.4	2.7	.2	—	—	1.7	†	.1	—
Other securities	2.0	2.3	.9	†	†	.2	.3	.2	—
Other	1.5	1.6	.7	†	†	—	1.0	.3	—
Short-term	1.6	2.2	.7	†	.3	†	1.0	1.3	3.4
U.S. government	15.7	15.6	9.6	†	.3	†	1.0	1.1	3.4
Long-term	15.4	15.2	9.3	†	.3	†	†	.1	—
Short-term	.3	.4	.3	†	—	—	—	—	—

† Less than \$50,000,000.

Source: U.S. Department of Commerce, Survey of Current Business, Aug. 1955. Detail may not add to totals because of rounding.

fidence in the long-run future of these countries and a number of very large ventures were in the planning stage.

An indication of the high interest in investing in Latin America was the attendance of more than 800 persons, many representing large United States corporations, at the Inter-American Investment conference held at New Orleans, La., early in 1955 and privately sponsored by the city of New Orleans and Time-Life International.

In Argentina various measures were taken in 1955 to encourage additional foreign investment, but the situation in that country was still very unsettled. A decree (No. 637) of Jan. 17 had the appearance of liberalizing remittances of profits for foreign enterprises established before Aug. 26, 1953—the date of Argentine foreign investment law No. 14222—but the new regulations did not appear to make any substantial change for most of the old established companies. In April the Standard Oil Co. of California signed a contract with the Argentine government under which the company would spend a minimum of \$13,500,000 over a period of years prospecting for oil in southern Argentina. The contract provided for 50-50 sharing of profits between the company and the government, but the approval of the Argentine congress was required before the contract became effective. Similar arrangements were said to be under discussion with other companies.

Industrial investments in Argentina included a plant for the production of polystyrene to be constructed by an affiliate of Monsanto Chemical Co., a factory in Buenos Aires to produce optical products financed by a German company and American Optical Co., and an \$8,000,000 investment in Cordoba by Kaiser-Willys in a factory to produce trucks, jeeps and passenger cars.

In Bolivia there was great hope that petroleum production could be increased; several United States companies were interested and an additional \$4,160,000 was raised by Glenn McCarthy to develop existing properties.

Brazil was suffering a severe balance of payments crisis in 1954 and 1955 as coffee exports and prices fell, and the political situation was somewhat strained prior to the presidential elections scheduled for late 1955. One of Brazil's great economic and political problems is the development of oil resources, but there seemed to be no immediate prospect of foreign capital entering the field following the decisive defeat by the Brazilian senate in April of a bill that would have made this possible. In spite of difficulties, Brazil remained one of the most active fields for United States direct foreign investments, which totalled \$1,050,000,000 in that country by 1955, more than half in manufacturing. According to newspaper reports French and German groups were both studying huge investments in Brazil, although the United States' stake was now by far the largest. Among the proposed United States investments in Brazilian industry were expanded productive capacity for abrasives and aluminum oxide by the Carborundum Co., plans to manufacture tobacco-processing machinery by American Machine and Foundry Co., a textile factory using \$3,000,000 of imported equipment by Saco Lowell shops, a new plant to manufacture steel drums and other products by the American Flange Corp., RCA Victor's plant to produce electronic equipment, a plastics plant to be established by the Koppers Co., a joint venture by W. R. Grace & Co. and a German firm to produce various chemicals, a new \$10,000,000 manufacturing plant of Singer Sewing Machine Co., the plans of Remington Rand Inc. to mass produce typewriters and calculating machines in Brazil, Caterpillar Tractor Co.'s project to manufacture equipment and parts in Brazil, and Burroughs Corp. facilities for manufacturing office equipment.

Although Chile was suffering from a critical price inflation in 1955, the prospects for additional United States investments,

especially in mining, were greatly improved by new tax legislation, the discovery of new resources, and sharply rising copper prices. The new tax legislation effective in May continued the income tax rate at about 75% but reduced the burdens of other regulations, including fixed prices for sales of copper to the Chilean Central bank and an arbitrarily high rate of exchange for pesos needed to cover local expenses. The latter factor continued to be a serious problem in 1955 as prices soared in Chile. In August, the Anaconda Co. announced the discovery of new property, the Indio Muerto mine, said to rank among the great copper mines in the world. The development of this and other copper properties in Chile was encouraged by a provision of the New Investments statute, adopted earlier in the year under which a decree can give tax rate guarantees, including five-year quick amortization.

Exploration for oil continued in Cuba, with Standard Oil Co. of Indiana reported as planning to spend \$10,000,000 over a period of years. Deep Rock Oil Corp. and other companies were also active in the country. Expansion of investments in sugar production was discouraged by the weakness of the market, but plans were being made for a \$7,000,000 plant to produce furfural, a sugar by-product.

Elsewhere in the Caribbean area there appeared to be an improvement in the prospects for foreign investment, although the agricultural basis of the region was still subject to market instability and occasional severe losses from weather damage and strikes. The president of Costa Rica cited the United Fruit Co. as a stabilizing influence, and there was a report that United States private capital was interested in constructing a \$3,000,000 oil refinery in the country. In the Dominican Republic a \$6,000,000 furfural plant was opened by the South Porto Rico Sugar Co. Guatemala was one of several Latin-American countries to agree to co-operate in the U.S. government's guarantee program. Reynolds Metals company began a \$7,000,000 bauxite mining project in Haiti, and several smaller ventures in that country were under discussion. U.S. bankers and a construction concern were considering a program to bolster the economy of Nicaragua by the construction of housing projects, dock facilities, etc. Despite serious damage to banana producing properties in Honduras, the outlook was brightened by a \$30,000,000 rehabilitation program announced by the Tela Railroad Co. Other activities in the area included off-shore oil exploration in British Guiana and a plant to produce soluble coffee in El Salvador.

Mexico recovered rapidly from a devaluation in 1954 and appeared to increase in attractiveness for United States investment, especially because of the continued policy of unrestricted foreign exchange transactions and tax incentives provided in the newly enacted Industrial Encouragement law. Republic Steel Corp. was reported as planning a \$15,000,000 titanium operation, Sears, Roebuck & Co. was opening additional stores and also entering the manufacturing field, various United States chemical and pharmaceutical concerns were planning expansion in the country, Mexican Gulf Sulphur Co. was expanding operations, Monsanto Chemical Co. expanded sulphuric acid production and Sherwin-Williams Co. opened a \$500,000 paint factory.

Investment interest in Peru was unusually active in 1955, centring around a \$200,000,000 project to develop three new copper properties containing at least 1,000,000,000 tons of ore. The American Smelting and Refining Co. was heading a group of U.S. companies interested in the project, and about half the capital was expected to be provided by the Export-Import Bank of Washington. This new project would more than double existing U.S. mining investments in Peru. Other plans for Peru included a \$3,000,000 tire and rubber company formed by B. F. Goodrich Co. and Peruvian capital, continued oil develop-

by Douglas Oil Co. in the Lobitos area, a refractories plant in Lima by Harbison-Walker Refractories Co., and a Sears, Roebuck store in Lima costing \$3,000,000 to \$4,000,000.

Direct U.S. investments in Venezuela reached \$1,400,000,000 in 1955 and were continuing to expand as the demand for petroleum intensified and prices rose. Creole Petroleum Corp. scheduled capital and exploration expenditures of \$120,000,000 for the year, much of which would be charged against income, including new projects such as a \$34,000,000 gas conservation plant, further development of \$35,000,000 harbour facilities, and \$11,000,000 on expanded refinery installations. Sun Oil Co. was also seeking to enter Venezuela. Other developments in Venezuela included work on sulphur and mercury deposits by Venezuelan Sulphur Corp. and a plan partly backed by U.S. capital to establish a company to extend automotive dealer credit.

U.S. companies carried out many additions to their European investments in 1955, spurred by greatly strengthened economies in most countries and the apparent easing of the political atmosphere. At the same time, there was a threat of economic dislocation if inflationary pressure was not kept in check. A Belgian drive to attract United States investment was having some success and the Ford Motor Co. (Belgium) announced plans to spend 175,000,000 fr. for new buildings and retooling. In France there was great interest in the expansion of oil production by the French affiliate of Standard Oil Co. (New Jersey), and the Caltex group was continuing exploration work as well as spending an additional \$8,500,000 to expand and improve refineries. Other companies were established in the machinery and chemical industries.

Germany's current economic strength and relatively free foreign exchange system attracted much attention from U.S. investors, who were leading all other foreign countries in direct investments in Germany. In 1955 the German affiliate of Standard Oil Co. (New Jersey) planned a new refinery to handle 1,000,000 tons a year, the affiliates of both General Motors and Ford Motor Co. were enlarging their capacity, the Pfadler Co. was expanding its German plant, Marchant Calculators, Inc., was to construct a factory in Hamburg, Berkshire Knitting Mills planned to produce stockings in Germany, and the German affiliate of International Telephone & Telegraph Corp. was to receive new United States capital for expansion. There was one liquidation in 1955 as New Jersey Industries received the equivalent of \$15,000,000 for the sale of the Emil Koester chain of stores to foreign interests.

Italy was endeavouring to attract foreign capital to aid in large plans for economic development, and legislation to liberalize the terms of previous laws was introduced early in 1955. Interest centered around oil development, with Socony-Vacuum Oil Co., Inc., obtaining a U.S. guaranty for an \$11,000,000 refinery expansion, Gulf Oil Corp. seeking permission from the Italian government to start production from a 25,000-ac. concession and the formation of a new company by Standard Oil Co. (New Jersey) to explore for oil in Sicily.

Investment continued to go forward in the Netherlands, with Caltex expanding its refineries near Rotterdam, and new investments in the chemical field by Dow Chemical Co. and Merck & Co., Inc. In Portugal, the Socony-Vacuum Oil Co. explored for oil and in Turkey the Federal Motor Truck Co. was to join Turkish interests in a \$7,000,000 truck assembly plant.

U.S. direct investments in the United Kingdom were larger than in any country except Canada or Venezuela, totaling \$1,250,000,000 at the beginning of 1955 and growing steadily. Among the many 1955 projects were a \$12,000,000 plastics plant for Scotland by Union Carbide & Carbon Corp., a new plant costing several million dollars by Borg-Warner Corp., a program to cost the equivalent of \$168,000,000, largely out of earnings,

to expand Ford's production facilities, participation by Solar Aircraft Co. in a British company to produce gas turbine engines, a joint venture by Oronite Chemical Co. to produce detergent ingredients in the United Kingdom and a \$25,000,000 expansion plan by Monsanto Chemical company's British subsidiary.

In the far east there was unusually active interest by U.S. investors in Australia, where the U.S. share in foreign investment had greatly expanded since the war. Petroleum investment was important, with further large outlays planned for exploration and the completion of a \$45,000,000 refinery by Standard-Vacuum Oil Co. Industrial investments included a large manufacturing plant by Caterpillar Tractor Co. costing nearly \$7,000,000, the beginnings of a large expansion program by Chrysler Corp., and a \$48,000,000 expansion by the Australian subsidiary of General Motors Corp. The Atlas Corp. was reportedly to invest \$1,265,625 with Australian interests in a uranium property, and Sears, Roebuck & Co. purchased a substantial interest in an Australian department store chain.

A more favourable attitude toward foreign investments seemed to be developing in Indonesia, although the situation was complicated by political changes. Standard-Vacuum Oil Co. was going ahead with the various parts of a comprehensive \$80,000,000 development program, but the installations of General Motors Corp. were liquidated in the year. The situation in India was also somewhat mixed. The government agreed to allow Standard-Vacuum Oil Co. to prospect for oil in Bengal and was considering an enlargement of the Caltex refinery investment. Both Burma and Pakistan issued official statements inviting foreign investors, and the latter country signed an investment guaranty agreement with the United States as well as an agreement with U.S. investors providing for an investment of more than \$30,000,000 in petroleum development.

Middle east oil production was at record levels in 1955, with the largest new investment taking place in the rehabilitation of the industry in Iran. In the year there was a series of negotiations aimed at raising the proportion of petroleum earnings going to the various governments in the area. Oil exploration was going forward in Egypt, production started at a new refinery in Lebanon and further expansion was planned by the U.S. owners, and Standard Oil Co. (New Jersey) was building a new petroleum terminal in Libya. Israel further liberalized regulations affecting foreign investors in 1955. The Israel-American Oil Corp. announced the discovery of a natural gas deposit and Ampol planned a \$10,000,000 investment in various enterprises in the first half of the year.

In the Union of South Africa, Remington Rand, Inc., established a new subsidiary to develop manufacturing facilities for export, and it was announced that Twentieth Century-Fox Film Corp. was to purchase a chain of movie houses for about \$30,000,000.

Other Private Investments.—Net capital outflows from the United States in 1954 were at a record level largely because of short- and medium-term credits to finance United States exports, especially to Latin America and Japan, increased holdings of sterling, and increased purchases of equity securities in Europe and Canada. In the first half of 1955 net capital outflows of these types were greatly reduced, but many arrangements were being worked out which would stimulate further financing of United States exports, as well as additional investments in the securities of foreign corporations. However, such capital flows are quickly influenced by changes in relative interest rates and exchange rates, and by short-term fluctuations in the situation of individual foreign countries, so that the conditions for a steady outflow are difficult to achieve.

A special program to assist U.S. exporters to obtain credit

Table II.—Value of Foreign Investments in the United States, Jan. 1, 1954, and Jan. 1, 1955
(In billions of dollars)

Type of Investment	Jan. 1, 1955									
	Jan. 1 1954 Total	Total	Western Europe	Western European dependen- cies	Other Europe	Canada	Latin- American republics	Other countries	Inter- national institu- tions	
Total	23.6	26.8	13.8	.5	.1	4.1	3.0	2.3	2.2	
Long-term	9.2	11.0	7.3	.2	—	2.3	.8	.2	—	
Direct	3.8	4.0	2.5	—	—	1.2	.1	—	—	
Corporate stocks	3.7	5.3	3.7	.1	—	.9	.4	.1	—	
Corporate bonds*	.3	.3	.2	—	—	—	—	—	—	
Other	1.5	1.5	.9	.1	—	.1	.2	.1	—	
Short-term and U.S. government obligations	14.5	15.7	6.4	.2	—	1.7	2.2	2.1	2.1	
Private short-term	7.6	8.5	3.6	.2	—	.7	1.9	1.9	.1	
U.S. government obligations†	6.8	7.3	2.9	—	—	1.0	.3	.2	2.0	
Long-term	1.0	1.1	.4	—	—	—	.2	—	.4	
Short-term‡	5.8	6.2	2.5	—	—	1.0	.1	.2	1.7	

*Includes state and municipal obligations.

†Includes estimated foreign holdings of U.S. currency of \$839,000,000 on Jan. 1, 1954, and \$838,000,000 on Jan. 1, 1955, which cannot be distributed by area.

‡Less than \$50,000,000.

Source: U.S. Department of Commerce, *Survey of Current Business*, Aug. 1955. Details may not add to totals because of rounding.

covering exports of capital equipment was inaugurated by the Export-Import bank late in 1954 and by July 1955 total credit lines agreed to by the bank totalled \$150,159,000, although only a negligible amount had been utilized.

U.S. banks were increasingly active in participating in the loans being made by the International Bank for Reconstruction and Development, usually buying the earlier maturities of loans repayable over a number of years. In the fiscal year 1955 the International bank sold or agreed to sell, mainly to U.S. banks, \$98,400,000 of loans without guarantee and \$800,000 with a guarantee. U.S. banks participated in loans in 1955 to a great number of countries, including Australia, Austria, Colombia, Finland, Nicaragua, Peru, Pakistan, Thailand, Uruguay, Guatemala and Panama. Other medium-term private bank loans made directly to foreign borrowers included \$4,000,000 to Italy, \$30,000,000 to Israel and \$40,000,000 to Spain.

Renewed interest in foreign securities was reflected in the successful flotation of a new Australian bond issue of \$25,000,000 and a \$30,000,000 issue of Belgian bonds at the end of 1954, followed by a \$15,000,000 new issue of Norway early in 1955. However, the greatest interest in 1954 and 1955 was in foreign corporate stocks, with net purchases, mainly of European and Canadian issues, reaching \$87,000,000 in the first half of 1955. To facilitate these investments the Irving Trust Co. issued American Depositary Receipts covering 34 foreign issues. The Securities and Exchange commission was drafting registration and prospectus forms to provide for the first time a means of registering these depositary receipts under the 1933 Federal Securities act.

United States Government.—Repayments on outstanding U.S. government long-term credits nearly equalled disbursements on new loans, leading to a net increase of only \$40,000,000 in the first half of 1955; there was a net repayment of \$200,000,000 in 1954. U.S. government holdings of foreign currencies and claims arising out of aid program counterpart funds and payments for agricultural exports from the United States continued to soar, increasing by about \$160,000,000 in the first half of 1955.

Foreign Investments in the United States.—Foreign long-term investments and liquid assets in the United States increased in value by a record \$3,100,000,000 in 1954 to reach a total value of \$26,768,000,000 at the beginning of 1955. A further increase of about \$1,400,000,000 took place in the first half of 1955. About \$1,300,000,000 of the 1954 increase was in liquid dollar assets, as was about \$500,000,000 of the increase in the first half of 1955.

Not included in these figures are sales of gold by the United States treasury to foreign countries, which totalled \$327,000,000 in 1954 and about \$65,000,000 in the first half of 1955. Gold sales had declined sharply as many foreign governments, seeing their international reserves increase beyond the bare

minimum, preferred to invest interest-bearing reserves such as time deposits or United States government obligations.

Most of the gains in reserves were by European countries but the rate of increase was falling off in 1955, and the United Kingdom sustained some losses in July and August.

Long-term Investments. The leading feature of foreign investments in the United States in 1954 and the first half of 1955 was large purchases

United States corporate stocks, amounting to \$135,000,000 in 1954 and \$80,000,000 in the first six months of 1955. Sharp rising market prices added nearly \$1,500,000,000 to the value of foreign holdings in 1954 and a further \$600,000,000 to July 30, 1955, raising the total value at that date to about \$6,000,000,000. At the beginning of 1955 the largest holdings of United States corporate stocks were recorded for Switzerland and the United Kingdom, with \$1,353,000,000 and \$1,153,000,000 respectively. Continued purchases were reported for these countries in 1955, but investors in the Netherlands and Canada were net sellers, probably because of the attractiveness of investments in their own security markets.

An increasing number of foreign firms were establishing producing or marketing units in the United States in 1955, although the amount of foreign capital involved was not yet substantial. The Bowater Paper Corp., with a British parent company, planned to add a \$25,000,000 unit to its Tennessee mill, mainly with loans from United States sources. Canadian companies continued their investments in mines and oil properties south of the border, with Nipissing Mines Co. acquiring full control of Vermont Copper Corp. Other investments included a further expansion of U.S. facilities by Canadian Breweries, Ltd., an \$18,000,000 vat dye plant constructed by a United States company owned by Swiss interests, a proposed 50% interest by Imperial Chemical Industries, Ltd., in a \$10,000,000 titanium plant in West Virginia, a proposed truck plant by Daimler-Benz, A. G. of Germany, and the purchase and equipping by the German Volkswagen Automobile works of a Studebaker-Packard plant in New Jersey. Sales and service organizations in the United States were being rapidly re-established by Japanese interests. (See also EXCHANGE CONTROL AND EXCHANGE RATE; EXPORT-IMPORT BANK OF WASHINGTON; INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT; INTERNATIONAL MONETARY FUND.)

(S. Pr.)

Foreign Loans, U.S.: see UNITED STATES: *Foreign Credits in the United States Government.*

Foreign Missions: see MISSIONS, FOREIGN (RELIGIOUS).

Foreign Operations Administration: see FOREIGN AID PROGRAMS, U.S.

Foreign Trade: see INTERNATIONAL TRADE.

Forests. United States.—More than 300,000 ac. in California were ravaged by forest fires in the late summer of 1955. Below-normal precipitation during the preceding winter and hot dry summer weather contributed to explosive forest fire conditions. During an 18-day period, 436 fires occurred. Federal and state forces held most of these to small acreages; the major losses were caused by 16 fires that reached large size.

For the full year 1954, the federal forest service and state

forestry agencies reported a total of 176,891 forest fires in the United States, a substantial increase over the 154,160 reported in 1953. The area burned totalled 8,832,963 ac., which was less than the 9,975,750 ac. burned in 1953. State forestry agencies increased the area under organized protection by approximately 1,000,000 ac. during the year, bringing the total area under some degree of protection by state and federal agencies to 600,377,000 ac. About 49,000,000 ac. of state and private forest and watershed land, most of it in the southern states, still lacked organized protection. The value of systematic protection was indicated by the fact that 12% of the unprotected area burned over in 1954 compared with 0.7% of the protected area.

The Society of American Foresters, at its 54th annual meeting late in 1954, awarded to William L. Hall of Hot Springs, Ark., the Gifford Pinchot medal, named for the society's first resident and first chief of the U.S. forest service. Hall, 81 years of age, was a cofounder of the society with Pinchot. He was cited as the oldest professional forester in the United States in active practice. To Tom Gill of Washington, D.C., was presented the Sir William Schlich memorial medal, named for one of the most eminent foresters of the English-speaking world. Sir William (1840-1925) was inspector general of forests in India, professor of forestry at Oxford university and author of the *Manual of Forestry*, an early monumental work on forest management. Gill, executive director of the Charles Lathrop Mack Forestry foundation, was awarded the medal for distinguished service to international forestry. He had been a forestry consultant to several governments in Central America and the Orient and a forestry adviser to the Food and Agriculture organization of the United Nations.

The William L. Hutcheson Memorial forest, a 65-ac. tract of virgin forest formerly known as Mettler's woods, located near New Brunswick, N.J., was dedicated Oct. 15, 1955, and turned over to the trusteeship of Rutgers university, New Brunswick. The forest was dedicated as a permanent memorial to the former president of the United Brotherhood of Carpenters and Joiners of America, A.F. of L. This organization was the largest donor of funds to a citizens' committee formed to raise money for the purchase of the tract to prevent its commercial exploitation. The memorial forest, together with adjoining land also purchased with donated funds, was to be maintained as the Rutgers University Forest Ecological project, an outdoor laboratory for the study of changes in natural plant and animal associations.

The U.S. congress appropriated a total of \$82,246,690 to the forest service, U.S. department of agriculture, for research, protection and administration of the national forests and co-operative work with the states in the fiscal year 1955. On June 30, 1955, the area of the 149 national forests and related lands under administration of the forest service was 181,002,248 ac. This was a net decrease of 55,370 ac. compared with June 30, 1954. During the fiscal year 1955 the national forests supplied a total of 6,328,229,000 bd.ft. of timber, a new record and an increase of nearly 1,000,000,000 bd.ft. over the 1954 cut. Recreational use of the national forests continued to increase, with 2,000,000 visits reported in the calendar year 1954 and a larger number expected in 1955. The forest service in 1955 issued permits for the grazing of 1,108,794 cattle and horses and 2,911,373 sheep on national forest ranges. Receipts from the sale of timber, grazing fees and other uses of lands under forest service administration in fiscal 1955 amounted to \$81,137,294, compared with \$68,992,686 in 1954.

A new forest research centre was established by the forest service at Rapid City, S.D., to study problems of forest utilization and multiple-use forest management in the ponderosa pine type forest of the Black hills. At Gulfport, Miss., a Southern

Institute of Forest Genetics was dedicated, to be maintained by the forest service for tree improvement studies, particularly with the southern pines.

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Canada.—The Canadian Forestry association, in co-operation with four other national organizations, called a national convention on resources in 1955, the first of its kind held in Canada since 1906. Cosponsoring the conferences were the Engineering Institute of Canada, the Canadian Chamber of Commerce, the Agricultural Institute of Canada and the Canadian Institute of Forestry. Delegates from every province in Canada drew attention to the need for definite policies on forests and other related natural resources.

In New Brunswick one of the most important steps in years was the appointment of a Forest Development commission. This commission was investigating the relation of the forests and the forest industry in New Brunswick to the entire welfare of the province. It was charged with proposing programs which would bring the forests into full production, under the co-operation of government, industry and the general public.

In British Columbia the Royal Commission on Forestry was convened to make an assessment of its progress since 1945. Its report was expected to have special emphasis on the place of forest management licences in the province's forest industry.

In March 1955 a nation-wide conference was held on research necessary to pulp and paper development, both in the mills and in the woods. Representatives from all branches of government, industry and forest education were present in Montreal, Que.

In August a new motorcar tour was added to the others operated by the Canadian Forestry association, this one to serve the 4-H Forestry clubs in Quebec. Three motorcar tours in the prairie provinces and two in Ontario had been operating for several years, through the courtesy of three large motorcar manufacturers. Two railway lecture cars were also operated by the association. The Canadian Pacific railway's "Tree Planting Car on the Prairies" was completing its 37th year, and the Canadian National railway's "Conservation Car" was in its second year of national service. Public education in forestry was being extended into remote forest communities from coast to coast by these means.

MacDonald agricultural college of McGill university, Montreal, appointed a forester to conduct classes in woodland management for its agricultural students, using the 350-ac. college tree farm and the 55-ac. arboretum. The appointment was financed in part by special contributions from five co-operating pulp and paper firms.

The Canadian tree farm program completed its second year of operation, and listed more than 200 tree farmers who were operating approximately 350,000 ac. of privately owned forestland under approved management practices. (J. L. V. C.)

Great Britain.—The chief forestry operations carried out in 1955 again related to the planting of new land and the clearing of poor scrub forest areas for planting. Extensive areas of conifer plantations, 25 to 30 years old, became due for thinnings to improve the crop, and the felling and disposal of the large quantities of small-sized timber employed all available local labour. The use of the poles in the round for building purposes was tried on an experimental scale. A chip-board factory was also set up in Scotland to make use of thinnings from plantations within a radius of about 30 mi. This factory was expected to use about 500 tons of small timber a week.

The construction of new roads for timber extraction made steady progress, particularly in Scotland and Wales where many hillside plantations were still inaccessible to wheeled vehicles. Various types of tractors and logging arches were used but in most hillside plantations the timber was still dragged to the main roads by horses.

The damage done to trees by squirrels was considerably reduced by paying a bounty for gray squirrel tails. To encourage interest in trees the Forestry commission inaugurated a "forest adoption scheme" which offered to schools within easy reach of state forests a plot of two to three acres for adoption. The children were expected to visit the plot regularly and to clear, plant and tend young trees. A number of such plots were adopted and some city councils started similar schemes for roadside tree planting.

Other Commonwealth Countries.—Political changes in west Africa considerably altered the duties of forest officers from administration to advisory work, and in Nigeria the post of director general of forests was abolished. Chief conservators were now directly responsible to the minister of natural resources and the policy was stated to be "the maximum utilization of the forests on the basis of a sustained yield."

In Kenya more than 66,000 ac. had been planted of the original afforestation scheme of 210,000 ac. to be planted in 35 years.

In South Africa and Southern Rhodesia wattle plantations were badly attacked by the wattle bagworm (*Acanthopsyche junodi*) and the wattle lappet moth. From 1952 about 20,000 ac. had been completely defoliated. Intensive treatment by spraying and other measures reduced these pests but serious damage was also caused in Southern Rhodesia by the Rhodesian cockchafer. South African plantations were very seriously damaged by the worst forest fires in many years. In Southern Rhodesia the forestry department was converted into a forestry commission with wider powers of control and management. Some of the oldest of the very large, recently formed plantations, chiefly privately owned, were beginning to yield marketable produce.

A new form of forest insect control was tried in New Zealand for the beetle *Anobium punctatum* by applying dichloroethyl ether mixed with paraffin, which killed the larvae living in pockets in the bark and wood.

In southern Australia a new method of scientific investigation formulated by T. N. Stoa enabled more accurate estimates to be made for the future yield from the plantations of the softwood *Pinus radiata* by calculating separately the volumes and heights for each kind of locality.

In Ceylon research in utilization was encouraged by financial assistance from the UN Food and Agriculture organization which enabled the installation of an experimental sawmill and an expert for the training of staff.

In the Gold Coast nearly 1,000 sq.mi. of forest were under professional forest management plans.

Europe.—In Hungary a new directorate of forestry was formed, and to increase public interest 6,000,000 Norwegian spruce trees were distributed for planting along streets and in city squares.

In Scandinavia a new investigation into the life history of the beetle *Hylobius abietis* was made, and a number of pine and spruce logs, partly buried in the ground, were being studied over a period of five years on 33 different sites.

In Germany an effective new method of bark-beetle control was started by applying a girdle around infested trees in the form of a band 50 cm. wide containing a compound with an alkali arsenate base.

The planting of American red oak (*Quercus borealis*) in European forests, particularly western Germany and the Netherlands, was the subject of a report which had aroused much interest.

This species had been found suitable for European conditions especially on poorer sites where it produced large timber more rapidly than the native European oaks. (See also LUMBER.)

(A. H. LD.)

Formosa. (TAIWAN). Separated at a distance of about 100 mi. from the China mainland, Formosa, a semi-tropical island, is situated north of the Philippines and south of Japan and Okinawa. Including the Pescadores, it has an area of 13,885 sq.mi. with a population of 8,260,961 according to 1953 census. The populations of the five municipalities were: Taipei, the capital, 670,242 (1955); Kaohsiung, 300,000 (1955); Keelung, 225,000 (1955); Taichung, 231,016 (1953); Tainan, 240,016 (1953).

History.—Fighting along the offshore islands and a possible threat to Formosa itself foreshadowed other significant developments during 1954–55. The loss of Yikiang Island and evacuation from the entire Tachen group and diplomatic pressure to persuade the Nationalists to give up all the offshore islands in order to bring about a cease-fire in the Formosa straits caused uncertainty, disappointment and disillusionment in Formosa. Faced with problems of morale that often took precedence over a consideration of tactics or strategy, the National government repeatedly declared that Quemoy and Matsu islands would be defended with or without U.S. military support. The civil organizations, schools and the provincial assembly, the highest representative body of Formosa, all pledged their support of the government decision. The signing of the Sino-American mutual defense treaty Dec. 2, 1954, in Washington, D.C., and the change of the instrument of ratification in Taipei March 1, 1955, with U.S. Secretary of State John Foster Dulles' presence and encouraging words, boosted morale. In addition to the provision for Formosa's defense the treaty laid down the principle of free enterprise in economic development and indicated further economic aid from the United States.

The tension in the Formosa straits brought other high U.S. officials, including the assistant secretary of state for far eastern affairs, Walter S. Robertson, and Adm. Arthur W. Radford, chairman of the joint chiefs of staff, to the island for consultation. In mid-April a Sino-American military co-ordination conference was held in Taipei between the Chinese defense minister and chief of the general staff, and the commander of the U.S. 7th fleet, chief of the U.S. military assistance group in Formosa and the chief of staff to the U.S. Pacific fleet commander.

To maintain operational liaison with Nationalist forces in Formosa liaison centre of the U.S. armed forces was set up. Early in 1955 about 75,000 Formosa-born Chinese were called to the colours to replace over-aged and disabled soldiers, and a U.S. \$48,000,000 aid program to help the retired veterans resettled and find vocations was launched in August.

A wartime atmosphere was created with the arrival of more than 15,000 civilian evacuees from the Tachen group in February and by the precaution taken against possible air raids in Taipei in April. The evacuees were housed in schools in Keelung, the northern chief port with a good harbour about 20 mi. north of Taipei, and subsequently moved to towns and villages along the east coast and in the south.

The Chinese communist infiltration and enticement caused some uneasiness in Formosa. So far the Nationalists on Formosa had managed to protect themselves against the kind of communist infiltration that plagued them on the mainland. In August the Nationalist precaution against communist penetration resulted in the resignation of President Chiang's top military aide Gen. Sun Li-jen, when one of his subordinates was arrested as an alleged communist agent. The shake-up caused some conce-



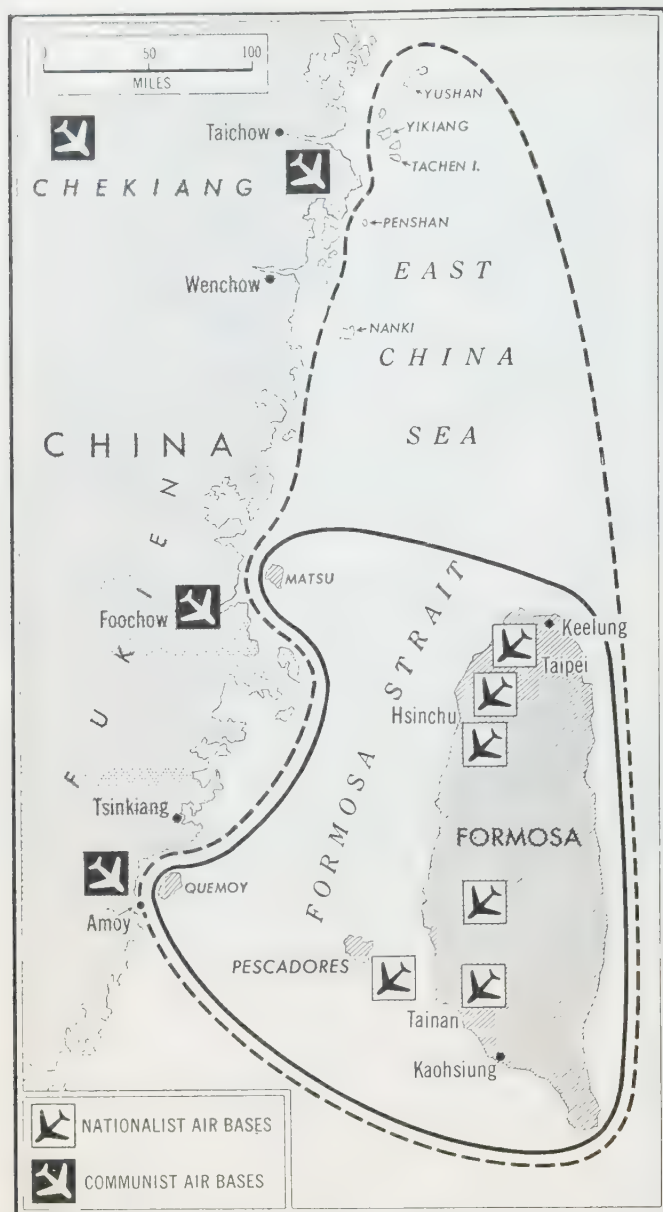
Above, left: SOLDIERS of the 92nd division on manoeuvres near Chiayi, For.

Above, right: U.S.-BUILT F-84 JET FIGHTERS bearing the emblems of the Nationalist forces, flying over Formosa. These planes were used in the frequent raids on the Chinese mainland in 1955

Left: SENTRY STANDING GUARD on a barricaded beach on the coast of Formosa

Right: LANDING CRAFT carrying civilians from the Tachen Islands to ships for removal to Formosa. Between Feb. 6 and 11, 1955, more than 5,000 civilians and 10,000 troops were evacuated under the protection of the U.S. 7th fleet





FORMOSA AND THE CHINA COAST. Area of dotted line shows Nationalist controlled area as of Jan. 1, 1955; solid line is area of Dec. 1, 1955

especially among foreign observers.

The self-government program initiated in 1949 with popular elections of local legislative councils and municipal and county administrative officials, including mayors and magistrates, was carried out with enthusiasm and satisfactory results. The third general local elections for councilmen in cities and counties took place in Dec. 1954 and Jan. 1955. About 1,800,000 voters went to the polls to elect 433 city and county councilmen from a total of 822 candidates. In the 1954 election for administrative officials only one out of five mayors and one out of sixteen magistrates elected were not Formosa-born. Greater participation and high posts in the provincial government were also accorded to the native born Formosans.

The four-year economic plan initiated in 1953 to increase production and improve the general welfare completed its second year with an increase in industrial and agricultural production. However, sugar and rice exports declined sharply in 1954. The plan called for continued U.S. economic-aid loans, the amount of which reached nearly U.S.\$90,000,000 for 1954 and was provisionally programmed for 1955 at nearly U.S.\$110,000,000. In Oct. 1954 contracts were signed for building a U.S.\$20,000,000

fertilizer plant capable of producing annually the equivalent about U.S.\$12,000,000 worth of ammonium sulphate imports an important step toward decreasing Formosa's trade deficit.

Education.—In the autumn of 1954 more than 90% of school-age children attended schools in Formosa. The 1954 total enrolment in the 1,338 elementary schools (1,199 in 1949) numbered 1,113,438 (900,648 in 1949). The number of secondary schools increased from 206 with 114,600 students in 1949 to 228 with 180,900 students. There were 90 technical and vocational schools of intermediary level with a total enrolment of 52,000 in 1954. The number of college students in 14 institutions of higher learning (2 national universities and 12 provincial and independent colleges) reached 14,288 as compared with 5,905 students in 6 colleges in 1949. A new Christian university, being built at Taichung, began operation in the fall term of 1955. The total enrolment of overseas Chinese college students in Formosa in the fall of 1955 numbered approximately 1,500 as against 1,125 in 1954.

Finance.—The certificate rate of the Taiwan Yuen or dollar was maintained at about T\$15 to U.S.\$1 but the black market rate rose to about T\$40 to U.S.\$1 in 1955 (T\$27 in 1954). In April 1955 the total note issue was about T\$1,207,000,000 and the total bank deposits were T\$2,155,000,000. The increase in note issue was attributed largely to borrowing by the National government from the Bank of Taiwan for defense expenditure. The National government's budget deficit fell from 24.2% in 1950 to 1.3% in 1953. For the fiscal year 1954 covering January–June 1954 the estimated deficit was about 7% of the total budget of the National government of T\$1,326,000,000. For July 1954 to June 1955 the estimated deficit was further reduced to about 4% of an estimated budget of T\$2,875,000,000. During the period of 1952–54 the Taiwan provincial government's revenue exceeded its expenditure. The receipts of national, provincial and local taxes in 1954 were estimated at T\$2,168,000,000 or about 20% higher than the total collections of 1953.

Trade.—Formosa maintained trade relations with about 50 nations. In order of importance the principal trading countries in 1954 were the U.S., Hong Kong and Japan. A new trade pact with Japan for April 1955 to March 1956 provided a two-way trade value of U.S.\$188,000,000. Since 1950 U.S. aid in the form of imports valued around U.S.\$60,000,000 each year contributed largely to alleviating Formosa's trade deficit. In 1953 Formosa's foreign trade ended with a favourable balance of more than U.S.\$29,000,000. In 1954 the total value of exports declined to U.S.\$97,756,000 while imports, excluding U.S. aid arrivals, amounted to U.S.\$110,217,000. Formosa's principle exports were largely agricultural products including sugar, rice, bananas, canned pineapple, tea and cashew while machine tools, chemical fertilizers, metals and ores and metal products constituted the chief imports.

Transportation and Communications.—Formosa's railway system totalled in 1955 nearly 2,800 mi.; a large percentage of the lines were owned and operated by the Taiwan Sugar corporation as feeder lines. The passenger and freight carried by the government railway of more than 600 mi. in 1954 were 66,847,359 (63,220,000 in 1953) persons and 8,563,400 (8,800,000 in 1953) metric tons. In Oct. 1954 the arterial highway with bituminous pavement of 250 mi. linking Keelung in the north and Kaohsiung in the south was opened to traffic. Nearly two-thirds of the total construction cost was financed by U.S. aid funds. In 1954 the Taiwan highway administration operated more than 1,500 mi. of bus routes in addition to privately-owned bus lines, and there was considerable increase in the number of vehicles and passenger-mileage. In mid-1954 the total registered tonnage of coastal and ocean-going ships was 354,215 as compared with 350,000 gross tons in 1953.

Agriculture.—Despite the industrial achievements in recent years, Formosa's economy remained predominantly agricultural. Production figures are shown in Table I.

Mining and Industry.—As shown in Table II significant progress has been made in manufacturing and mining.

Table I.—Agricultural Production in Formosa

(In thousands of metric tons)						
Year	Rice	Tea	Sugar cane	Sweet potatoes	Bananas	Pineapples
1945	639	1.4	4,159	1,165	32	17
1952	1,570	11.6	4,801	2,090	107	62
1953	1,700	12.0	7,890	2,200	99	71
1954	1,695	13.0	6,499	2,515	98	66
1955 goal . . .	1,800	14.0	5,519	2,530	94	72

Table II.—Industrial Output in Formosa

Power and mineral production:			
Power (1,000 kw.hr.)	1946	1953	1954
Coal (1,000 metric tons)	472,002	1,564,341	1,805,300
Crude oil (kl.)	1,049	2,393	2,100
Natural gas (1,000 cu.m.)	2,539	2,830	5,400
	39,025	30,925	29,000
Manufactured products:			
Sugar (metric tons)	80,656	920,899	642,000
Chemical fertilizers (metric tons)	500(1945)	164,000	168,000
Cement (metric tons)	97,269	519,676	536,000
Machines (metric tons)	800	8,318	6,500
Gasoline (kl.)	2,810	109,925	137,000
Cotton yarn (metric tons)	410	19,545	23,000
Paper (metric tons)	2,585	24,428	29,000

BIBLIOGRAPHY.—China News, *Directory of Taiwan 1955*; Foreign Operations Administration, *Taiwan Monthly Production Data* (up to June 1955); United Nations, *Economic Survey of Asia and the Far East*, 1955 (1955); Industrial Development Commission, *Industry of Free China* (monthly magazine, up to June 1955).

(H. T. CH.)

Foundations: see COMMUNITY TRUSTS; SOCIETIES AND ASSOCIATIONS, U.S.

Four-H Clubs. The 4-H club program continued to serve an increasing number of boys and girls, chiefly rural, throughout the United States and territories. An increase of approximately 44,000 members in 1954 brought enrollment by 1955 to 2,104,787. These young persons were organized into nearly 89,000 community and county 4-H clubs and did their work under the guidance of about 336,000 public-spirited volunteer leaders.

They carried on varied projects in farming, homemaking, community service and other activities. They raised livestock and poultry, grew gardens and field crops, conserved the soil, sewed, cooked, preserved food and improved their homes. The 1955 club theme was "Improving Family and Community Living."

Any boy or girl between the ages of 10 and 21 years may join a 4-H club. The only membership "fee" is a willingness to "learn by doing," which is the club slogan, and "to make the best better," which is the club motto. The term "4-H" refers to head, heart, hands and health, which are emphasized in the program. The national 4-H club camp in Washington, D.C., marked the 5th year of the camp. Besides about 200 delegates and 100 state club leaders who attended, more than 300 former delegates from 10 states and Puerto Rico returned to the nation's capital for the silver anniversary occasion.

Since 4-H club work is based on the interests and needs of young persons, it adapts to suit changing conditions. A few new trends were apparent. One was the development of an appropriate program to better serve boys and girls in low-income families; another was a strong effort to meet the needs and interests of older 4-H club members more fully; and a third was to grow in suburban areas, with more than 650,000 youth from nonfarm homes already enrolled.

The 4-H program is a part of the national educational system of co-operative extension work in agriculture and homemaking, in which the U.S. department of agriculture, the state land-grant colleges and the counties share. Two important 4-H supporting groups are the National Committee on Boys and Girls Club Work, with headquarters in Chicago, Ill., and the National 4-H Club foundation in Silver Spring, Md. Pres. Dwight D. Eisenhower is honorary chairman of the national committee.

(C. M. F.)

France. A republic of western Europe, France is bounded north by the English channel, northeast by Belgium and Luxembourg, east by Germany and Switzerland, southeast by Italy, south by the Mediterranean sea, southwest by Spain and west by the Atlantic ocean. Area: 212,736 sq.mi., including the Mediterranean island of Corsica (3,367 sq.mi.), but excluding the overseas *départements* (see also ALGERIA; FRENCH GUIANA; GUADELOUPE; MARTINIQUE; RÉUNION). Pop.: (1946 census) 40,502,513; (1954 census) 42,774,445. Language: French is almost universally spoken but there are also other regional languages or dialects: German in Alsace and part of Lorraine; Breton in Brittany; Flemish in the northern corner of the Nord *département*; Provençal in the Alpes Maritimes, Basses-Alpes, Var and Bouches-du-Rhône *départements*; Catalan in Roussillon (Pyrénées-Orientales); Basque south of Bayonne; and Italian in Corsica. Religion: mainly Roman Catholic with about 700,000 Protestants and more than 230,000 Jews. Chief towns (pop., 1954 census): Paris (cap.) 2,850,139; Marseilles 661,492; Lyons 711,270; Toulouse 268,863; Bordeaux 257,946; Nice 244,360; Nantes 222,790; Strasbourg 200,921; 16 towns with a population of from 100,000 to 200,000. President of the republic, René Coty. Prime ministers in 1955: Pierre Mendès-France and

(from Feb. 23) Edgar Faure.

History.—Although the succession during 1955 passed from one Radical to another and Faure took over many of Mendès-France's objectives, especially in North Africa, the government crisis of February marked a shift back from Mendès-France's attempt to renew the whole method of governing France with the help of public opinion, above all that of the young, to a more patient acceptance of the machinery of government as it stood, though not without frequent reminders from the prime minister that it needed improvement. At the same time the government majority, which had been essentially centre-left under Mendès-France, became centre-right under Edgar Faure. The Socialists did indeed give Faure support against his own right wing over Morocco in October, but they made it clear that this did not mean approval of the government. The fact, however, that both Mendès-France and Faure were Radicals and old comrades and that they shared many aims prevented Mendès-France from conducting an immediate campaign against the "old forces" that had defeated him. His efforts were first concentrated on capturing the Radical party machine and his campaign in view of the elections in 1956 was only beginning to unfold when it was seriously upset by Faure's desire in October for immediate elections. While the question of how France was to be governed was in the background throughout the year and the national assembly gave even greater proof of the difficulty of bringing it to a decision, the foreground was generally and sometimes almost exclusively occupied by North African affairs.

Fall of Mendès-France.—At the new year the Mendès-France government was visibly approaching its end. Mendès-France had only won the debate on the Paris agreements because their importance to France internationally outweighed the growing opposition to himself in the national assembly. (The agreements were ratified on Dec. 30, 1954, by 287 votes against 260, with 74 abstentions.) His proposal on Jan. 4 to return from a much qualified system of proportional representation to the prewar system of single-member constituencies showed that he still considered that attack was the best defense.

A further sign that Mendès-France would not admit defeat in advance was the reconstruction of the cabinet on Jan. 20 prefatory to a second period of his premiership in which his principal preoccupations would no longer be foreign policy but finance and economics, the main subjects of his campaigns before he had taken office. This incidentally stressed a divergence between himself and Faure, for if both were profoundly concerned with modernizing the French economy, Faure undoubtedly held that there was no reason to abandon the gradual methods by which he had already achieved a great degree of consolidation, while Mendès-France evidently feared less the possibility of shock after a more surgical attack on the deep-seated causes of trouble. The refusal of the assembly on Jan. 31 to vote provisional credits for February since the budget was not yet passed—normally not a political issue at all—was a warning how far the wind had turned against him.

Mendès-France was opposed in this debate both by the conservative opponents of his policy and by the Mouvement Républicain Populaire (M.R.P.) who were in essential agreement over North Africa but believed that the present was the last occasion on which Mendès-France could be forced to resign for many months because of the international calendar. Mendès-France had come into office after a stinging attack against the M.R.P. foreign minister Georges Bidault and M.R.P. management of Indochinese affairs. He seemed also to them a revival of the kind of French left which would offer no room for a Catholic party, however liberal. Early in the debate René Mayer, former premier, a right-wing Radical, showed that the truce into which he seemed to have entered with Mendès-France

was over. This was significant for the later course of the debate. Mendès-France was finally defeated on Feb. 5, by 319 against 273. He had against him the right which resented all policy of concession in North Africa, the M.R.P. on personal grounds and the Communists because he had negotiated the Paris agreements.

Faure Cabinet.—Faure was well placed to form a new government in that he had been a member of the Mendès-France and Joseph Laniel governments. He represented a thread of continuity. He had not, during the last year and a half, taken an active part in the disputes over the European Defense community, Indochina or North Africa. He restored the centre-right coalition of René Mayer and Laniel but with a breath of new air from the Mendès-France regime. From the start, however, his position on the left flank of his own government involved him in juggling to maintain the balance. It soon became evident that to save what seemed to him essential he was prepared to sacrifice on other issues. By this combination of yielding and firmness with his coalition always shaking beneath his feet he got the budget voted on March 20 by 392 to 211 votes.

On March 27 the council of the republic (upper house) approved the ratification of the Paris agreements by 234 to 75. This decision had at one time appeared doubtful. There was a strong inclination to introduce some conditional reserve into the bill. The senators asked for assurance about points of variance between France and Germany on the Franco-Saar agreement, as well as on the prospects of the creation of a western European arms agency. Faure insisted that France would be in a much better position to press for allied support after publicly demonstrating its solidarity by ratifying the treaties.

With these matters settled Faure resumed the Franco-Tunisian negotiation on April 7. Among the chief difficulties remaining was the boundary of the area of the Libyan frontier to be under French control as part of French responsibility for security and the proportions of French members in municipalities. The atmosphere of the negotiations was naturally affected by the violent speeches by leaders of the French die-hard organization *Présence Française* and by the extremist nationalist Salah ben Youssef. Nonetheless negotiations did not break down. On April 21, Faure received Habib Bourguiba, much the most important figure in the Tunisian Neo-Destour party, but not a member of the delegation. He was in fact still technically an exile though by now an honoured one. Negotiations were finally concluded successfully on May 29, and the assembly ratified the agreement by 538 to 44 on July 9. (See also TUNISIA.)

Algeria and Morocco meanwhile were giving grave concern. In Algeria Jacques Soustelle, the new governor general, was fighting on two fronts, against the armed rebellion and terrorism that was spreading and against the conservatism of the official hierarchy and dominant political forces in Algeria, and more particularly the demand of settlers that arms should be distributed among them and reprisals carried out. In order to strengthen the executive without weakening civil control, a civilian form of state of siege was invented called "state of urgency." The national assembly passed the necessary law on April 1. Statements on policy in Algeria by Faure and Soustelle stressed that reform, political, social and economic, must be pushed forward without waiting till rebellion and terrorism had ceased. (See also ALGERIA.)

Faure seemed to have planned to leave the problem of Morocco until Tunisia was settled, but the terrorism continued and was soon paralleled by counterterrorism, namely outrages against nationalist Moroccans or Frenchmen advocating a policy of understanding with them. While Moroccan terrorists or alleged terrorists were often arrested, no counterterrorist ever had been. This had aroused sharp criticism in France. On June 12 Jacques Lemaigre-Dubreuil, a well-known industrialist and a

strong advocate of a policy of reconciliation, was murdered in Casablanca. The counterterrorists could no longer be ignored. Roger Wybot, director of the territorial security section of the *Sûreté Nationale*, was sent to Morocco to look into the conduct of the police. Within a few days a dozen arrests were made, mostly among the police, but by the end of the year there was still no indication of the charges being brought against them. On June 20 the government appointed as resident general Gilbert Grandval, who had gained a reputation for energy and imagination as France's representative in the Saar. On June 21 Faure told the assembly that counterterrorism must be expressed no less than terrorism. He outlined French policy in Morocco as: (1) the maintenance of the French presence; (2) the restoration of the functions of internal government to the Moroccans; (3) the creation of a modern democratic Moroccan state. He thus made it clear that the French government had abandoned the plans for a merger of French and Moroccan sovereignty which were the underlying reason for the quarrel that led to Ben Youssef's deposition in 1953.

Faure was evidently walking warily in his references to Morocco, fearing opposition within his own cabinet and from the French in Morocco.

He had hoped to deal with Morocco during the parliamentary holiday, facing the assembly when it met again in October with a successful *fait accompli*, but the murder of Lemaigre-Dubreuil forced him to act earlier. Grandval arrived in Rabat on July 1. Nationalist extremists on both sides, however, were evidently determined to prevent reconciliation. A bomb thrown into a European cafe in Casablanca precipitated anti-Moslem riots by the Europeans and violent demonstrations against Grandval. Disciplinary measures had to be taken against the police. Faure approved Grandval's plan to invite Mulay Mohammed ben Arafa, the phantom sultan, who had been on the throne since 1953, to retire to Tangier and set up a council of regency which could form a representative government that would negotiate with France. Mohammed ben Youssef, the deposed sultan, should be allowed to live in France instead of Madagascar. This plan, however, ran into sharp opposition not only within the coalition but inside the cabinet. Antoine Pinay was slow to assent, but Gen. Pierre Koenig, minister of national defense, did not seem to assent at all. It was objected on the right that France would lose face by deposing the sultan of its own creation. Faure gave assurances that it was not intended to tolerate the return of the deposed sultan and Grandval warned that every day's delay made this return more probable. On Aug. 19 the French government announced an invitation to representatives of all sections of Moroccan opinion to meet a French cabinet committee at Aix-les-Bains. The hope of having achieved something before Aug. 20 (the anniversary of Ben Youssef's deposition) had failed. Grandval was pressing his resignation. Violent outbursts by Moslem extremists in both Morocco and Algeria nearly drowned the cause of conciliation in blood. By Aug. 26 important progress toward agreement on the lines of Grandval's proposals had been made. Faure sacrificed Grandval in the hope of conciliating his right wing and appointed Gen. P. G. Boyer de Latour du Moulin, hitherto resident general in Tunisia. But this did not disarm opposition, some of which seemed to come from the new resident general. It was not till Oct. 1 that the shadowy sultan could be persuaded to go and not until Oct. 6 that the Moroccan council of regency had at last been established.

The effect of this on the government's prestige at home was disastrous. Those who agreed with Faure's aims had no patience with his delays. There were two riots by reservists called up and ordered to embark for North Africa. As if in sympathy with the general decay of authority the Pierre Poujade anti-tax movement raised its head again. Faure's first step to reassert himself



"YOUR HEALTH, MONSIEUR!" a 1955 cartoon by Shanks of the *Buffalo Evening News* (N.Y.)

as to ask the Gaullist ministers to show solidarity or resign. He stayed, four resigned, including Koenig. On Oct. 9 the assembly approved Faure's Moroccan policy by 477 to 140 after a debate in which his execution of it was severely criticized. He had greater difficulty in securing a majority on Algerian policy because, on the principle of taking one difficulty at a time, he had not initiated a frank discussion as he had on Morocco. On Oct. 18 his policy was approved by 308 to 254. His original speech had gone little beyond a promise of the full execution of the 1947 statute of Algeria combined with important administrative, social and economic reforms, but in his second he laid stress on consultations to be held before the new year with members of all Algerian parties on the future status of the country. In the course of the debate he admitted that the troops in North Africa now numbered 320,000, an increase of more than 100,000 in the year. Faure was no doubt assisted in rallying a demoralized assembly by the vote of the UN general assembly at the end of September to include a discussion of Algeria in its agenda. This was a severe shock to French opinion, as was, nearly a month later, the big adverse vote on the Saar (q.v.).

On Oct. 21 Faure announced the government's decision to ask the assembly to curtail its own existence and hold elections in December. Faure declared that he left it to the assembly to decide whether the electoral law should be reformed. In fact, with so short an interval the only practicable reforms would be those that did not require remapping the constituencies. The return to single-member constituencies as Mendès-France had demanded would have meant delaying the elections. Mendès-France immediately attacked Faure for holding sudden elections by a method which would save as many as possible of the old deputies, instead of seeking a real renewal. Faure replied that vital decisions must be taken in January and that only a government based on a new assembly would be able to shoulder them. Mendès-France had gained control of the Radical party machine at a stormy party congress in May and was about to strengthen

it and launch his election campaign at a second party congress opening on Nov. 4. This congress fully endorsed Mendès-France's views and received with catcalls the premier who had difficulty in getting a hearing.

Meanwhile in Morocco the principal opponent of the deposed sultan, Haj Thami el-Mezuari el-Glaoui, the pasha of Marrakesh, had transformed the situation on Oct. 25 by declaring himself in favour of the deposed sovereign's restoration. The French government could no longer oppose the Moroccan people's unanimous wish so that when the sultan landed in France from Madagascar it was at once quite evident that his exile was at an end. The shadow sultan confirmed the situation on Oct. 3 by formally abdicating in Tangier. On Nov. 6 Pinay formally informed Mohammed V Ben Youssef that France recognized him as sovereign and a joint declaration was issued by which the sultan was committed to becoming a constitutional sovereign, France to leading Morocco rapidly on the road to self-government and the sultan and France to seek by bilateral negotiations a framework of "interdependence" within which Morocco would be independent and French interests in Morocco guaranteed. Here was indeed a strong argument to reinforce Faure's plea that France must have a government able to take decisions in January. (See also MOROCCO, FRENCH.)

Indochina.—Declining French interest in Indochina was stimulated in April and May by the difference of opinion with the U.S. as to whether the southern Vietnamese premier Ngo Dinh Diem should be encouraged to put down by force the armed sects, the more so since Ngo was disinclined to accept the commitment in the Geneva agreement to hold elections simultaneously with northern Vietnam in 1956. On May 3 Faure told the assembly that it would be more dangerous not to hold these elections than to lose them. French views were overruled with regard to Ngo and the sects and henceforth the principal French interest in Indochina was in gradually withdrawing what was left of the expeditionary force. It stood at 35,000 in October, when it was decided to reduce it to 20,000. (See also VIETNAM.)

(See also FRENCH LITERATURE; NORTH ATLANTIC TREATY ORGANIZATION; PARIS.) (D. R. GL.)

On Nov. 29 the government was defeated by a 318-to-218 vote of the assembly, or more than a majority of the entire membership of the chamber. Faure thereupon seized on a clause of the 1946 constitution, never before used, which provided that if two governments are defeated on formal votes of confidence by a majority of all the house within an 18-month period, the cabinet may order dissolution of the assembly, and elections must then be held within 30 days. The cabinet backed Faure's decision to dissolve parliament, with some dissent, and he set Jan. 2, 1956, for the national elections.

Education.—(1953-54). Primary schools: state infant 4,076, pupils 620,780; private infant 211, pupils 21,787; state primary 70,166, pupils (including infant) 4,085,338; private primary 10,691, pupils (including infant) 888,021; state higher primary, pupils 239,735; private higher primary, pupils 69,334; total primary 80,857, pupils 4,395,707; teachers, all groups (state) 167,261, (private) 33,800. Secondary schools (including some primary classes): state 898, pupils 529,879, teachers 21,423; private 1,624, pupils 372,974, teachers 18,148. State vocational schools 1,064, pupils 282,897, teachers 19,035. State teachers' training colleges 162, students 16,868. Institutions of higher education: state 53, students 15,806; private (including vocational) 40, students 8,136. Universities 16, students 145,865, teachers 3,600.

Finance.—Monetary unit: franc, with an official exchange rate in 1955 of 349.95 to the U.S. dollar. Budget: (1954 actual) revenue 3,249,000,000,000 fr., expenditure 3,535,000,000,000 fr.; (1955 est.) revenue 2,997,000,000,000 fr., expenditure 3,313,000,000,000 fr. National income (1953): 10,470,000,000,000 fr. Internal debt (1954) 4,440,000,000,000 fr.; external debt 1,129,000,000,000 fr. Currency circulation: (Feb. 1955) 2,548,000,000,000 fr.; (Oct. 1954) 2,471,000,000,000 fr. Deposit money: (Oct. 1954) 2,520,000,000,000 fr.; (Feb. 1955) 2,694,000,000,000 fr. Gold and foreign exchange holdings (March 1955, official) U.S. \$1,535,000,000. Cost of living index (April 1955, 1948=100): 168. Wages index (April 1955, 1948=100): 234.

Foreign Trade (1954).—Imports 1,475,394,000,000 fr.; exports 1,466,124,000,000 fr. Main sources of imports: French dependencies 28%; continental European Payments union countries 23%; U.S. and Canada 10%; U.K. 5%; other sterling area 18%; Latin America 6%. Main



PASSENGERS AWAITING BUSES at Neuilly, a suburb of Paris, Fr., are kept warm by infrared heaters installed in 1955

destinations of exports: French dependencies 36%; continental E.P.U. 34%; U.K. 6%; other sterling area 4%; Latin America 6%; U.S. and Canada 4%.

Transport and Communications.—State railways (1954): 41,200 km., including 4,421 km. electrified; passenger-kilometres (1953) 25,880,000,000; freight ton-kilometres (1954) 41,270,000,000. Roads (1953): 830,000 km. Motor vehicles in use (1953): cars 2,020,000, commercial vehicles 1,254,000. Navigable inland waterways (1953): 8,500 km. Shipping (July 1954): merchant vessels of 100 gross tons and more 1,267; gross tonnage 3,844,519. Civil aviation (1954): 2,711,115,000 passenger-kilometres; freight 91,368,000 ton kilometres. Telephones (Jan. 1954): 2,768,951. Licensed radio receivers (1954): 8,585,000.

Agriculture.—Main crops (metric tons, 1954, revised data): wheat 10,519,000, rye 537,000, barley 2,522,000, oats 3,565,000, maize 871,000, flax fibre 34,200, potatoes 17,012,000, grapes (1953) 9,020,000; dessert grapes (1954) 234,000. Livestock (Sept. 1954): cattle 16,889,000, pigs 7,328,000, sheep 7,826,000, horses 2,277,000, chickens 75,000,000. Meat production (metric tons, 1954): beef 751,200, veal 272,400, pork 511,200, mutton and lamb 80,400. Dairy production (metric tons, 1954): milk 18,600, butter 305,000, cheese (1953) 270,000. Wine production (1954) 58,490,000 hl. Sugar (1954, raw value) 1,617,000 metric tons.

Industry.—Index of employment (1948=100): Oct. 1954, 105, April 1955, 106. Index of industrial production (Jan. 1955, 1948=100): mining 150, manufacturing 147, construction 102, gas and electricity (March 1955) 171, general (March 1955) 154. Industrial production (metric tons, 1954, excluding the Saar): coal 54,405,000, iron ore (35% metal content) 43,824,000, pig iron 8,937,000, crude steel 10,626,000, aluminum, primary, 12,306,000, cement 9,553,000, (1953) zinc ore 11,500, bauxite 1,163,000, gold (kilograms) 1,515,000, (1954) woven cotton fabrics 209,000, cotton yarn 295,300, wool yarn 128,400, rayon filament yarn 53,300, rayon staple fibre 50,900. Gas production (1954): 2,589,000,000 cu.m., electricity (95% of total) 42,763,000,000 kw.hr. Motor vehicle production (1954): cars 437,100, commercial vehicles 163,240. Merchant shipping launched (1954): 268,300 gross tons.

Franklin Institute: see SOCIETIES AND ASSOCIATIONS, U.S.

Freemasonry: see SOCIETIES AND ASSOCIATIONS, U.S.

Freer Gallery of Art: see SMITHSONIAN INSTITUTION.

French Colonial Empire: see FRENCH UNION.

French Equatorial Africa. This federation in central Africa of four overseas territories of the French Union is bounded west by the Atlantic ocean, Nigeria and French West Africa, north by Libya, east by the Anglo-Egyptian Sudan and southeast by the Belgian Congo. Cameroun, under French trusteeship, is administered separately. Areas and populations are shown in the table.

Native population is mainly Bantu, but there are semi-

Hamitic, semi-Negroid pastoralists in the northern savannah tracts. Religion: animist; 46% Moslem in Chad; about 280,000 Christians in Gabon and Middle Congo. Chief towns: Brazzaville (cap. of A.E.F. [Afrique Equatoriale Française]) 1,200,000 (1950 census) 84,090, including about 5,000 Europeans; Bamenda (1953 est.) 60,000; Fort Lamy 18,300; Libreville 12,600; Yaoundé (1950 est.) 30,000. High commissioner in A.E.F. in 1954 Governor-General Paul Chauvet. Governors: Gabon, Yves Diouf; Middle Congo, Ernest Rouys; Ubangi-Shari, Louis Sanmarco; Chad, Ignace Colombani. High commissioner in Cameroun Roland Pré.

History.—Nothing of political importance happened in 1954. The elections to the senate did not change anything. Deposits of iron ore at Boca-Boca (Gabon) and of manganese at Franceville attracted attention, and a railway linking Franceville with the Congo-Ocean line was planned. Late in August a number of Sudanese officials from the north presented themselves in Ubangi, as refugees from the revolt of the south.

In Cameroun the Cameroun Peoples' union (U.P.C.), an organization with communist leanings, stirred up a certain

Territory	Area (sq.mi.)	Population (1952 est.)	Capital
Gabon	103,089	408,778	Libreville
Middle Congo	132,046	684,450	Pointe Noire
Ubangi-Shari	238,224	1,071,791	Bangui
Chad	495,752	2,241,501	Fort Lamy
Total	969,111	4,406,520*	
Cameroun	166,793	3,077,080†	Yaoundé

*Including 20,120 Europeans (about 7,500 French). †1951 census. Including 12,000 Europeans (10,249 French).

amount of trouble. On May 24 a police post at Douala was attacked. Violent demonstrations took place at N'Kongsam and at Yaoundé. After 26 people had been killed, order was restored and the U.P.C. dissolved.

The number of rural communes, each equivalent to an administrative subdivision, was raised from 17 to 52 by the creation of 35 new ones; on their councils most of the members were chosen by election, though some were nominees of the traditional chiefs. A vast area in the south of Cameroun was not administered in this way.

P. H. Teitgen, minister for Overseas France, visited Cameroun in May and declared that the territory would shortly be granted political institutions like those newly conceded to Togo. He opened the 1,830-m. bridge across the Wouri estuary, connecting western Cameroun with Douala at once by rail and by road.

(Hu. De.)

Education.—Schools (1953): A.E.F., primary 938, pupils 123,000, secondary 35, pupils 2,449; vocational 95, pupils 4,207. Cameroun, primary 1,336, pupils 152,006; secondary (including teacher training) pupils 3,000; vocational 27, pupils 1,137.

Foreign Trade.—(1954) Monetary unit: franc C.F.A. (Colonies Françaises d'Afrique)=2 metropolitan francs. Metropolitan franc: 350 U.S.\$1. A.E.F.: imports: 16,681,800,000 fr.C.F.A. including 10,000,000,000 fr.C.F.A. from France; exports 12,794,000,000 fr.C.F.A. including 8,600,000,000 fr.C.F.A. to France. Cameroun: imports 16,000,000,000 fr.C.F.A., including 10,000,000,000 fr.C.F.A. from France; exports 15,000,000,000 fr.C.F.A., including 7,800,000,000 fr.C.F.A. to France. 2,600,000,000 fr.C.F.A. to the Netherlands. Cocoa exports (Cameroun metric tons, 1954): 50,000.

French Guiana. An overseas *département* on the northern coast of South America. Area, including the adjacent maritime territory of Inini: 35,135 sq.mi. Pop.: (1946 census) 28,500 (1954 census) 27,863 (including 2,380 *primitifs*). The coastal and lowland population is Negro or mixed; Europeans about 5,000. Inini, aboriginal Indians. Religion: mainly Roman Catholic. Capital and chief port, Cayenne, pop. (1953 est.) 15,000. In effect in 1955, Robert Vignon.

History.—The Radicals retained their majority in the general council during 1955; one Socialist was elected to it. An aircraft was purchased for inland use. The road along the coast was completed from St. Laurent to Mana; development work went on at Cayenne.

(Hu. De.)

Foreign Trade.—(1954) Monetary unit: metropolitan franc, valued in 1955 at 350 francs to U.S. \$1. Imports 3,500,000,000 fr., including 1,593,000,000 fr. from France. Exports 175,000,000 fr., including 120,000,000 fr. to France.

French Guinea: see FRENCH WEST AFRICA.

French India: see INDIA.

French Literature. Literary production in 1955 seemed less prolific than in 1954. The number of novels was fewer than in the preceding year—approximately 50 as against about 200. Nevertheless, literary juries were not averse to it to select the winners of the traditional prizes, the foremost of which was the Goncourt prize for 1955.

The best-known writers did not produce outstanding works. This applied to Jules Romains, to Georges Duhamel, who appeared to have produced only a travel book, *La Turquie nouvelle*, and *Refuges de la lecture*; to Henri de Montherlant who, apart from his *Port-Royal*, published his "Théâtre Complet"; and to Paul Morand, who offered only a selection of articles, *L'Eau sous les ponts*. Paul Vialar, with exceptional fecundity, added two volumes to an already extensive work: *Cinq hommes de ce monde* (imaginary life stories of heroes of World War II—Englishman, an American, a German and a Russian) and *Voiles de Mars*, in which was evident the author's hatred of war. Roger Vercelet, a former winner of the Prix Goncourt, produced a novel on Martinique, *L'Île des revenants*. There was no doubt, however, that the most valuable novel, which attracted the attention of both literary and political circles, was that which won the 1954 Goncourt prize: *Les Mandarins*, by Simone de Beauvoir. It brought back memories of "existentialist" theories of postwar Paris and portrayed dispirited youth engaged in a fruitless quest for a philosophy and a faith. Critics were warm in their praise of *Le Passage* by Jean Reverzy, which dramatically depicted an invalid under sentence of death by his doctors, and *Le Goût du péché* by Maurice Boissais, a story of a Protestant Puritan family, which earned the Prix Interallié. *La machine humaine* by Gabriel Veraldi seemed less inspired than his earlier *A la mémoire d'un ange*, although it won the 1954 Prix Fémina.

The many novels that were published in 1955 included *Le Terre*, by Pierre Brisson, the editor of *Figaro*; *Philippe*, by Claude Aveline; *Amélie*, by Henri Troyat; *La femme infidèle*, by Jules Roy; *Les Asiates*, by Jean Hougron; *La Greffe de printemps*, and *Les eaux mêlées*, by Roger Ikor; *L'Heure exquise*, by Raymond Las Vergnas; *Les bijoutiers du clair de lune*, by Robert Vidalie; *Les rois maudits*, by Maurice Druon; *L'Humeur vagabonde*, by Antoine Blondin; *Le Pays où l'on n'arrive jamais*, by André Dhôtel; *Le Machin* and *Les Cheveux sur la soupe*, by Jacques Perret; *Doucine*, by Jean Dutourd; and *Le Bouquet de mariée*, by Jacques Chenevière. Two books by Pierre Gascar were particularly worthy of attention. These were *Femmes* and *Graine* (a moving recollection of an unhappy childhood).

Once again French women writers contributed to the wealth of the year's literary production. They included Louise de Vilморin, with *Les belles amours*; Françoise Mallet-Joris, with *La chambre rouge*; René Jérôme-Tharaud, with *Le Bois perdu*; Françoise Lorrain, with *La Colonne de cendres*; and Monique Saint-Hélière's *L'Arrosoir rouge*.

Among books of poetry published, the following should be noted: *Clair obscur*, by Jean Cocteau; *La Pluie et le beau temps*, by Jacques Prévert; *Poèmes retrouvés*, by Jacques Duron; and *Facé*, by Marie Jeanne Dury. Memoirs and letters published in 1955 included volume six of the *Journal* of Julien Green (1950-54); *Souvenirs sans fin*, by André Salmon; the second volume of *Journal littéraire*, by Paul Léautaud; and General Charles de Gaulle's *Les Mémoires de guerre* (whose literary

value reinforced intrinsic historical interest). Several biographies attracted the notice of the cultivated public. These were *Saint Just et la force des choses*, by Albert Ollivier; *Les Frères Goncourt*, by André Billy; *Alexandre Dumas*, by Henry Clouard; *Don Quichotte*, by Etienne Burnet; Robert Escarpit's *Rudyard Kipling*; and Marcelle Auclair's *Jaurès*. The most notable works of literary criticism were *Balzac et son monde*, by Félicien Marceau (who also produced an interesting novel—*Les élans du coeur*); *L'Esprit du mal et l'esthétique baudelairienne*, by Marcel A. Ruff; *Jules Romains et les hommes de bonne volonté*, by André Cuisenier; and *Mallarmé lycéen* and *Rimbaud ou le génie impatient*, by Henri Mondor. Reprints during 1955 included Marcel Proust's *A la recherche du temps perdu* (three volumes, with a preface by André Maurois); volume 1 of Charles Baudelaire's *Oeuvres complètes*, arranged in chronological sequence under the direction of Sylvestre de Sacy; and *L'Esthétique de la langue française*, by Rémy de Gourmont. Of equal significance were *La correspondance André Gide—Paul Valéry (1890-1942)*, with a preface and notes by Robert Mallet; and *La correspondance générale* of Prosper Mérimée (the second volume of the second series, started by Maurice Parturier).

During 1955 the literary world commemorated the second centenaries of the death of Montesquieu and the death of Saint-Simon, the centenary of the birth of Emile Verhaeren, and the 50th anniversary of the death of Jules Verne. Jean Cocteau, Daniel Rops and Albert Buisson were elected members of the Académie française on March 3, and Jean Giono was elected member of the Académie Goncourt, as successor to Colette. (See also CANADIAN LITERATURE; LITERARY PRIZES.) (A. PR.)

French Overseas Territories: see FRENCH UNION.

French Pacific Islands: see PACIFIC ISLANDS, FRENCH.

French Union. With the establishment, by the constitution of 1946, of the French union, in which are comprised both the mother country and the former empire, the old colonial terminology was abolished and for the colonies were substituted four categories of overseas regions. The older assimilated colonies claimed recognition as French *départements* administered as in the mother country; the others became overseas territories (*territoires d'outre-mer*) which henceforward would elect representatives to parliament and would have their own local assemblies possessed of wide powers; the trust territories, to be known in future as *territoires associés*, were similar in structure to the overseas territories and had the same electoral privileges; lastly, there were the former protectorates, now styled *états associés*, which could belong to the union only by an act of voluntary accession. Total area of the French union, excluding France proper (1955 est.): 4,483,527 sq.mi.; total population about 63,838,000. Certain essential information on the component parts of the French union is given in the table on page 282. (See also separate articles.)

History.—In 1954 Pierre Mendès-France had begun to solve the French union's political difficulties by making peace in Indochina and by promising autonomy to Tunisia. His successor Edgar Faure concentrated his attention on the outstanding north African problems, with a view to putting an end to bloodshed and disturbances. On Feb. 4, 1955, the Mendès-France government was overthrown on the north African question by a combined vote of the right wing and the communists. Edgar Faure's government, formed on March 2, included P. H. Teitgen as minister for overseas France.

The Franco-Tunisian negotiations were continued to some effect: in April a protocol of agreement was signed whereby Tunisia received internal autonomy. The Tunisian leader Habib Bourguiba returned to his country in triumph. Yet when tran-

French Union

Country and area, sq.mi. (approx.)	Population* (000's omitted)	Capital, status, governors, rulers, etc.
AFRICA		
Algeria, 846,124	9,531	Algiers, group of four départements, Governor General: Jacques Soustelle.
Morocco, 154,054	8,340	Rabat, protectorate, Sultan: Mohammed V Ben Yussef; Resident general: André Dubois.
Tunisia, 48,332	3,700	Tunis, protectorate, Bey: Mohammed el-Amin; Premier, Tahar Ben Amar; High Commissioner, Roger Seydoux.
French West Africa, 1,831,079	17,726	Dakar, group of territories, High commissioner: Bernard Cornut-Gentile.
Mauritania, 416,061	560	Saint-Louis, overseas territory, Governor: Albert Mouragues.
Senegal, 80,617	2,158	Saint-Louis, overseas territory, Governor: Max Jourdain.
Sudan, 460,540	3,461	Bamako, overseas territory, Governor: Lucien Geay.
Upper Volta, 105,946	3,200	Ouagadougou, overseas territory, Governor: Salvador Etcheber.
Niger, 494,633	2,227	Niamey, overseas territory, Governor: Jean Ramadier.
Ivory Coast, 123,282	2,309	Abidjan, overseas territory, Governor: Pierre Mesmer.
French Guinea, 106,216	2,262	Conakry, overseas territory, Governor: Jean Paul Parisot.
Dahomey, 43,784	1,549	Porto Novo, overseas territory, Governor: Charles Bonfils.
Tagoland, 21,235	1,070†	Lomé, trust territory, Commissioner: vacant.
French Equatorial Africa, 969,111	4,492‡	Brazzaville, group of territories, High commissioner: Paul Chauvet.
Gabon, 103,089	413‡	Libreville, overseas territory, Governor: Yves Jean Digo.
Middle Congo, 132,046	693‡	Pointe Noire, overseas territory, Governor: Ernest Rouys.
Ubangi Shari, 238,224	1,082‡	Bangui, overseas territory, Governor: Louis Sanmarco.
Chad, 495,752	2,304‡	Port Lamy, overseas territory, Governor: Ignace Colombani.
Cameroon, 166,793	3,121‡	Yaoundé, trust territory, High commissioner: Roland Pré.
French Somaliland, 8,494	63‡	Jibuti, overseas territory, Governor: Roland Petitbon.
Madagascar, and Dependencies 230,165	4,540§	Antananarivo, overseas territory, Governor-general: André Soucadeaux.
Comoro archipelago, 832	170	Dzaoudzi, overseas territory, Administrator: Pierre Coudert.
Réunion, 969	274||	Saint-Denis, overseas département, Prefect: Pierre Philip.
AMERICA		
Saint-Pierre and Miquelon, 93	5	Saint-Pierre, overseas territory, Administrator: Pierre Sicod.
French Guiana, 35,135	28	Cayenne, overseas département, Prefect: Robert Vignon.
Guadeloupe, 687	229||	Basse-Terre, overseas département, Prefect: Jacques Ravail.
Martinique, 425	239||	Fort-de-France, overseas département, Prefect: Gaston Villéger.
ASIA		
National Republic of Vietnam, 63,600	10,000	Saigon, associated state, President and Premier: Ngo Dinh Diem.
Laos, 91,500	1,260§	Vientiane, associated state, King: Sisavang Vong; Premier: Katay Sasorith.
OCEANIA		
New Caledonia and dependencies, 7,654	63§	Nouméa, overseas territory, High commissioner for the Pacific Islands: René Hoffherr.
New Hebrides, 5,700	52‡	Vila, Franco-British condominium, French Resident: Pierre Anthonioz.
French Pacific Islands, 1,545	63§	Papeete, overseas territory, Governor: Jean Toby.

*1954 estimate if not otherwise stated. †1955 est. ‡1952 est. §1953 est. ||1954 census. ¶1954 est.

quillity had been restored in Tunisia, assassinations and attacks by armed bands increased in Algeria and in Morocco. In Morocco the new resident general, Gilbert Grandval, tried to find a solution despite bloodshed, rioting and the opposition of certain French elements of the population. His proposals, put forward in August, involved the departure of the reigning sultan Mulay Mohammed Ben Arafa and the establishment of a Moroccan government. Faure came to terms with the Nationalists and with the deposed sultan, Mohammed V Ben Yussef; but opposition from the right wing of his own supporters obliged him to temporize and to accept Grandval's resignation. It was only when the Gaullist ministers in turn resigned that Faure, on Oct. 8, was able to secure the assembly's approval of his policy.

In Algeria the focus of terrorist activity was transferred



FRENCH TROOPERS in Algeria guarding suspected terrorists in a rout Aug. 22, 1955, after a week of violence in which more than 2,000 persons were killed

from the Aurès range to the zone between Constantine and Philippeville. The size of the French population and the fact that the country's being politically linked with France caused the government to propose that the union be maintained and consolidated, while undertaking to hold *bona fide* elections and consult the inhabitants' elected representatives with a view to formulating a new policy. On Oct. 18 it secured a majority of 50 votes for these proposals.

For the former protectorates of north Africa, then, the policy of autonomy was finally adopted. The Indochinese states meanwhile became practically independent; toward the end of October the special French ministries for them were suppressed, responsibility passing to the ministry of foreign affairs. At the same time support was increasingly forthcoming for the concept of a federal structure for the French republic insofar as Algeria and the overseas territories were concerned; the Socialists, traditional champions of the policy of assimilation, now adopted a more federalist standpoint; and the U.D.S.R. (Union Démocratique et Socialiste de la Résistance), a group not removed from the Socialists, did likewise. Sedar Senghor, Senegalese African, leader of the federalist group known as the Overseas Independents, joined the Faure government as secretary of state in the premier's office.

The institutions granted to Togo by the national assembly constituted a step in the direction of autonomy; and Cameroon was to receive the same. The 40 principal towns of the overseas territories were given the status of *communes*, with elected municipal councils.

On the international plane the north African crisis was exploited in an anti-French sense at the Bandung conference and at the United Nations assembly. The latter, on Sept. 30, by a vote of a slight majority, put the Algerian question on its agenda. The French delegation, taking the view that Algeria was French territory and that the majority's decision was unconstitutional, left the assembly. (See also ALGERIA; ASIATIC AFRICAN CONFERENCE; CAMBODIA; FRANCE; LAOS; MOROCCO; FRENCH; TUNISIA; UNITED NATIONS; VIETNAM.) (HU. DE.)

French West Africa.

This group of eight West African overseas territories of the French union is bounded west and south by the Atlantic ocean, north by the Rio de Oro, southern Algeria and Libya, and east by Chad and Nigeria. The eastern part of the former German

Territory	Area (sq. mi.)	Population (1951 census)†	(1954 est.)	Capital
Mauritania	416,061	546,400	560,000	Saint-Louis
Senegal	80,617	2,092,800	2,158,000	Saint-Louis
Sierra Leone	460,540	444,900	3,461,000	Bamako
Upper Volta*	105,946	3,116,200	3,200,000	Ouagadougou
Niger	494,633	2,164,900	2,227,000	Niamey
Ivory Coast	123,282	2,169,600	2,309,000	Abidjan
French Guinea	106,216	2,556,900	2,262,000	Conakry
Dahomey	43,784	1,570,000	1,549,000	Porto Novo
Total	1,831,079	17,361,700	17,726,000‡	Lomé
Togoland	21,235	998,660†	1,070,000§	

*Territory of Upper Volta was formed on Jan. 4, 1947, from parts of Sudan, Ivory Coast and Niger. †Census of non-natives only; estimate of natives. ‡1950 est. 1955 est.

ny of Togo, under French trusteeship, is administered separately. Areas and populations are shown in the table above.

Population: mainly Negro; some Arab and Berber admixture in the savanna; European (1951) 62,236 (including 49,458 French) in A.O.F. (Afrique Occidentale Française), 1,427 (1952) in Togoland. Religion: animist 53.4%; Moslem 44.2%; Christian 2.4%. Chief towns (pop., 1951 census, unless otherwise stated): Dakar (cap. of A.O.F.) 229,200; Abidjan (1953 est.) 160,000; Bamako (1952 est.) 100,000; Saint-Louis 60,000; Conakry 35,600; Porto Novo 28,400; Lomé (1948 est.) 30,100. High commissioner in A.O.F. in 1955, Gov. Gen. Bernard Cornut-Gentile. Governors: Mauritania, Albert Mouragues; Senegal, Max Jourdain; Sudan, Lucien Geay; Upper Volta, Salvador Etcheber; Niger, Jean Ramadier; Ivory Coast, Pierre Lesmer; French Guinea, Jean Paul Parisot; Dahomey, Charles Bonfils. The post of commissioner in Togoland was vacant.

History.—The only political incident of 1955 occurred on Jan. 22, when the Socialist leader Lamine Gueye was attacked by supporters of the Bloc Senegalais. The elections to the senate in June led to only a slight alteration in the numerical representation of the parties. The congress of the African Democratic Rally met at Conakry in July and reaffirmed its belief in the unity of the French union which, however, it desired to interpret in a federal sense.

On April 16 a law was passed to grant new political institutions to Togo: the powers of the territorial assembly were enhanced and a council of government was set up, consisting of members elected by the assembly. In the elections to the new assembly, held on June 12, the electorate was asked by the constitutionalists to abstain from voting, but 80% of it went to the polls: 15 candidates of the Togo Progressive party and 15 of the Northern Peoples' union won seats. The assembly voted unanimously in favour of a motion demanding that the link with France be maintained and the regime of trusteeship brought to an end. A United Nations mission of inspection traversed the territory in September.

Two companies were formed to exploit the Mauritanian copper and iron deposits. Less peanuts and less coffee, but more cocoa and more bananas, were exported than in 1954. Measures were taken to make it possible to export the peanut crop of the Niger territory by way of Dahomey: as the wharf at Cotonou had a maximum capacity of 300,000 tons, it seemed that it could have to be lengthened. An institute for the issue of currency for French West Africa and Togo was established, superseding the Banque de l'Afrique Occidentale, which remained, however, in existence as a private bank. (HU. DE.)

Education.—Schools, 1954: A.O.F., primary 1,562, pupils 239,847; secondary 70, pupils 10,718; vocational 98, pupils 4,363; 1 higher institution, students 373; teachers (all schools) 7,033. Togo (1953), primary 13, pupils 48,515; secondary (including teacher training) 8, pupils 981; vocational 5, pupils 319.

Foreign Trade.—(1954) Monetary unit: franc C.F.A. (Colonies Françaises d'Afrique)=2 metropolitan francs; 350 metropolitan francs=\$S.1. A.O.F.: imports 66,445,000,000 fr.C.F.A., including 45,000,000,000 fr.C.F.A. from France; exports 58,264,000,000 fr.C.F.A., including 1,000,000,000 fr.C.F.A. to France. Togo: imports 2,700,000,000 fr.C.F.A., including 1,200,000,000 fr.C.F.A. from France; exports 4,200,000,000 fr.C.F.A., including 2,600,000,000 fr.C.F.A. to France. Products exported (metric tons, 1954): coffee 94,800; cocoa 52,800; peanuts 112,000 (oil 89,600).

Friends, Religious Society of. Friends (also called Quakers) number fewer than 200,000 throughout the world. They are organized into more than 50 yearly meetings (more than 30 of which are in North America) and although most of these meetings keep in close touch with each other through a world committee and personal intervisitation, there is no over-all organization.

In March 1955 the Hicksite and Orthodox Yearly Meetings of Philadelphia merged. This union climaxed more than 20 years of growing co-operation between them. Their century-old journals, *Friends Intelligencer* and *The Friend*, were combined into the *Friends Journal*. During the summer the corresponding meetings in New York also united, as did the three yearly meetings in Canada. The 128-year-old Hicksite separation thus came to an end.

In June, six American Friends took advantage of increased travel opportunities in the U.S.S.R. to pay what they termed a "simple and informal visit of good will." In addition to sight-seeing and visits to many places the group presented to Andrei Gromyko, acting Soviet foreign secretary, a plan for international disarmament inspection that would utilize the International Labour organization inspection system.

Plymouth Friends Meeting, Plymouth Meeting, Pa., received a \$5,000 award from the Fund for the Republic for its action in refusing to discharge its librarian, who was under attack for refusing to sign the state loyalty oath.

Two outstanding books by English Friends indicate current Quaker concerns. Hallam Tennyson published *Saint on the March*, an account of Vinoba Bhave, successor to Gandhi, who was trying to solve India's land problem through his "land gift mission." Reginald Reynolds wrote *Beware of Africans* (issued in the United States as *Cairo to Capetown*), a report on Africa's racial problems. (See also CHURCH MEMBERSHIP.)

(LY. W. R.)

Frozen Foods. Retail sales of frozen foods were indicated as possibly in excess of \$2,000,000,000 in the U.S. in 1955, as compared with less than \$1,800,000,000 in 1954, a gain of perhaps 15% for the year. In particular, prepared or precooked frozen foods including soups came to the front; more than 200 items, prepared by more than 330 packers, totalling more than 425,000,000 lb. and representing sales estimated at \$250,000,000, were involved. Prepared fish sticks were up to 65,000,000 lb., as compared with only 7,500,000 lb. in 1953. Frozen orange juice sales also continued to increase beyond the 61,341,000 gal. of 1953-54; more than one-fourth of the lemon consumption was in frozen form, as was considerably more than half the strawberry crop.

The industry was described as afflicted with growing pains, sales having far outstripped frigid retail space, with the lease-back system of financing plant facilities increasingly used in the industry. Adequate inventories were difficult to maintain. The Federal Trade commission was requested by the industry to indicate acceptable legal procedure to be used by distributors

Storage Holdings of Some Freezer Commodities, U.S.

Commodity	(In thousands of pounds)	1955*	1954*	Average 1950-54*
Fruits		437,793	374,543	351,265
Juices				
Orange		268,442	286,701	186,900
Other		96,457	114,849	67,645
Vegetables		608,453	602,309	489,203
Cream		22,178	22,248	32,308
Creamery butter		326,387	508,476	262,183
Eggs (frozen)		180,023	160,797	154,038
Poultry		120,196	146,651	129,033
Beef		109,089	113,267	115,540
Pork		218,312	228,738	321,487
Lamb and mutton		8,851	7,867	8,210
Veal		9,938	12,916	10,177
Edible offal		52,606	48,961	50,600
Fish and shellfish		203,684	211,316	201,252

*As of Aug. 31.



TEAM of fieldworkers harvesting Boston marrow squash in 1955 for freezing at a major U.S. vegetable processing factory

and packers in placing frozen food dispensers in retail outlets. Abuse with respect to food freezer plans was reported much decreased.

Frozen foods were increasingly utilized in the U.K., except that a sharp swing away from frozen imported beef was registered by the housewife, even at half the price of home killed and one-fifth lower than when prices were under control.

(J. K. R.)

Fruit. U.S. fruit crops in 1955 totalled at least 3% larger in volume than in 1954 and perhaps 8% larger than the 1947-49 average. The year was not without some disasters. A late March freeze penetrated deep into the southland, greatly damaging early fruit prospects, especially peaches, which were a near failure in much of the important southeast area. Trees as well as bloom were reported damaged, thus raising some question about recuperation in 1956. Uncommonly hot weather early in September damaged several crops. Drought followed by repeated floods and windstorms in parts of the eastern U.S. damaged some crops. Grapes were a fifth more abundant than in 1954. Cranberries and citrus were somewhat increased, apples and pears little changed. The frozen strawberry pack exceeded the record 194,349,967 lb. of 1954.

The favourable supply situation resulted in an August price level for fruits about 9% lower than at the same date in 1954. Packs, canned, dried and frozen, of several major fruit types were as much as 15% larger than in 1954. Stocks of canned citrus juices were only half as large as in 1954, and stocks of frozen orange juice were 6% smaller on Sept. 1. Imports of fruits and preparations, excepting bananas, totalled about \$52,000,000 in value in 1954-55, almost unchanged from 1953-54. Exports were nearly three times as large—\$151,588,000.

The deciduous fruit crops of western Europe apparently were somewhat less abundant than in 1954, but grapes were indicated as abundant and uncommonly high in sugar content. The 1955 apple crop of northern-hemisphere countries was about one-fourth smaller than the 1954 crop, the pear crop about 5% smaller than in 1954. Except for pears, the 1954-55 Australian deciduous fruit crop was estimated as between one-tenth and one-fifth smaller than in 1953-54, but higher yields were preliminarily indicated for 1955-56.

Of world production of citrus in 1954-55, the U.S. produced about 40% of the oranges and tangerines, 90% of the grapefruit, 50% of the lemons and 8% of the limes. Florida produced more than 90% of the citrus juices. Israel expected a

citrus crop as much as one-fifth larger than the 9,000,000 bc of 1954-55. There was some question as to the degree of recovery from previous frost damage in Spain.

Apples.—The commercial U.S. apple crop of 104,813,000 was 4% smaller than that of 1954 but near the decade average. It was generally of good fruit size and colour. National average prices to producers in September were \$2.62 per bushel compared with \$3.02 a year earlier.

The world apple crop of 1954 was 600,723,000 bu., large compared with 561,678,000 bu. in 1953 and an average production yield of 462,320,000 bu. Europe accounted for most of the increase, with 418,399,000 bu. as compared with 393,218,000 in the previous year. Percentage increases in Japan and Argentina were even larger than in western Europe.

Large apple crops in 1955 in British Columbia and Nova Scotia spurred efforts to increase exports to the U.K., which in 1954-55 imported 1,275,284 boxes of North American apples, 783,692 boxes from Canada, 491,592 boxes from the U.S.

Apricots.—The 1955 commercial apricot crop of 257,000 tons was generally late, but two-thirds larger than that of 1954 and 10% above the 234,400-ton average for 1944-53. California, as usual, was the major producer (230,000 tons). In Washington (23,000 tons) a large part of the Wenatchee crop was not harvested because of weak demand.

Avocados.—The Florida 1955-56 crop of 14,000 tons was about one-fifth larger than 1954-55 and about 300% larger than the 1944-53 average. California orchards suffered damage from excessive heat.

Bananas.—About 47,265,000 bunches of bananas from Central and South America valued at \$64,400,000 were imported in 1954-55 as compared with 50,063,000 bunches valued at \$67,668,000 in 1953-54. World trade in bananas increased in 1955. Argentina took 84% of the exports from Brazil.

Cherries.—The sweet cherry crop, produced predominantly in California (39,000 tons), Oregon, Washington and New York, was indicated at 118,980 tons, 21% larger than in 1954 and 26% above average. The sour cherry varieties, mostly used for pies, produced a crop of 150,590 tons, 40% more than in 1954 and 29% above average. Michigan with 73,000 tons was the leading producer, followed by New York (31,900 tons) and Wisconsin (22,300 tons). The important Door county of Wisconsin had a record crop. Because of quality and price, sweet cherries were not harvested. French production of bigarreau cherries, largely processed into glacé cherries, was 14,330 tons as compared with 13,800 tons in 1954.

Cranberries.—A 1955 crop indicated at 1,049,300 bbl. was 3% larger than the 1,018,000 bbl. of 1954 and 25% above average. Massachusetts with 560,000 bbl. (590,000 bbl. in 1954) was above average. The Wisconsin crop was a record high of 300,000 bbl.

Dates.—The U.S. department of agriculture in October announced a program to assist the domestic date industry in selling new use outlets for as many as 4,000,000 lb. of 1955 crop. Dates withheld from sale in normal outlets under federal marketing order. The date crop of Iraq was forecast at 270,000 tons.

Table I.—U.S. Commercial Apple Production, by Leading States

(In thousands of bushels)					
State	Indicated 1955	1954	Average, 1944-53	State	Indicated 1955
Washington . . .	31,300	23,160	28,367	Connecticut . . .	1,780
New York . . .	17,600	16,900	19,046	Idaho	1,670
California . . .	9,036	9,200	8,174	Illinois	1,500
Michigan . . .	6,200	6,000	6,929	Maine	1,460
Pennsylvania . .	6,000	6,020	6,008	New Hampshire .	1,460
Virginia . . .	5,100	12,900	9,025	Vermont	1,230
West Virginia .	3,700	5,600	3,642	Wisconsin	1,200
Ohio	3,230	3,000	3,114	Colorado	1,180
Massachusetts .	3,200	2,180	2,436	Maryland	1,072
Oregon	3,175	2,710	2,734	Indiana	1,025
New Jersey . . .	2,620	2,900	2,421		

ns, 30% less than in 1954 when marketing problems resulted about 50,000 tons remaining unsold.

Figs.—The 1955 California fig crop was indicated as smaller than average or than the 25,900 tons dried and 11,000 tons not dried in 1954.

The world fig crop of 1954 was 188,700 tons, slightly above average. Italy (57,300 tons), Turkey (33,000 tons) and Algeria (33,000 tons) were the leading producers. Turkey announced an export subsidy on figs equivalent to 2.4 cents per pound.

Grapes.—The U.S. 1955 crop of grapes of all types was indicated at 3,133,800 tons, 22% more than in 1954 and 7% above average for 1944-53. European types grown in California (2,016,000 tons as compared with 2,329,000 tons in 1954) and Arizona totalled 2,920,000 tons. American-type grapes amounted to 213,300 tons; the crop of the Great Lakes states was 138,700 tons, 25% less than in 1954 but 15% above average. New York with 75,400 tons was the leading producer, but the Washington crop of 56,000 tons was double the average for 1944-53.

The South African raisin crop was reduced to 9,400 tons from 10,700 tons the previous year. Turkey increased the export subsidy on raisins from 2.6 cents to 4.8 cents per pound. Unfavourable weather at harvest affected quality and reduced the amount of the Australian raisin pack to 75,900 tons as against 151,100 tons in 1954. Currants declined to 11,800 tons from 15,000 tons in 1954.

Grapefruit.—The U.S. 1955-56 grapefruit crop was indicated as approximately midway between the 42,170,000 boxes of 1954-55 and the 49,262,000-box average of 1944-53. A Florida crop of 38,000,000 boxes was indicated, as compared with only 34,800,000 boxes in the previous year and a decade average of 31,400,000 boxes. The Texas crop, though less abundant than in 1954, was of good size and quality.

A world grapefruit crop of 48,181,000 boxes in 1954-55 was 10% below that of the previous year. The U.S. accounted for about 90% of the world crop.

Lemons.—The California 1955-56 lemon crop was indicated at 13,200,000 boxes, as compared with 14,000,000 boxes the previous year and an average crop of about 13,000,000 boxes.

The 1954-55 world lemon crop of 29,750,000 boxes was 10% smaller than for the previous year but more than the 23,292,000-box average of 1935-39. The Mediterranean area produced 1,880,000 boxes.

Limes.—The 1955 Florida crop was indicated at 360,000 boxes, moderately smaller than the 380,000 boxes of 1954 but well above the average of 270,000 boxes for 1944-53. A world crop of 4,600,000 boxes in 1954-55 was larger than the 3,000,000 boxes of 1953-54 and about twice as large as the prewar average. Mexico was the leading producer with 2,342,000 boxes.

Olives.—The prospective California olive crop was below the 10,000 tons of 1954 and the 44,400-ton average of 1944-53.

The important Spanish green olive crop of 1955-56 was indicated at 2,900 tons of Queens and 14,500 tons of Manzanillos, a total of 17,400 tons as compared with 31,900 tons in the previous year.

Oranges.—The 1955-56 U.S. orange crop was indicated as slightly smaller than the total 125,870,000 boxes of 1954-55 but larger than the average crop for 1944-53 of 111,796,000 boxes. The California crop was damaged by high September temperatures, but other areas had larger crops than in 1954, Florida producing an indicated total of 91,000,000 boxes as compared with 88,400,000 boxes in 1954 and only 63,090,000 boxes in 1944-53. Prices to producers in the very early part of the 1955-56 harvest season (October) averaged only \$1.42 per box as compared with \$1.98 a year earlier.

A decrease of 11% in the important Mediterranean crop,

mostly because Spain had not yet recovered from severe frosts, approximately cancelled the increase in North America. The world total was 354,450,000 boxes as compared with 354,071,000 boxes in the previous year and a prewar average of 212,972,000 boxes.

Peaches.—A total U.S. crop of 50,539,000 bu. was 18% below the small 1954 crop of 61,316,000 bu. and 27% less than the 1944-53 average. The crop in all southern states was a near failure because of freeze damage, and the earlier part of the crop to come to market from other areas sold at uncommonly high prices. The western crop, much of which ripened later than usual, was 39,861,000 bu., 9% above 1954 and 4% above average. The California freestone crop was smaller than 1954, or average, but the clingstone type, largely used for canning, was 22,502,000 bu., 17% larger than in 1954 and 5% above average.

Pears.—The 30,143,000-bu. pear crop indicated for 1955 approximated the crop of 1954 and was about average for 1944-53. Larger crops in Washington and Oregon compensated for reductions in California and the central area. Bartletts were particularly numerous. The price to producers in September for all pears was \$2.11 per bushel as compared with \$2.18 per bushel in 1954.

A world pear crop of 157,097,000 bu. in 1954 was slightly smaller than the 166,887,000 bu. of the previous year, but large as compared with the 117,059,000-bu. average crop of 1935-39. Europe, especially France, western Germany and Italy, was the major producer.

Plums and Prunes.—The 1955 U.S. plum crop was a large one of 91,400 tons, 16% larger than 1954 and 6% above average; California with 87,000 tons, 21% larger than in 1954, was responsible for the increase, whereas Michigan had a small crop.

The prune crop of the Pacific northwest, for use fresh or in canned or frozen form, of 97,300 tons (fresh basis), was 9% below average but 44% more than the small crop of 1954 and

Table II.—U.S. Orange Production by States

(In thousands of boxes*)

State	Indicated, 1955	1954	1953	Average, 1944-53
Florida				
Temples	2,800	2,500	2,200	1,129
Other, early and midseason	49,200	49,500	48,000	33,601
Valencias	39,000	36,400	41,100	28,360
Tangerines	4,600	5,100	5,000	4,550
California				
Navels and miscellaneous	13,500	15,340	14,460	16,419
Valencias . . . . .	...	23,800	17,940	28,060
Texas				
Early and midseason	1,350	1,100	675	1,882
Valencias	450	400	225	1,064
Arizona				
Navels and miscellaneous	500	510	550	518
Valencias	680	620	620	505
Louisiana	215	175	100	257

*Boxes hold 77 lb. in California and Arizona; 90 lb. in other states.

Table III.—U.S. Peach Production by Leading States

(In thousands of bushels)

State	Indicated 1955	1954	Average, 1944-53	State	Indicated 1955	1954	Average, 1944-53
California	33,753	31,252	32,948	New York	1,300	1,010	1,337
South Carolina	*	3,350	3,592	Illinois	*	1,210	1,684
Georgia	*	2,800	3,612	Virginia	*	1,200	1,533
Washington	2,400	1,500	1,875	North Carolina	*	1,150	1,742
Pennsylvania	2,250	2,550	2,189	Alabama	*	1,130	786
Colorado	2,110	2,230	1,751	Ohio	890	1,000	929
Michigan	2,150	2,550	3,744	Oregon	568	300	572
New Jersey	1,870	1,910	1,629	West Virginia	566	682	546

*Major producing states with small crop or failure in 1955.

Table IV.—U.S. Pear Production by Leading States

(In thousands of bushels)

State	Indicated 1955	1954	Average, 1944-53	State	Indicated 1955	1954	Average, 1944-53
California				Michigan	875	820	781
Bartlett	12,501	14,918	11,918	New York	495	285	548
Others	1,667	1,833	1,704	Pennsylvania	185	185	225
Washington				Illinois	183	216	245
Bartlett	5,400	4,120	5,039	Ohio	170	150	196
Others	1,880	1,500	1,814	Colorado	165	270	180
Oregon				Utah	146	320	168
Bartlett	2,700	1,500	2,147				
Others	3,700	2,565	3,332				

harvested rather late. Some of the crop was left unharvested; a larger than usual fraction was dried.

The California prune crop was indicated at 137,000 tons (dried basis), 23% less than 1954 and 21% below average for 1944-53.

Pineapples.—Distributors' stocks of canned pineapple on July 1, 1955, were 1,121,000 cases as compared with 1,097,000 cases a year earlier.

Strawberries.—The total U.S. strawberry crop was 13,191,000 crates as compared with an average for 1949-54 of 11,217,000 crates. Yields averaged 119 crates per acre as against a normal 92. Indicated for harvest in 1956 were 130,020 ac., one-sixth more than the 111,260 ac. of 1955.

The early season strawberry crop was much reduced by March frost in the south, but the mid- and late-spring crop, predominantly in the Pacific coast states, was large.

Tangerines.—The Florida 1955 tangerine crop was indicated at 4,600,000 boxes as compared with 5,100,000 boxes in 1954 and an average crop of 4,550,000 boxes. (See also FROZEN FOODS; HORTICULTURE.) (J. K. R.)

Furniture Industry.

Recovery from the so-called recession of 1954 exceeded all expectations in 1955, at both the wholesale and retail furniture industry levels in the U.S. Wood furniture shipments came very close to matching the 1953 peak dollar volume of \$1,750,000,000. This was about a 12% increase over 1954. Physical volume showed a smaller increase, since price rises, resulting from increased labour and materials costs, accounted substantially for the expansion in dollar volume.

Of 141 leading furniture manufacturers surveyed by the National Association of Furniture Manufacturers in the last quarter of the year, 90% reported business as good, 10% fair. This contrasts with a similar survey in the last quarter of 1954, which showed only 44% reporting business as good, 54% fair and 2% poor.

At the retail level, an equal upsurge in business was recorded. Because of this optimistic outlook, dealers tended to increase inventories. In 1954, only 41% out of 150 manufacturers questioned considered their dealers' inventories to be "normal." In Aug. 1955, a repeat survey showed that 83% considered dealers' inventories normal. In short the hand-to-mouth method of buying was decreasing. In 1954, 29% of the retailers followed the buy-only-as-needed pattern; during 1955 only 14% were ordering on this basis.

There were no sensational new design developments in furniture during 1955, but there was a further strengthening of the trend away from the strictly modern to a softened contemporary, which borrowed design details from other periods and other countries. In addition to contemporary, which led the field, other styles, in the order of their popularity, included French and Italian Provincial, Early American, Empire, Spanish and Regency. Woods were predominantly walnut, mahogany, cherry, maple, birch and ash, popular in that order, and many of the new finishes showed the graining of the wood. More mar-proof surfaces than ever were shown on cabinet and table tops—plastic laminates, field stone, tiles and marble. Case goods showed many tambour and sliding louvred doors concealing all sorts of ingenious interior arrangements for orderly storage.

Adjustable base units to hold a variety of combined units from bookshelves and storage cabinets to desks and high-fidelity recording systems were much in evidence in the better lines. There was an increasing tendency to finish case pieces on all sides, and upholstered furniture showed exposed wood frames in both traditional and the more modern designs.

Another noteworthy trend was the scaling-down of some of



FORMOSAN STUDENTS learning to make rattan furniture. The four-month course was conducted in 1955 for members of the Taiyal tribe of eastern Formosa

the higher-priced groups. In these cases, the luxury lines of their original versions were kept intact, the scaled-down models being added simply for the purpose of obtaining wider outlets for the makers' lines. (See also INTERIOR DECORATION.)

(H. W. As.)

Furs. The United States fur industry appeared likely to produce the \$275,000,000 mark in retail sales for 1955—a gain of at least 10% over the previous year. This was the second successive year of improvement for the industry, following a low point of 1953 when volume dipped below \$230,000,000. Still, business was a far cry from the peak year of 1946 when volume was about \$490,000,000.

Mink continued to be by far the major dollar volume item. Mouton processed lamb was the top seller in terms of unit volume. Sheared beaver, dyed in a variety of new colours, staged a strong comeback in retail selling. In fact, the entire trade toward the use of hitherto untried colours, in a variety of furs, gained momentum throughout 1955. In addition to beaver, such items as mouton processed lamb, muskrat, sheared raccoon, squirrel and Persian lamb appeared in new colours and stimulated consumer interest.

Short fur pieces, such as stoles, capes and jackets, continued to account for more than 50% of sales, although there were signs of recovery in coat business in 1955.

Through 1955 at least, the fur industry appeared to have survived, with little loss in volume, the new competitive threat of Orlon-Dynel pile fabrics—synthetic products made to look like such furs as mouton processed lamb, beaver and Alaska seal. In terms of price as well as appearance these synthetic furs were held to be directly competitive to mouton processed lamb. But mouton sales suffered little in the late summer and early fall and still ranked highest in unit sales.

Wholesale prices of fur garments were generally higher in 1955 than in 1954, largely because of substantial rises in skin prices in the international market. The continuing recovery of western Europe contributed to the increase in raw

ices of such items as squirrel, Persian lamb, beaver, muskrat, coon and mink.

United States imports of raw furs during 1955 showed little change from 1954, when imports totalled \$67,100,000, compared with \$69,500,000 in 1953. U.S. exports amounted to \$6,728,000 in 1954.

The Davy Crockett coonskin cap craze which spread throughout the country in 1955 resulted in the rapid consumption of raccoon tails and a tremendous rise in the use of rabbit skins. Probably more rabbits went into the making of so-called coon-hat hats than raccoon skins.

The credit structure in the industry held generally stable during 1955 as compared with 1954. In that year, fur industry solvency losses amounted to \$4,340,000, a reduction of more than 50% from the 1953 figure of \$8,861,000.

A new labour agreement between Associated Fur Manufacturers, representing about 600 manufacturing firms in New York, and the fur union was negotiated in the spring of 1955. The major innovation of this new three-year contract was a plan for an industry label program to be jointly administered by the union and the manufacturers.

The label program involved issuance of labels to all unionized manufacturers, with the funds from the sale of these labels to be used for national advertising and promotion of all furs. The labels would be distributed only to manufacturing shops complying with the new contract. The label plan, therefore, was designed as a means of taking action against contracting illegal under the contract) and substandard shops. (S. Gd.)

Future Farmers of America: see SOCIETIES AND ASSOCIATIONS, U.S.

Galapagos Islands: see ECUADOR.

Gambia: see BRITISH WEST AFRICA.

Gambling: see BETTING AND GAMBLING.

Gas, Natural and Manufactured. Because so few of the countries producing a large part of natural gas production report their output it is not possible to compile world statistics on it. However, Table I shows the known output of those countries producing important quantities of natural gas, and Table II shows similar data for manufactured gas, both according to reports in the *Monthly Bulletin of Statistics*, U.N. Manufactured gas is produced and consumed in large volume in areas where natural gas is not available or the cost of obtaining it is prohibitive in competition with the manufactured product.

Table I.—Natural Gas Production*

(In millions of cubic feet)

	1950	1951	1952	1953	1954
United States	3,712,678	4,377,155	4,753,466	5,129,776	5,567,958
Algeria	39,411	50,853	61,871	76,703	82,636
Canada	67,804	79,669	88,569	100,858	120,775
Iran	61,871	86,026	93,654	93,230	94,078
U.S.S.R.	8,687	9,959	9,408	8,645	9,154
U.K.	18,010	34,114	50,599	80,517	105,308
U.S.A.	26,613	36,656	38,648	41,445	38,775
U.S.S.R.	16,781	16,612	16,866	17,671	18,180
U.S.S.R.	18,222	17,375	7,204	16,951	19,494

*Excluding gas used for repressuring, as well as gas flared, vented or otherwise wasted.

Table II.—Manufactured Gas Production

(In millions of cubic feet)

	1950	1951	1952	1953	1954
Australia	34,877	37,885	40,386	41,276	42,250
Canada	12,628	10,764	10,510	10,298	11,654
U.S.S.R.	50,852	61,023	62,718	62,295	68,651
U.S.S.R.	27,037	28,139	26,316	25,893	25,893
U.S.S.R.	13,306	13,646	13,688	13,434	13,730
U.S.S.R.	85,602	86,026	87,721	87,721	91,535
U.S.S.R.	46,615	53,395	54,667	51,277	53,395
U.S.S.R.	469,541	567,856	633,541	651,763	636,931
U.S.S.R.	55,938	66,109	71,618	70,346	72,889
U.S.S.R.	37,716	49,158	57,209	67,380	75,008
U.S.S.R.	56,362	59,328	61,871	61,871	66,532
U.S.S.R.	542,429	563,195	569,975	564,466	586,926
U.S.S.R.	571,246	525,903	488,611	446,233	449,624

Table III.—Production and Consumption of Natural Gas in the U.S.

(In thousands of millions of cubic feet)

	1949	1950	1951	1952	1953	1954*
Gross production	7,546.8	8,479.7	9,689.4	10,272.6	10,645.8	10,984.8
Loss and waste	853.9	801.0	793.2	848.6	810.3	723.6
Returned to ground†	1,273.2	1,396.6	1,438.8	1,410.5	1,438.6	1,518.7
Marketed	5,419.7	6,282.1	7,457.4	8,013.4	8,396.9	8,742.5
Exports	20.1	26.2	24.2	27.5	28.3	28.7
Consumption	5,195.5	6,026.4	7,102.6	7,613.6	7,979.0	8,402.9
Domestic	992.5	1,198.4	1,474.7	1,622.0	1,685.5	1,894.2
Commercial	347.8	387.8	464.3	515.7	530.7	585.0
Field use	1,059.6	1,187.5	1,441.9	1,483.8	1,471.1	1,456.9
Carbon black	427.9	410.9	426.4	368.4	300.9	251.2
Oil refineries	422.4	455.1	537.8	536.4	558.7	563.3
Cement plants	84.5	97.0	102.5	111.5	117.1	125.2
Other industrial	1,860.7	2,289.7	2,655.0	2,975.8	3,315.0	3,527.1
Public utilities	550.1	628.9	763.9	910.1	1,034.3	1,165.5
Interstate traffic	2,007.9	2,543.5	3,242.8	3,794.5	4,172.5	4,633.2

*Preliminary. †Mostly for repressuring oil fields; small amounts of surplus gas are returned to the ground for storage. ‡Includes manufactured gas, and not included in the consumption total.

United States.—As shown in Table III, compiled from U.S. bureau of mines data, output and consumption of natural gas increased steadily for many years. By 1955 natural gas was used in 43 of the 48 states. Exports in 1954 were 22,308,000,000 cu.ft. to Mexico, and 6,131,000,000 cu.ft. to Canada. Available data for 1955 showed increased domestic consumption, chiefly because of much colder weather earlier in 1955 than in 1954. There was also an increase in industrial use, because of increased industrial activity.

Coke-Oven Gas.—Slightly more than 14,000 cu.ft. of gas per ton of coke made was produced in by-product coke ovens in 1954. Of the 869,874,515,000 cu.ft. made in 1954, waste and leakage accounted for 13,040,807,000 cu.ft. and 298,490,561,000 cu.ft. was used to heat ovens. The remaining 558,343,147,000 cu.ft. was used as follows: 8% under boilers, 73% in steel plants, 14% servicing city gas mains and 5% was sold for other industrial uses, as reported by the U.S. bureau of mines. (See also FEDERAL POWER COMMISSION; PETROLEUM.)

(F. E. H.; B. B. M.)

Gasoline: see PETROLEUM.

Gas Turbine Engines: see JET PROPULSION.

GATT: see TARIFFS.

Gem Stones. The United States produces a great variety of semiprecious and ornamental gem stones but produces no precious stones (diamond, emerald, ruby or sapphire). In Jan. 1955, the U.S. bureau of mines published a list of known semiprecious stones of mineral origin that were reported found in 40 states and Alaska in 1953. Gem collectors and lapidaries compose the principal market for the domestic stones. In 1954, U.S. production of gem stones was estimated to be worth between \$600,000 and \$700,000.

Imports of gem stones had for many years steadily increased in volume and value. Tables I and II, covering U.S. imports during 1953 and 1954 and values during 1945–54, include gems

Table I.—U.S. Imports of Gem Stones

	1953	1954
	Carats	Value
Rough diamonds	730,350*	\$57,001,329*
Cut diamonds	444,362*	50,571,535*
Rough emeralds	15,561	27,987
Cut emeralds	26,952	320,739
Pearls, natural		264,873
Pearls, cultured		3,769,758
Marcasites		94,813
Real		2,589
Imitation		61,073
Other varieties		203,667
Rough		2,218,868
Cut		15,718,185
Imitation		\$130,194,343
Total		\$143,593,877

*Revised. †Effective Jan. 1, 1954, not separately classified, included with precious and semiprecious stones rough or uncut. ‡Because of changes in tabulating procedures by the U.S. department of commerce, data known not to be comparable to earlier years.

Table II.—Value of U.S. Imports of Gem Stones

	1945	1950	1951	1952	1953	1954
	\$114,435,231	\$189,017,646	\$110,076,029	\$115,940,031	\$84,132,466	\$118,508,049
						\$128,953,866
						\$124,699,402
						\$130,194,343
						\$143,593,877



SYNTHETIC DIAMOND created at the laboratories of the General Electric company, Schenectady, N.Y. About $\frac{1}{16}$ in. long, the diamond was photographed with a standard diamond phonograph needle to indicate its size. In its initial tests the diamond proved hard enough to scratch natural diamonds and capable of withstanding pressures of 1,500,000 lb. per square inch.

of not only natural origin (pearls, etc.) but also synthetic stones. (See also DIAMONDS; MINERALOGY.) (F. E. H.)

Genetics. Human Genetics.—A. C. Allison presented an extensive report of his studies of the buffering action of the sickle-cell anaemia gene on malaria. This gene in double dose, the homozygous condition, has long been known to produce a high infant mortality. Yet in some African tribes the sickling gene, the presence of which can be noted in heterozygotes by appropriate test, was found to have a frequency of 30% or even higher. Allison seemed to solve the puzzle of the high incidence of this gene, which should have been selected against and have remained in low frequency. In some African villages almost half the persons not carrying the sickling gene were infected with malaria. Of those persons heterozygous for this gene only 28% were infected with malaria. Furthermore, malaria in the sicklers was milder in its symptoms; they had a higher resistance. Further study of this phenomenon was under way by Allison, J. V. Neel and others.

In some villages this balance between the two diseases was not found and there may, therefore, be other variables as yet undiscovered.

Ultrastructure of Chromosomes.—The problem of the fine structure of the chromosome, the ultimate nature of the hereditary material, was being attacked vigorously on many fronts and with new techniques. J. G. Gall, using the electron microscope, was able to demonstrate clearly the true structure of the so-called lampbrush chromosomes of many organisms. Under the high power of the conventional microscope such a chromosome appeared to have a central axis covered with a fine fuzz. The electron microscope picture showed this fuzz actually to be made up of two long strands of material folded in and out from the central matrix. It was estimated that such a chromo-

some strand was a continuum of considerable length. Numerous particles in varying concentrations near the loops of the strands were interpreted as ribonucleic acid molecules, RNA, the complex product of the chromosome, which, on passing into the cytoplasm, carries the specific organizing potential for the formation of the numerous cell enzymes necessary for processes.

The problem of the size and number of genes arranged in linear order in the chromosome was attacked by the use of certain microorganisms, which allowed for observations on large numbers of individuals, always a limiting factor in the study of the genetics of higher organisms. Seymour Benzer studied mutations occurring in a specific chromosome region of a strain of bacteriophage. He was able to demonstrate recombination of genes very near together on the chromosome and to show that certain of these genes were no larger than a dozen nucleotide pairs. Biochemical studies had earlier led J. D. Watson and F. H. C. Crick to postulate the essential structure of the chromosome as consisting of a helix of deoxyribonucleic acid (DNA), the ultimate units of which were these pairs of nucleotides. On theoretical grounds these and other workers had considered the probable gene structure as made up of several nucleotide pairs in the long DNA chain.

M. Demerec, I. Blomstrand and Z. E. Demerec demonstrated that small blocks of genes could be transferred by bacteriophage particles from one cell of the bacterium *Salmonella* to another. As the second cell underwent division this block of genes could be substituted for the homologous region of the bacterial chromosome. By this mechanism, known as transduction, pieces of chromosome carrying various mutant genes could be transferred from one bacterium to another. The linear order of certain gene loci could thus be determined even though the usual type of linkage studies made in sexually reproducing forms is not possible in *Salmonella*. By this ingenious method the linear order of a series of biochemical mutants was demonstrated. Mutant genes, blocking in turn a series of steps in biochemical synthesis, were found to lie in a corresponding linear order in the bacterial chromosome.

In higher organisms cases of extremely closely linked genes all acting on the same character complex, continued to accumulate. M. M. Green reported a series of these pseudo-alleles at the forked bristle locus in the fruit fly *Drosophila melanogaster*. A mutant gene at another locus suppressed the action of some of these forked alleles but not of others. Genetic recombination by crossing over occurred between forked alleles from two groups but not between those belonging to the same group. J. R. Laughnan demonstrated a complex series of these extremely closely linked genes, pseudo-alleles, in strains of corn collected from Ecuador and Peru. Thus the approach to the ultimate structure of the genetic material in the cell nucleus was being made along several different but mutually corroborative lines.

New Books.—*Human Heredity* by J. V. Neel and W. J. Schull, two modern methods used in this rapidly advancing field. Without apologetics the authors presented the newest mathematical techniques. However, the book was so arranged that the physician or intelligent layman, lacking mathematical training, could gain an understanding of what is known in human genetics and an insight into the important role which studies in heredity play in medicine and sociology in these times.

Genetics and Metabolism by R. P. Wagner and H. K. Mitchell for the first time presented a survey of the biochemical basis of inheritance in a modern and sophisticated treatment of the borderline field where physiology, biochemistry, embryology and genetics meet on common ground.

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Geneva Big Four Conferences of 1955.

The Precedents.—The last World War II conference of h

of governments of the big powers was held in Potsdam, Ger., during the second half of July 1945. It was left to the foreign ministers of the big powers to discuss problems of common concern deriving from the defeat of Germany and Japan. As time went on it became more and more evident that the problems inherited from the war were being transformed into problems of relationships between the big powers, the Soviet Union on one side and the United States, Great Britain and France on the other. Conferences of foreign ministers were held in London at the end of 1945, in Paris and New York in 1946. There had then been some agreement (e.g., on the formation of a commission entrusted with the study of problems arising from the discovery of nuclear energy, on the recognition oforean independence, on the peace treaties with Italy, Finland, Hungary, etc.). But the gap between the position of the western Big Three Powers and that of the Soviet Union was widening and foreign ministers' conferences of 1947 in Moscow and in London ended in total disagreement. The Korean war made the holding of other conferences impossible.

After the death of Joseph Stalin there seemed to be some modification in Soviet internal and external policies, and in May 1953 British prime minister Winston Churchill proposed a conference of heads of governments with the aim of finding a solution to the problems dividing the democratic bloc and the communist bloc. The suggestion of the prime minister was received with elation by Europeans, who were frightened at the thought of a Soviet invasion, but with coldness by most Americans, who were mindful that the United States had borne the brunt of the war in Korea.

Churchill fell ill and nothing came of his suggestion except an exploratory meeting at Bermuda of the Big Three heads of government. The Korean armistice revived hopes of peaceful settlement of at least some of the major problems dividing the democracies and the Soviet Union (unification of Germany, European security, disarmament, communist aggressions in the far east, etc.) but a conference of foreign ministers in Berlin at the beginning of 1954 was as unfruitful as the meetings of 1947 and 1949.

The Thaw.—French exhaustion after seven years of war in Indochina led to the Geneva conference of April–July 1954 and a truce on the basis of the surrender of the northern half of Vietnam to the communists. Many people did not realize that the Geneva agreement had been made possible by the fact that the communists received more than they gave, and hopes for a general settlement revived. The French, harassed by internal and colonial problems, were particularly insistent in asking for a conference at the highest level which would repeat on a larger scale the so-called miracle of Geneva. To this end, the French premier, Pierre Mendès-France, tried to enlist the support of other governments. The British, mindful of Churchill's opposition the year before, were sympathetic. The Italians, Austrians and west Germans expressed enthusiastic approval for a Big Four conference.

The turning point came in Feb. 1955 when the team of Premier Bulganin, N. S. Khrushchev and G. Zhukov took over in Moscow and engaged in a diplomatic policy which aimed at winning friends, encouraging neutralism and isolating the United States. Since 1945 the Austrian peace treaty had been left hanging in mid-air, the Soviet government holding that it could not be signed until a solution had been found to the problem of a peace treaty with Germany. In a sudden reversal, the Soviet government announced that the Austrian treaty would be dealt with independently from the German one. This was a new language, and a new policy. The pressure for a meeting at the top increased, outside and inside the United States. At the end of April the U.S. state department announced that the foreign min-

isters of the Big Three western powers, who were going to Paris for a regular meeting of the North Atlantic Treaty organization, would discuss plans for a Big Four conference. It had been made clear in Washington, London and Paris that no general conference would take place before the implementation of the Paris agreements of 1954 concerning the status of Germany, the strengthening of the 1948 Western European union, and Germany's admission both to the union and to NATO. Moscow had made equally clear that the implementation of the Paris agreements would lead to the invalidation of the amity pacts between the Soviet Union and Great Britain (1942) and between the Soviet Union and France (1944); also that an eastern counterpart of NATO would be organized among the Soviet Union and its European satellites. All this seemed to clear the ground for a summit conference in the summer.

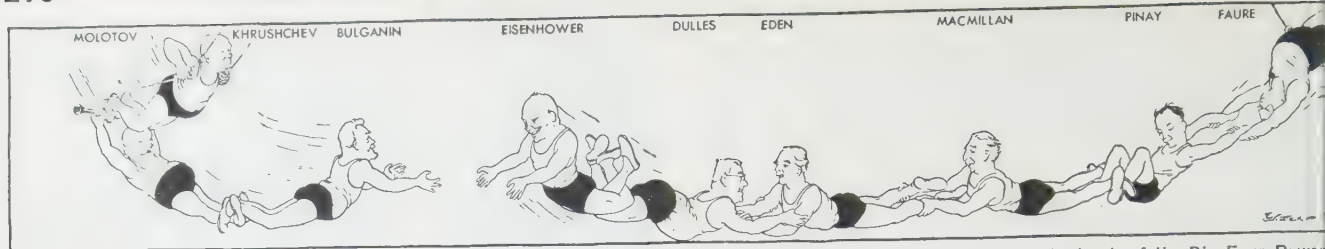
On May 15 the Big Four foreign ministers met in Vienna to sign the Austrian peace treaty. Plans for a conference of heads of governments were discussed and on May 26 the Soviet Union formally accepted the invitation which through three identical notes had been sent by the governments of the United States, Great Britain and France a fortnight before.

The Summit Conference.—The immediate reaction was one of great enthusiasm, in the United States, in Europe and elsewhere. Even responsible leaders spoke of a new era, of a radical transformation in international affairs. Certain developments seemed to indicate that optimism was justified: The Communist Chinese government promised to release arrested United States fliers; the Soviet authorities apologized after a Bering sea incident in which a United States plane had been shot down; Konrad Adenauer, chancellor of western Germany, was invited to Moscow; Cardinal Mindszenty was reported released from imprisonment in Hungary; all kinds of cultural, economic and political missions were exchanged between communist and non-communist countries.

No agenda was set for the conference but through indirect means it was proposed and accepted that the conference should deal mainly with European problems. On July 12 Pres. Dwight D. Eisenhower discussed the policy to be followed in Geneva with congressional leaders. On July 15 the foreign ministers of the three western powers met in Paris to discuss a common front vis-à-vis the Soviet delegates. Before leaving for Geneva, President Eisenhower in a radio and television talk stated that a change in spirit would be "the greatest step towards peace, toward future prosperity and tranquillity that has been taken in all the history of mankind," adding "we shall be conciliatory . . . we shall be tolerant." Premier Bulganin, stating that the Big Four heads of government "can and must" resolve major disputes, also said that "a bad peace is better than a good quarrel." Similar sentiments were expressed by Sir Anthony Eden and by the French premier Edgar Faure.

The conference opened in Geneva on July 18. The United States delegation was led by President Eisenhower, the British delegation by Prime Minister Eden and the French delegation by Premier Faure. The Soviet delegation included Premier Bulganin, Khrushchev, secretary of the Communist party, Foreign Minister V. M. Molotov, Marshal Zhukov and A. A. Gromyko.

The conference lasted six days. President Eisenhower presided at the first meeting and in his opening speech suggested that six issues should be discussed: the unification of Germany through free elections, safeguards for the security of the Soviet Union, restoration of sovereignty and self-government to countries deprived of them, the improvement of communication among nations, international trade and steps toward disarmament through a system of inspection and alarms. The three prime ministers followed, Edgar Faure and Sir Anthony Eden expanding on some of the points made by the president, and



COMMENT on the Geneva conference of the heads of the Big Four Powers
De Gazet van Antwerpen, Belgium

Bulganin rejecting any discussion concerning the satellites and bringing up the usual question of Communist China. Through discussion among the foreign ministers it was decided that the status of the satellites and that of China should be left out and that the issues to be dealt with would be the unification of Germany, European security, disarmament and cultural and economic relations between east and west. In the course of the following days the foreign ministers met at 11 A.M., the heads of government at 4 P.M.

The Issues.—Prime Minister Eden presented the western plan for Germany: creation through free elections of a unified regime for a sovereign Germany with which a peace treaty would be negotiated and which would decide what attitude to take in international relations. Prime Minister Bulganin made it clear that agreement was unlikely; he stated that because of the "remilitarization of western Germany and her integration in military groupings of the western powers . . . we may fail to reach immediate agreement on the reunification of Germany." On European security, the western spokesman was again Prime Minister Eden who affirmed that "there are many ways of insuring that unification of Germany shall not involve any threat to anybody" and offered three different plans to the Soviet delegation: (1) a five-power pact against any aggressor, linking the Big Four and Germany (largely modeled on the Locarno pact of 1925); (2) agreements on the armed strength of Germany; (3) the creation of a demilitarized zone along the border between Germany and Poland. At the Berlin conference of 1954 Soviet foreign minister Molotov had proposed a defense treaty linking all European countries (including the U.S.S.R.) with the United States and Red China as observers; Prime Minister Bulganin brought back the same plan, offering a defense treaty open to all European countries, to which the western and eastern German republics would be equal and separate parties, asking for the withdrawal of all foreign troops from Europe (this meant U.S. troops; the Soviet troops, being European, would remain) and the abolition of both the North Atlantic treaty and the Warsaw treaty.

The problem of disarmament had already been discussed at length by a committee of the United Nations. The issue came up for discussion on July 21, the first anniversary of the signing of the cease-fire in Indochina. Prime Minister Eden proposed the inspection of the demilitarized zone between east and west and its extension. Premier Faure indicated that the western democracies favoured the reduction of military budgets, the money to be spent instead for the economic development of all needy nations. President Eisenhower made a dramatic appeal to the Soviet delegation, stating "I propose . . . to give to each other a complete blueprint of our military establishment . . . to provide within our countries facilities for aerial photography." Prime Minister Bulganin offered a plan modeled on the one presented on May 10 by the Soviet government: step by step reduction of all nuclear weapons and their final destruction, and limitation of troops (1,500,000 men each for the United States and the Soviet Union, 650,000 men for Great Britain and France, 150,000–200,000 for the other countries). On the issue of east-west relations, there was verbal but not substantial

agreement. The three western heads of government urged a free flow of communication, through all available mediums. President Eisenhower expressed the hope that it would be possible to break down "both mild and severe barriers to mutual understanding." Prime Minister Bulganin echoed by saying, "We strive for a broad development of international contacts and cooperation in the field of culture and science, for the removal of obstacles impeding intercourse among nations."

The Outcome.—The friendly atmosphere of the July conference was a pleasant change from the bitter acrimony of previous meetings. It seemed a good thing that each side could state its case with clarity and without insults where it stood. The gaps were wide but many hoped that time and good will would fill them. The job of bridging the gaps was entrusted to a conference of four foreign ministers to be held in Geneva in October. The summit conference nearly foundered on the subject of the agenda to be discussed in October. With considerable difficulty a compromise formula was found which avoided, in a rather ambiguous way, the problem of priority to be given to the issues of German unification and European security: "The heads of government instruct their foreign ministers to continue the consideration [of questions discussed] . . . taking account of the close link between the problems of European security and the reunification of Germany."

The conference disbanded in an atmosphere of optimism. It seemed that President Eisenhower had been able to convince the Soviet Union of the peaceful intentions of the west. It was hoped that the Soviet leaders would modify their policies accordingly, dropping the aggressiveness which could have been the result of fear. There were good omens: at the beginning of August conversations were started in Geneva between U.S. and Communist Chinese diplomats; the Soviet Union announced a reduction of 640,000 men in its armed forces (not many knew that in the course of the previous months U.S. armed forces had been reduced by about that number and therefore the Soviet Union was not changing the ratio of its forces to that of the United States). The Finnish government was suddenly notified that the Soviet Union was giving back the base of Porkkala. For seven or eight weeks the expression "spirit of Geneva" was used in written and oral statements by many people in many countries.

End of the Spirit.—The foreign ministers' conference in Geneva proved that little or nothing had changed in the traditional Soviet attitude. The meeting opened on Oct. 27 and lasted until Nov. 16. The four protagonists were John Foster Dulles, U.S. secretary of state, Harold Macmillan, British foreign minister, Antoine Pinay, French foreign minister, and Molotov. There were three items on the agenda. The first included German reunification and European security. In July the Soviet delegation had accepted the close link between the two. In October and November Molotov reiterated the Soviet position: the problem of security came first and that of German reunification could not be solved on the basis of proposals made by the western powers. In the course of the debate, the discussion narrowed on the basic question of free democratic election

many versus Soviet style elections. After a brief trip to Moscow, Molotov announced on Nov. 8 that under no conditions could the Soviet Union accept a plan which would jeopardize the communization of east Germany. That was the end far as the first item on the agenda was concerned. The second item was disarmament. On Nov. 10 Molotov attacked the plan offered by the western powers, based on the proposal made by President Eisenhower of exchanging military blueprints, establishing control posts, publicizing military expenditures and using aerial inspection. On the following day Dulles tried to meet the Soviet criticism by offering to put U.S. bases abroad under air attack. Molotov replied that the proposals of the western powers were not of a constructive nature. On Nov. 14, the third item (east-west relations) came up for discussion. The western powers had presented a series of concrete proposals which Molotov rejected as representing interference with the internal affairs of the Soviet Union. Disagreement was total on all points it had been in 1947 and in 1949. Nothing could be clearer on that subject than the final communiqué: "In compliance with the directive issued by the four heads of government . . . the foreign ministers . . . met in Geneva from October 27 to November 16, 1955. . . . [They] agreed to report the result of their discussions to their respective heads of government and to recommend that the future course of the discussions of the foreign ministers should be settled through diplomatic channels. . . ." The two Geneva conferences had been a good try; the Soviet Union had made their success impossible. (M. SA.)

Geneva Conference on Peaceful Uses of Atomic Energy: see ATOMIC ENERGY.

Geography. The most obvious trend in geography in the United States during 1955 was toward the application of geographic training to a great variety of specific activities. For example, very few professionally trained geographers in government work were so classified. Considerably more than 50% of them were engaged in some form of map making, interpretation or librarianship. Others were classified as geographic names specialists, intelligence analysts, foreign service officers, area experts, climatologists, planners, etc. Many of the more experienced geographers filled responsible administrative positions, or served as co-ordinators of research projects. Likewise, few positions taken in business and industry by recipients of graduate degrees in geography during the year were designated as geographic. They were positions in cartography, planning, marketing, transportation, etc. Even in the field of education an increasing number of geographers were teaching integrated studies, area studies and social studies programs. The formal training of geographers was continuing at an accelerated rate, but employment, aside from college and university teaching, tended to lose the identity of geographers as such.

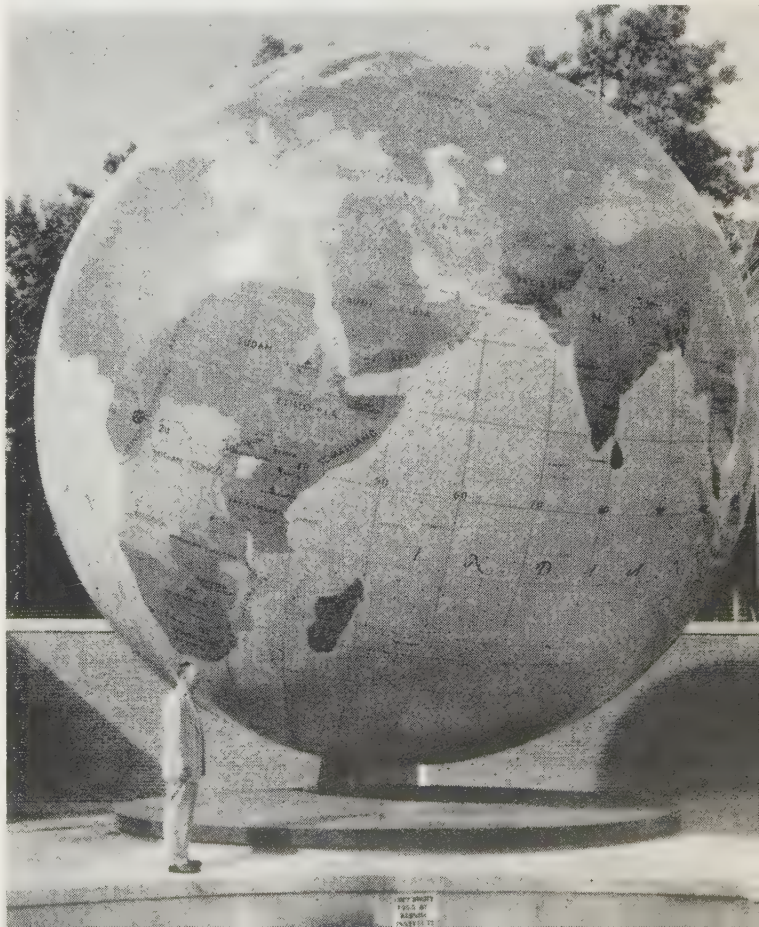
A second trend in geography was toward concentration on research and exploration in foreign lands, with most emphasis on planning for participation in the International Geophysical Year and exploration of the antarctic. Geographers in more than 40 countries were participating, with scholars from other fields in geophysics, in planning simultaneous, world-wide observations and measurements from more than 700 stations during the anticipated period of maximum sunspot activity in 1957-1958. The information thus gained about the geographical distribution of phenomena was expected to be of great value in forecasting, weather forecasting, telecommunications, navigation and high-altitude flight. (See also INTERNATIONAL GEOPHYSICAL YEAR, 1957-58.)

Two polar expeditions were especially noteworthy because of their magnitude and connection with plans for the International

Geophysical year. One was the Trans-Antarctic expedition, directed by V. E. Fuchs and supported by the British and commonwealth governments. The primary objective was to make a cross-section of the antarctic continent's features and structures. In contrast, the U.S. Antarctic expedition, known as Operation "Deepfreeze," was establishing observation stations at widely separated points, including one at the South Pole. This was one of a series of operations encompassed by the U.S. antarctic program under the direction of Rear Admiral Richard E. Byrd. Other antarctic expeditions in which geographers were participating had been activated in connection with the International Geophysical year by Argentina, Australia, Chile, France, Great Britain, Japan, New Zealand, Norway, the Union of South Africa and the U.S.S.R. The existing and proposed sites for all these countries were plotted on U.S. hydrographic chart no. 16,429, which was published Oct. 27, 1955, in a very limited quantity for use by operational units.

Foreign research in other areas was also being encouraged by geographical societies and government agencies, and by the reduction of restrictions on foreign travel. For example, the Royal Geographical society and Alpine club jointly created, early in 1955, the Mt. Everest foundation. The foundation was to administer all profits resulting from the ascent of Everest and to make grants for geographical research and exploration in mountain regions of the world. In the United States the National Academy of Sciences-National Research council initiated a program for young geographers to carry out field investigations abroad. Financial support was provided by the U.S. office of naval research. In Germany the president of the Deutscher Geographentag, Werner Krause, said in his presidential address during the year that any research project could now be undertaken in any field and that young geographers now had

GIANT STEEL GLOBE, 30 ft. in diameter and weighing 40 tons, erected in 1955 at the Babson Institution of Business Administration, Wellesley, Mass., for use by geography students. The 500 vitreous enamel plates could be removed and changed to keep pace with world events



the opportunity to travel on grants in all parts of the world, even to places where Germans had been barred for the past ten years.

Several other polar, marine and mountain exploring expeditions were continued or undertaken. Spurred by the conquest of Mt. Everest in 1953, climbers from 11 countries attempted other peaks in the Himalayas and two reached their goals. An Italian group scaled 28,250-ft. Mt. Godwin Austen (K-2), and an Austrian expedition ascended Cho Oyu (26,867 ft.). A British group reconnoitered the world's third tallest peak and loftiest unscaled mountain, Kanchenjunga (28,146 ft.) but did not reach its summit.

Two U.S. icebreakers pierced, for the first time, the M'Clure strait which connects the Arctic ocean with Viscount Melville sound and constitutes a western entrance to the famous north-west passage. Russian scientists reported finding a vast underwater divide between the New Siberian Islands and Greenland. An expedition led by a Jesuit priest of Boston college, Chestnut Hill, Mass. (Daniel Linehan), localized the north magnetic pole near the northwest end of Prince of Wales Island, about 150 miles west and a little south of the position established in 1946.

The National Geographic society (q.v.) continued to support expeditions begun in 1953 and 1954, and undertook several new ones, bringing the total now in progress to eleven. Among those which had yielded notable results was the Palomar Observatory Sky survey which was culminating in a sky atlas with 1,758 photo-maps and sky charts. The atlas, which was scheduled for completion in 1956, was meant to serve primarily as a guide to show astronomers where research efforts should be concentrated for new discoveries. Geographic study of astronomical bodies had also been advanced through the National Geographic society's joint support with the Lowell observatory of a photographic study of Mars from Bloemfontein, U. of S.Af. About 20,000 photos, taken when Mars was nearest the earth and directly above the observatory, revealed blue-green markings believed to be vegetation, gleaming polar caps, frost areas, clouds and possibly dust storms.

One of the most useful tools for geographical research in recent years was the new edition of the *London Times Atlas*. Volume iii (western Europe) of the five-volume work was published in 1954 and the remaining volumes were scheduled to be completed at the rate of one a year, making this the largest and most comprehensive English language atlas in existence.

Geographers who worked effectively on problems or projects of significance to the profession were honoured by awards granted at national or international meetings. At the 51st annual meeting of the Association of American Geographers in Memphis, Tenn., April 11-14, 1955, the Outstanding Achievement award was presented to Gilbert F. White of The University of Chicago for his penetrating studies of water resources and their control, and citations were given to Henry M. Kendall of Miami university, Oxford, O., for editorial work on the *Annals* of the association, to John C. Weaver of Kansas State college for crop studies in the middle west, and to Erwin Raisz of Boston for work on landform maps. At the 40th annual meeting of the National Council of Geography Teachers in San Francisco, Calif., Aug. 19-21, 1954, the Distinguished Service award was granted to Erna G. Gilland of California Teacher's College, Pa., for contributions through teaching. The Richard Elwood Dodge prize in physical geography went to C. Langdon White of Stanford university, Stanford, Calif., and the Ray Hughes Whitbeck prize in economic geography went to Lucille Carlson of Western Reserve university, Cleveland, O. At the annual meeting of the Special Libraries association in Detroit, Mich., June 13-16, 1955, the Geography and Map division presented the award for Outstanding achievement in Geography and Map librarianship

to Marie C. Goodman of the library of congress. At the annual meeting of the Royal Geographical society in London, June 1955, the Society's Patron medal was presented to John Wright of the American Geographical society. At the 6th general assembly of the Pan American Institute of Geography and History in Mexico City, July 25-Aug. 7, 1955, the Atwater medal was given to Federico A. Daus of Argentina, and the Pan American Medal in Geography to Jorge Zarur of Brazil. (See also CARTOGRAPHY; EXPLORATION AND DISCOVERY; GEOLOGICAL SURVEY, U.S.; NATIONAL GEOGRAPHIC SOCIETY; SOCIETIES AND ASSOCIATIONS, U.S.) (A. C. GH)

Geological Survey, U.S. This bureau in the United States department of the interior has as its principal objectives the determination and appraisal of the nation's mineral and water resources, delineation of the physical features of the United States, its territories, possessions, and supervision of mineral leasing on federal and Indian lands.

During 1955 emphasis continued to be placed on activities to attain these objectives—the preparation of topographic, geologic and hydrologic maps; systematic collection; exploration, appraisal and interpretation of quantitative and qualitative data on mineral and water resources; classification of public lands for mineral and water power potential; supervision of mineral and oil and gas development on federal and Indian lands; fundamental research in the sciences and techniques involved; publication and dissemination of maps and reports setting forth the results of its investigations and mapping. In addition to these basic goals, the survey is frequently called upon to provide consultative and technical services to other federal agencies.

Geologic Investigations.—During 1955 the geologic division carried on co-operative investigations with 13 states and the territory of Alaska. The result—publication of 44 reports (2 by states and 42 by the geological survey) and the preparation for publication of 37 additional reports and maps. The milestones in the progress of geologic mapping were publication of geologic maps of New Hampshire, Oklahoma and Wyoming.

Novel developments in geophysical, geochemical and geotectanical prospecting aided exploration for new deposits of minerals and mineral fuels. In co-operation with engineers of the bureau of mines, survey geologists continued to evaluate applications for loans to mining companies and individuals, and supply technical advice necessary for effective execution of contracts under the Defense Minerals Exploration administration and the Emergency Procurement service.

Studies were made for the department of defense on tectonic and volcano hazards in the Aleutian Islands. In anticipation of construction of the Air Force academy, a special geologic investigation was completed at Colorado Springs, Colo. Field studies and a core-drilling program were completed on navy oil-sand deposits in Utah. Special geologic work was done for the cooperation of engineers and other department of defense agencies. Much work under auspices of the Foreign Operations administration, investigations of mineral resources were made in 17 countries: Latin America, Asia and Africa. On behalf of the Atomic Energy commission a broad program of geologic research and exploration for fissionable raw materials was continued, paying particular attention to the Colorado plateau and the Black Hills.

Shallow seismic reflection equipment developed by survey scientists during 1954 was further tested and refined. This was successfully used in locating buried river channels in Colorado. Studies of radiowave frequency propagation, electromagnetic methods and induced polarization were also made. For regional studies in the Mojave desert and in Salt Lake and Utah valleys.

avity and aeromagnetic methods yielded valuable data. Thousands of fossils from 35 states, Alaska and 12 areas outside the United States were examined by palaeontologists and stratigraphers. The resulting information was incorporated in 13 administrative reports for use in guiding the field work of other geologists and for eventual publication.

Water Resources Investigations.—While the United States is a water-rich nation except for some areas like the southwest, water supply has become a major national problem because requirements are increasing so rapidly. The national per capita use of water quadrupled from 1900 to 1950 and it was estimated that it would nearly double again before 1975. The basic facts contributing to the problem were population growth coupled with a rising standard of living.

In achieving its principal objective—an accurate appraisal of U.S. water resources—survey scientists and engineers systematically collected, analyzed and interpreted hydrologic and geologic data; evaluated water resources of specific areas; determined water requirements for industrial, domestic and agricultural uses; performed research and development to broaden the knowledge of basic principles in water occurrence and movement, and to improve its investigations techniques; and prepared technical and scientific reports for publication.

Because its work meshes closely with many state and local interests in water supply, state and local governments have encouraged increasing participation in co-operative ventures. Since 1929 the congress has provided funds to match area financial offerings and federal-state partnerships have developed with all 48 states. Federal funds for co-operative water investigations in fiscal 1955 amounted to \$3,800,000.

About 6,800 gauging stations to obtain stream-flow data were operated in 1955 in the 48 states and in Alaska, Hawaii and Guam. A special project summarizing stream-flow records in the United States for the period 1888–1950 was about 60% complete. Special reports on floods were in progress or near completion for 17 states. Hydraulic data on 96 sites where bridges were to be built were furnished to highway departments.

Survey-gathered data on water available in basalt beneath the Snake river plain played a significant part in the first major federal reclamation development in the United States based on underground water. A large perennial supply was found permitting irrigation of about 64,000 ac. in the Minidoka project, Idaho.

Dissolved minerals are a factor in the use of water. For this reason the chemical quality of more than 64,000 samples of water from streams, lakes, springs and wells was determined. The major portion of these samples came from about 450 daily periodic sampling sites, mostly on streams. A major reference report entitled *Industrial Utility of Public Water Supplies in the United States, 1952* was issued during 1955. It was a two-volume compilation of chemical analyses of water from 1,315 of the nation's larger cities.

Topographic Mapping.—This activity is designed to furnish accurate and detailed information on natural and man-made topographic features of the United States, its territories and dependencies. This is for use by the public as well as by civil and military agencies of the government.

Since it was established in 1879 the survey had published about 17,000 different topographic maps that now covered about 98% of continental U.S. However, many of the older maps had long needed revision. At the end of 1955 only about 37% of the country was covered by maps that met modern needs. Barring unforeseen delays, the next three decades were expected to see the country substantially covered with topographic maps made to modern standards. However, a continuing problem of keeping these maps up to date would remain. During the year mapping or map revision was carried on in all 48 states, Alaska,

Puerto Rico, the Virgin Islands and the Hawaiian Islands. In 29 states mapping was accelerated through federal-state co-operative programs whereby mapping costs were shared equally between the federal government and a state, county or municipality. Altogether, 2,266 map manuscripts were transmitted to the publications office for printing and distribution. Of these, 1,280 represented new mapping.

Conservation.—Conservation activities in 1955 were aimed, as in previous years, at assuring proper development and use of water and mineral resources on federally controlled lands. This work required field surveys; preparation of maps and reports dealing with water power, fuels, minerals and chemicals; and on-site supervision of mining and drilling operations to assure safe and economical production of coal, oil, gas and other minerals.

In mineral classification alone, 24,137 cases were handled involving either the outright disposal of federal lands with no reservation of any mineral; disposal of such lands with qualifications; or exercise of the government's right to lease such property for minerals exploration and production by private enterprise.

More than 1,800 mining properties were under supervision during fiscal 1955, involving leases, permits and licenses in 32 states and Alaska. Minerals production was estimated at nearly 17,000,000 tons valued at more than \$120,000,000 with royalties amounting to more than \$5,000,000. The production of coal from federal land in the United States and Alaska aggregated 5,588,830 tons with a royalty value exceeding \$692,000.

Drilling on public lands during the year included the spudding of 1,413 wells and completion of 1,352 wells, of which 937 were productive of oil or gas. In all, 21,758 wells, including 12,433 capable of producing oil or gas, were under supervision at the end of the fiscal year; production was appreciably greater than in 1954 and royalty returns to the United States amounted to nearly \$40,000,000.

Publications.—The information gathered by the geological survey in field and laboratory is made available through a variety of books, pamphlets, maps and charts. A list of those published by the survey is available free upon request. In addition, many reports were published by other federal agencies, co-operating states, and scientific and technical periodicals. Reports published during the year included 46 professional papers, 47 bulletins, 60 water-supply papers, 35 circulars and 30 chapters for the new edition of the *Topographic Manual*.

(H. B. N.)

Geology. The review of geological articles and books shows the progress of geological science. Scrutiny of geologic literature published in 1955 revealed two major fields of endeavour: detailed provincial studies and refinements in research methods. Writings of universal interest on the broader aspects of geology made up but a minor part of the year's production, and petrology, normally a subject of considerable study, received comparatively little attention.

General and Historical Geology.—The cultural division of the French embassy, New York city, issued the *French Bibliographical Digest: Science, Geology* (2) (1954), an annotated list of geologic books and articles published in the French language during the period 1948–54. A summary of trends in French geology was included. *Prodrome d'une description géologique de la Belgique*, by P. Fourmarier et al. (1954), the most recent complete geologic description of Belgium, was published. A. L. DuToit, in *The Geology of South Africa*, presented a revision of this standard reference which incorporated data discovered after 1939.

Engineering Geology.—The application of geology to engineering attracted greater attention and more detailed examina-

tion during 1955. John R. Schultz and Arthur B. Cleaves, in *Geology in Engineering* (1955), contributed a text in elementary geology designed for engineering students. The Aug. 1955 issue of the *Bulletin* of the Geological Society of America included "Engineering Geology Reference List," assembled by Stafford C. Happ, which included references in European and North American literature. *A Glossary of Selected Geologic Terms With Special Reference to Their Use in Engineering*, by W. Lee Stokes and David J. Varnes, was published by the Colorado Scientific society in 1955. *Géologie des barrages et des aménagements hydrauliques* (1955), by M. Gignoux and R. Barbier, primarily a reference on the subject of geology of damsites but touching upon the associated subjects of construction, tunnelling, drilling, grouting, equipment and underground water, was published. Numerous examples involving widely varying geological situations were presented.

Structural Geology.—Reinout W. van Bemmelen, in *Mountain Building* (1954), considered the principles of mountain building and described current mountain making in Indonesia, one of the areas of most active crustal deformation at this time. A study of the earth's crust utilizing earthquake surface waves appeared in "Crustal Structure and Surface-Wave Dispersion," by Jack E. Oliver, Maurice Ewing and Frank Press, in the July 1955 issue of the *Bulletin* of the Geological Society of America. Analysis of surface-wave dispersion resulted in the deduction that the Pacific ocean and parts of the North Atlantic ocean were underlain by typical oceanic crust except for a possible thin layer of continental rock under the Easter Island rise. A symposium entitled *Crust of the Earth*, edited by Arie Poldervaart, was published as a Geological Society of America Special Paper. The nature of the earth's crust, recent deformation and sedimentation, structural synthesis and petrogenesis and the historical development of the earth's crust were the major topics of exposition.

Sedimentation and Marine Geology.—*The Ocean Floor* (1954), by Hans Pettersson, presented information on the nature, stratigraphy and geochemistry of the sediments of the ocean floor, based on data obtained during the cruise of the "Albatross" in 1947. Other topics were the ages of the deep oceanic basins, turbidity currents, bottom waters and the life of the great deeps. Francis P. Shepard and David G. Moore contributed a classic discussion of sedimentation in the Gulf of Mexico in "Central Texas Coast Sedimentation: Characteristics of Sedimentary Environment, Recent History, and Diagenesis," in the Aug. 1955 issue of the *Bulletin* of the American Association of Petroleum Geologists. Deposition, biology and chemistry of the sediments were closely integrated and the studies enabled identification of depositional environments in cores of as much as 85 ft. of sediments in bays, barrier islands and deltas. "Deep-sea Channels, Topography, and Sedimentation" by Henry W. Menard, Jr., in the Feb. 1955 issue of the *Bulletin* of the American Association of Petroleum Geologists, had for its principal topic an explanation of the surface relief of parts of the ocean bottom. Smooth submarine topography was found to be closely related to deposition by turbidity currents, while irregular topography was described as occurring in areas where deposition was solely by settling out of suspended material. Bottom topography of some relief was observed to be sheltered from turbidity currents by submarine mountains or ridges. Submarine fans were also discussed. Morphology of some submarine canyons led the author to the conclusion that turbidity currents had eroded the channels, as canyon orientation could be related to Coriolis effects.

Papers presenting lithofacies analyses (quantitative presentation of physical characteristics of sediments in map form with relation to source and depositional areas) appeared in larger

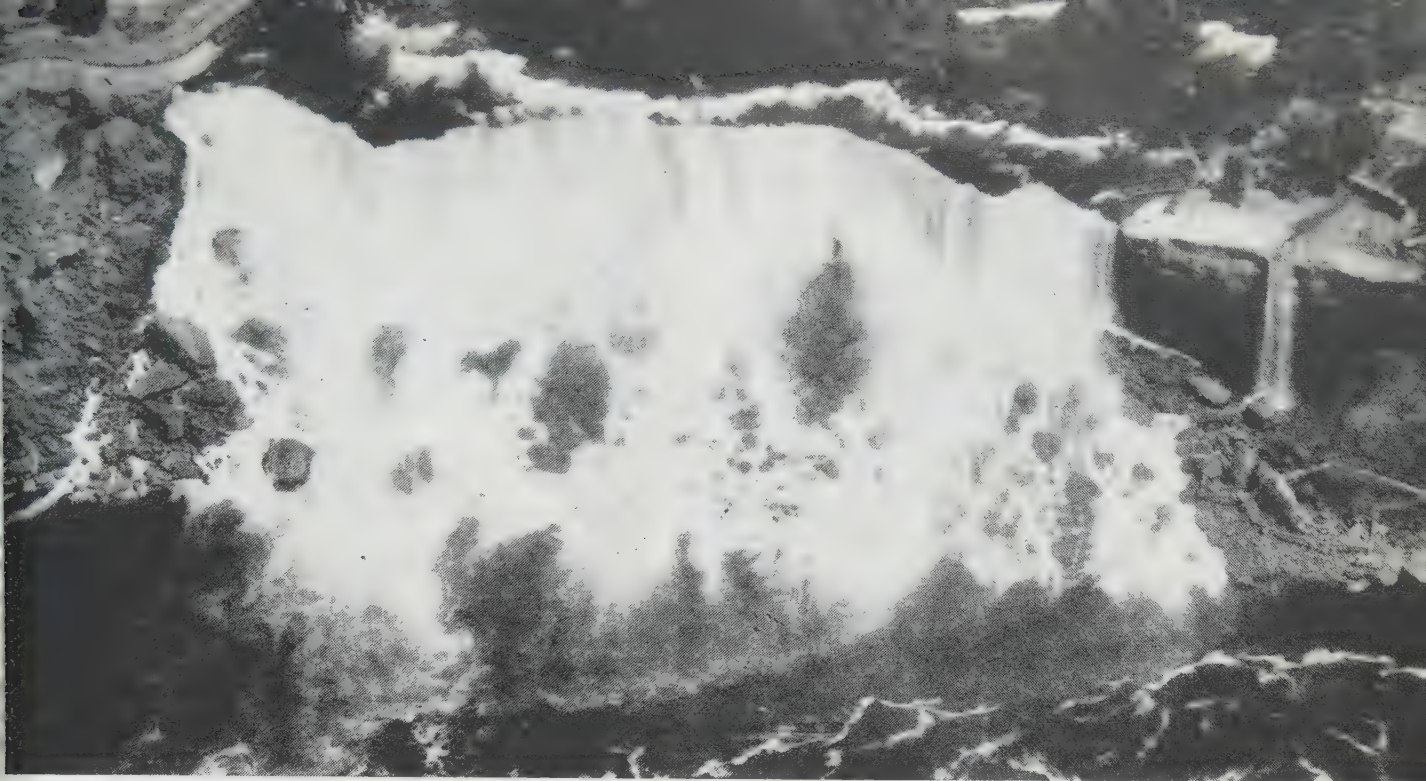
numbers in 1955. Outstanding examples of this type of presentation were published in various issues of the *Bulletin* of the American Association of Petroleum Geologists and are as follows: January, "Lithofacies Map of Lower Silurian Deposits Central and Eastern United States and Canada," by Thomas Amsden; April, "General Lithofacies Relationship of St. Peter Sandstone and Simpson Group," by E. C. Dapples; and May, "Quantitative Lithofacies and Biofacies Study of Florena Shale (Permian) of Kansas," by John Imbrie, and "Devonian System of Williston Basin," by Andrew D. Baillie.

Mineral Deposits.—The first all-inclusive publication on mineral deposits of Bolivia was published. Frederico Ahlfeld. *Los Yacimientos Minerales de Bolivia* (1954), included maps, cross sections, descriptions of mining districts and individual deposits and production and export data. Continued expansion of the search for uranium resulted in the devotion of the entire March-April 1955 issue of *Economic Geology* to all phases of the geology of uranium, and U.S. geological survey and Atomic Energy commission geologists described numerous individual deposits.

Petroleum Geology.—A. I. Levorsen, a petroleum geologist of outstanding reputation, wrote *Geology of Petroleum* (1955) in which the subject was completely discussed. In "Time Migration of Oil and Gas," in the May 1955 issue of the *Bulletin* of the American Association of Petroleum Geologists, W. C. Gussow proposed a method of determining the length of time of migration. Time involved in compaction, regional time of trap formation, hydrostatic and saturation pressure and diagenesis were each examined and related to oil migration. The principles were tested by application to Alberta, Can., oil fields. The origin of petroleum in place was discussed by C. Corbett in "In Situ Origin of McMurray Oil of Northeast Alberta and Its Relevance to General Problem of Origin of Oil," in the August issue of the *Bulletin* of the American Association of Petroleum Geologists. It was suggested that humic acids derived from plant material were the source of the hydrocarbons. Environmental factors in deposition of the sediments were discussed and a sequence of chemical changes from original plant material to oil was proposed.

The international oil situation was the subject of several examinations. *World Oil*, in its "International Issue" of Aug. 1955, presented developments of the petroleum industry in producing countries of the world during the previous year, with a special section devoted to Russia and other communist-dominated countries. Leonard M. Fanning, in *Foreign Oil and the Free World* (1954), showed the international petroleum development by the leadership of the United States of America in the petroleum industry. Practical problems, economics and political aspects were discussed and statistics of the industry were given for some areas. The July 1955 issue of the *Bulletin* of the American Association of Petroleum Geologists reviewed developments in Mexico, South and Central America, Europe, Africa, the middle east and the far east for 1954, while the June issue of the same publication presented statistical data on exploration in Alaska, Canada and the United States for 1954. In *Romanian Oil Industry* (1955), Constantin N. Jordan reviewed events of that segment of the oil industry for the period 1945-52 with the major presentation that of statistical information. An interesting series of reviews by George V. Chilingar of comparatively recent Russian publications appeared in various issues of the *Bulletin* of the American Association of Petroleum Geologists in 1955. The origin of petroleum was emphasized in these reviews.

Geochemistry.—Two phases of this subject received more than usual attention within the year. *Isotope Geology* (1955) by Kalervo Rankama, and *Nuclear Geology* (1954), edited



ROCK FALL at Niagara falls in 1955. Geologists located areas of dangerous
isms and dynamited thousands of tons of rock to reshape the face of the
ls. The photograph shows the American falls with New Prospect point at
upper left

Henry Faul, presented numerous applications of radioactivity and related phenomena to geologic problems. Techniques and equipment for study of radioactive effects, age determinations and earth origin and history were discussed. Biogeochemistry as applied to exploration for metalliferous minerals was demonstrated in two case histories: "Biogeochemical Reconnaissance of the Annie Laurie Uranium Prospect, Santa Cruz County, Arizona," by Roger Y. Anderson and Edwin B. Kurtz, Jr., in *Economic Geology*, March-April 1955 issue, and "Biogeochemical Prospecting at the Shawangunk Mine—a Case Study," by Joseph E. Worthington, in *Economic Geology*, June-July 1955 issue. The problem of sampling for biogeochemical exploration is analyzed and techniques for effective sampling were suggested by Harry V. Warren, Robert E. Delavault and John A. C. Artescue in "Sampling in Biogeochemistry," which appeared in the Feb. 1955 issue of the *Bulletin of the Geological Society of America*. (See also MINERALOGY; OCEANOGRAPHY; PALAEOLOGY; SEISMOLOGY.) (L. ON.)

Georgia. Georgia, popularly known as the "empire state of the south," is located in the south Atlantic region of the United States. It has an area of 58,876 sq.mi. and had an estimated population of 3,539,000 on July 1, 1955, according to the U.S. bureau of the census. Of the 1950 population (3,444,783), 54.7% was rural and 45.3% urban; 68.6% was native white and 30.9% Negro. Atlanta, the capital, had a 1950 population of 331,314. Its 1954 estimated population was 457,300. Other chief cities and their 1950 populations, with their estimated 1954 populations in parentheses, are: Savannah, 119,638 (29,700); Columbus, 79,611 (90,800); Augusta, 71,508 (93,700); and Macon, 70,252 (76,000).

History.—In Jan. 1955, the state legislature convened for the first time under a constitutional amendment providing for annual sessions not to exceed 40 days. Prior to the adoption of this amendment in 1954, the state legislature met in 70-day annual sessions. The Jan. 1955 session of the legislature passed an act providing for the automatic withdrawal of all state and local funds for public education in any public school district system where white and coloured Negro children were not

segregated in schools and classes. The act was another in a series of measures adopted by the state legislature designed to maintain segregation in the public schools of the state.

In another measure which reflected the continued urban trend and increased industrialization in the state, the legislature authorized cities and towns to formulate workable programs for utilizing appropriate private and public resources to eliminate and prevent the development and spread of slums, to encourage needed urban rehabilitation, and to provide for the redevelopment of slum areas.

Other important actions of the January session of the legislature authorized the creation of a farmers' market authority to construct and improve farmers' markets throughout the state; established a rural roads authority to construct, maintain, repair, operate and finance rural road projects; prohibited the sale or use of fireworks in the state except in public displays authorized by the state fire marshal and local government officials; repealed the act of 1953 creating the Georgia turnpike authority; provided for the issuance of five-year drivers' licences instead of the permanent licences formerly issued; required the filing of ad valorem tax affidavits with applications for automobile licence tags; and established a state programs study committee to study the operations of the state government and to make recommendations to the governor and state legislature for meeting the fiscal needs of the state on a long-range basis.

Among the more significant political developments of the year was a meeting of the state legislature in extraordinary session for two weeks in June for the purpose of enacting new revenue, licence and tax laws needed to cope with a developing financial crisis in the state government. After rejecting a controversial sales tax extension bill, the legislature raised taxes on gasoline, cigarettes, beer and wine, incomes, insurance premiums and a number of other items. It was estimated that the new tax-producing bills would bring in more than \$40,000,000 to the state treasury.

Principal state officials during 1955 were: governor, S. Marvin Griffin; lieutenant governor, Ernest Vandiver; secretary of state, Ben W. Fortson, Jr.; comptroller general, Zach D. Cravey; attorney general, Eugene Cook; treasurer, George B. Hamilton; commissioner of agriculture, Phil Campbell; commissioner of labour, Ben T. Huiet; and superintendent of schools, M. D. Collins.

Education.—During the school year 1955-1956, there were 2,864 public schools in Georgia with an enrolment of 892,467 pupils and a teaching staff of 29,255, according to the state department of education.

There were 1,615 elementary schools, 741 for white children and 874 for Negro children. An additional 1,249 elementary schools had one or more high school grades (including 524 for Negro children). There were 665 five-year high schools (419 for white children and 246 for Negro children). There was an enrolment in the elementary grades of 666,808 (442,514 white children and 224,294 Negro children) and a teaching staff of 19,057 (12,839 white and 6,218 Negro). There was an enrolment in high school grades of 225,659 (166,651 white children and 59,008 Negro children) and a teaching staff of 9,033 (6,763 white and 2,270 Negro). There were 645 nonteaching principals (490 white and 155 Negro).

Total expenditures of the state government for education during the fiscal year ending June 30, 1955, amounted to \$122,295,266, compared with \$113,417,455 the preceding year and \$137,711,000 for the operating budget for the fiscal year beginning July 1, 1955.

Social Insurance and Assistance, Public Welfare and Related Programs.—Public assistance programs during the fiscal year ending June 30, 1955, amounted to \$62,247,686, an increase of approximately 6.5% over the previous year, according to the state department of public welfare. Old-age assistance amounted to \$43,860,295; aid to the blind, \$1,694,545; aid to dependent children, \$12,562,369; and aid to disabled persons, \$4,130,477. In June 1955, a total of 97,985 persons received old-age assistance with an average allowance of \$37.81; 3,370 blind persons received benefits averaging \$42.96; 39,961 dependent children received benefits averaging \$27.14; 9,052 disabled persons received benefits averaging \$42.05.

During the fiscal year ending June 30, 1955, a total of 6,914 persons were convicted of crimes (1,921 of felonies and 4,993 of misdemeanors) and committed to state and county penal institutions under the control of the state board of corrections. There were 7,789 prisoners in these institutions on June 30, 1955, compared with 7,675 on June 30, 1954.

Communications.—As of June 30, 1955, the state highway department reported that there were 87,455 mi. of public roads in Georgia and an estimated additional 7,483 mi. of city streets and alleys. The state highway system extended 15,111 mi., and county roads extended 72,343 mi. For the fiscal year ending June 30, 1955, the state highway department expended \$65,755,641.01. The state received \$15,517,352.62 from the federal government for highway purposes during the fiscal year.

On Dec. 31, 1954, there were 6,049 mi. of railroads in Georgia, according to the Interstate Commerce commission. The Georgia Public Service commission reported there were 607,526 telephone stations in the state as of July 15, 1955. There were 3,238 mi. of federal airways and 79 active civil airports in Georgia as of June 30, 1955.

Banking and Finance.—On June 30, 1955, there were 301 state banks in Georgia with total deposits of \$953,656,932 and total assets of \$1,064,342,920, according to the Georgia department of banking. The same source showed 51 national banks in the state with total deposits of \$1,171,883,000 and assets of \$1,274,494,000 as of April, 1955. There were also 14 state chartered building and loan associations in Georgia in 1954 with total assets of \$21,093,040, according to a report by the Georgia secretary of state.

The Georgia Savings and Loan league reported that there were 79 savings and loan associations on June 30, 1955, of which 71 were chartered by the federal government and 8 by the state. These 79 associations had resources of approximately \$600,000,000.

Total receipts of the state government for the fiscal year ending June 30, 1955, were \$236,473,995; budget allotments for the period were \$241,304,615. On June 30, 1955 the state had a net surplus of \$16,364,658.

Agriculture.—The U.S. department of agriculture estimated that the total cash income (including government payments) of Georgia farmers for 1954 was \$601,765,000. This represented a decline of 7.6% from the \$650,956,000 reported for the previous year. Of the 1954 cash income 52.5% was derived from crops while 46.4% came from livestock. Government payments during 1954 amounted to \$6,640,000.

Table I.—Principal Crops of Georgia

Crop	Estimated 1955	1954	Average, 1944-53
Cotton, bales.	685,000	612,000	695,000
Corn, bu.	65,208,000	29,642,000	46,217,000
Peanuts, lb.	613,800,000	276,750,000	657,004,000
Tobacco, lb.	146,740,000	124,220,000	114,536,000
Oats, bu.	18,356,000	21,235,000	14,416,000
Peas, lb.	4,000,000	20,000,000	36,981,000
Potatoes (sweet), bu.	1,350,000	966,000	4,080,000
Potatoes, Irish, bu.	344,000	395,000	872,000
Hay, tons	596,000	444,000	676,000
Wheat, bu.	1,472,000	2,072,000	2,216,000
Peaches, bu.	*	2,800,000	3,612,000

*The 1955 peach crop was almost a complete failure because of spring freeze damage. Source: U.S. Department of Agriculture.

Table II.—Principal Industries of Georgia

Industry	All employees		Salaries and wages		Value added by manufacture	
	1953	1953	1953	(in 000s)	1952	(in 000s)
Food and kindred products.	32,271	\$ 90,559	\$219,382	\$170,492		
Textile mill products.	107,183	269,250	410,587	398,281		
Apparel and related products.	33,906	71,176	115,447	110,068		
Furniture and fixtures.	8,496	21,324	39,694			
Paper and allied products.	12,745	47,629	128,969	115,537		
Chemicals and allied products.	11,015	35,021	77,121	72,220		
Leather and leather products.	2,096	5,203	9,836			
Stone, clay and glass products.	7,562	22,104	42,792			
Machinery (except electrical).	5,858	20,863	37,948	38,381		
Miscellaneous manufactures.	3,894	10,444	21,101			
Administrative and auxiliary.	3,350	13,728				

*Withheld because the estimate did not meet publication standards, either on the basis of the associated standard error of estimate or on the basis of a consistency review. Source: U.S. Department of Commerce, *Annual Survey of Manufactures*, 1953.

Manufacturing.—In June 1955 there were 324,300 persons employed in manufacturing industries in Georgia, compared with 304,600 in June 1954, according to the U.S. bureau of labor statistics. The same source reported that gross average weekly earnings of production workers in manufacturing was \$52.93 for June 1955, compared with \$48.51 in June 1954. The U.S. bureau of the census estimated that persons employed in manufacturing in Georgia received a total of \$848,075,000 salaries and wages in 1953. The same agency reported that a value of \$1,545,467,000 was added by manufacture during 1953, compared with \$1,355,318,000 in 1952 and \$1,332,659,000 in 1951. (G. S. Ps.)

Mineral Production.—Table III shows the tonnage and value of the mineral commodities produced in Georgia in 1952 and 1953 (preliminary, whose value exceeded \$100,000. Georgia produces a variety of nonmetallic minerals. In 1953, the state was second in output of mica, third in slate, and fifth in asbestos. Georgia was 32nd among the states in value of mineral output, with 0.36% of the U.S. total in 1953.

Table III.—Mineral Production of Georgia

Mineral	(Short tons)		1953	
	Quantity	Value	Quantity	Value
Clays	2,562,000	\$23,138,000	2,651,000	\$23,455,000
Iron ore	358,000	1,439,000	291,000	1,101,000
Sand and gravel.	2,134,000	2,030,000	2,051,000	1,901,000
Stone	7,142,000	18,115,000	7,122,000	18,759,000
Talc	56,000	653,000	58,000	203,000
Other minerals. . . . .	...	7,023,000	...	6,978,000
Total.		\$52,398,000		\$52,397,000

German Literature. The year 1955 gave many indications that the book trade was in just a healthy condition as the rest of West German economy. Sales were high, many new titles were published and the German technical literature again displayed the quality and quantity always associated with German scholarship before 1932. However, the creative literature failed to achieve anything like the recovery which the nation had produced in the technical and economic sphere. In literature it was not so much a question of recovery but rather of rebirth, the rebirth of a new generation of authors. The great difference between the work presented during the year by the present generation and that of the old generation with an unbroken continuity of development reaching back into the pre-Hitlerian days was apparent with the publication of the concluding volume, *Der Tag des jüngsten Arztes*, in the autobiography of his youth which Hans Carossa began to write during World War I. Here in the mature reflections about his life and times as a young doctor in Bavaria the author expresses his awareness of the organic meaningfulness of his entire long life in a very simple, peaceful prose which is saturated with the tradition of the language.

Max Frisch, a talented young Swiss writer, in his excellent psychological novel, *Stiller*, generally acknowledged as the finest novel of the year, articulately gave voice to the themes and style which attract the younger writers. This long book tells of the unsuccessful attempts of a man, Stiller, to lose his identity by fleeing from his total environment. The Swiss architect and writer was distinguished not only by this novel which was awarded the Wilhelm Raabe prize, but his radio play, *Der Lärm und die Architektur*, was selected as the best submitted to the jury of the Hessian radio, and his play, *Don Juan oder Liebe zur Geometrie*, was successfully produced on the German stage.

Typical of those established German authors who enjoyed a profitable exile during the years of German suffering but who thus forfeited their acceptance by the German public was Hermann Hesse, author of *A Thousand Must Fall*, whose latest effort, *Off Limits, Roman der Besatzung Deutschlands*, was highly publicized but not well liked. Disappointed critics regarded the novel as an attempt to sell a huge number of copies since it emphasized the sensational elements such as fraternization, prostitution, etc. and, it was claimed, often gave distorted views of the truth.

Among the older German authors was Lion Feuchtwanger, one of modern German literature's foremost historical novelists whose lengthy *Spanische Ballade*, was set in 12th-century Spain.

the historical background was presented with such detail that sometimes it threatened to turn the novel into a lecture. Max Rod, the Czech writer, uses the historical novel primarily as a vehicle for his poetical speculations and psychological explanations. This was especially true in his latest book, *Armer Cicero*, which uses a love affair of the aging orator for a young girl as the situation through which Cicero, who is caught in the gulf between his ideals and the realities of life, becomes aware of human frailty and reaches the stage of readiness for self-sacrifice, the last step in the logical development of his life. Honoured on her 70th birthday, Ina Seidel also produced one of the finest German novella of recent times, *Die Fahrt in den Abend*, which is about a retired physician who suddenly is brought back to the memory of a critical decision in his earlier life, starting from which he reviews and evaluates then the remainder of his life in retrospect.

World War II, especially the Russian war, army life and postwar problems was the predominant theme in the work of the more promising young writers. Hans Hellmut Kirst, film critic for a Munich paper and the author of 1954's best seller, *Null-acht-fünfzehn*, expanded in the course of one year the military adventures of Private Asch into a trilogy. Volume two, *Die seltsamen Kriegsabenteuer des Gefreiten Asch*, focuses more attention on various members of an artillery regiment on the eastern front, unpleasant types found in the army, whose crudity and brutality the author satirizes unmercifully. The third volume, *Der gefährliche Endsieg des Gefreiten Asch*, emphasizes similar characters and situations in the military theme during the final days of the war. Episodes and personalities are exaggerated for the author's purpose, which is to satirize the tragedy caused by the evils of army life and war.

Of quite a different stamp was the last volume, *Berlin*, of the war trilogy (*Moscow, Stalingrad*) written by Theodor Plievier, who died during the year. In twelve years of devoted effort this author, a disillusioned emigrant to and then from the Soviet Union, tried, probably better than anyone yet, to picture realistically on a broad canvas the eastern-front war as it affected the three cities. In the novel, *Berlin*, no details are spared and everything is presented, but by choosing to give such a picture there arises a documentary rather than a novel. The most important works of nonfiction dealing with the war came from the pens of two generals, Albert Kesselring's *Gedanken zum Zweiten Weltkrieg*, and Erich von Manstein's *Verlorene Siege*. The former attempts a critical evaluation of personal experiences which culminate in an investigation of the errors committed by the Axis powers. The latter aims at supplementing the existing source documents by appending that which von Manstein calls the essential element; that is, how the leading personalities thought and acted.

Though not drawing her material from the war, Johanna Moosdorf concentrated on an attempt to make understandable the reactions of men under duress by placing them against the realistic background, the factory environment of the east zone. *Der Himmel brennt* the author, herself a refugee from east Germany, was the first to use the workers' revolt of July 1954 as the setting for a skilful revelation of the German worker under the Soviet system, who takes pride—even love—in his work but at the same time has the greatest hatred for the regime over him. Stefan Andres was the only young author of ability to escape the lure of present-day environmental influences that are so attractive to his contemporaries, and in *Die Reise nach Cortina*, a trip through southern Italy, the main characters meet, travel together, and encounter personal emotional crises under the spell of the chapel where the Franciscan order was begun.

In the field of the German drama, still dominated by trans-

lations, there was but one noteworthy play printed and produced by a German writer, Carl Zuckmayer's *Das kalte Licht*, which shows the conflict between loyalty and ideology in a German atomic scientist who went to England and Canada and became a communist spy. Zuckmayer's ability to write an eminently producible drama led him here to write an almost technically perfect play, but the psychological development of the central figure cannot quite match the dramaturgy. To be noted in the field of poetry were the volumes: *Yamins Stationen* by Peter Härtling, and *Après-lude* by Gottfried Benn, both of which contained some of the finest lyrics that modern German poets had written. Heinz Piontek, who had begun to make a name for himself in the field of the lyric, published a volume of small pieces in lyrical prose, *Vor Augen*, which received much favourable comment.

The third and last volume of Franz Werfel's unpublished work *Erzählungen aus zwei Welten*, edited by Adolf Klarmann (the manuscripts being prepared for the printers by the widow, Alma Mahler Werfel), surprisingly reveals that Werfel went through a period of intense Jewish-nationalistic feeling from the time the Nazi danger threatened Austria through his flight to France, including even the first days of his residence in America. During this period he emphasized the peculiarities of the Jewish character, contrasting them with other peoples. This volume contains two major prose works. One, *Eine blassblaue Frauenschrift*, presents as the heroine the noblest, most undistorted of all his many Jewish characters, the daughter of a Viennese physician, Vera Wormser. The second, *Cella oder die Ueberwinder*, is a completed first volume of a projected two-volume novel which with great penetration depicts the expulsion of the Jews out of Vienna and the early days of the Nazi terror in that city. Another valuable posthumous work was found in the one volume, *Das Gesamtwerk*, of Friedo Lampe, which contains several hitherto unpublished novelle and short stories of this little known man who wrote in the true style of the German Romantic tradition.

C. W. Ceram, the author of the best seller, *Gods, Graves, and Scholars*, published a similar work, *Enge Schlucht und schwarzer Berg*, dealing exclusively with the Hittite empire and the archaeological adventures concerned with the discovery and study of this strange civilization that was so long lost to the world. In his *Wörterbuch der deutschen Umgangssprache* Heinz Küpper made an outstanding beginning in one branch of German lexicography which had been sadly neglected. Heinrich Weinstock's book, *Realer Humanismus*, was highly praised as it presented a thorough treatment of the history of humanism, its place in education, why and how it failed, and also the author's plea for a "real" humanism, distinguished from the traditional form in that it should take realities into account. One of the most valuable studies of the 19th-century Kulturkampf was written by Georg Franz in his *Kulturkampf: Staat und katholische Kirche in Mitteleuropa von der Säkularisation bis zum Abschluss des preussischen Kulturkampfes*.

The creative literature in the east zone was practically nonexistent. The lot of the author was not a pleasant one in the Peoples' Republic where royalties, or the equivalent, were extremely low except for the select few, and the opportunities for part-time employment which the government recommended were equally poor. In May 1955 the government instituted the first literary fair where they presented their prize authors behind counters to sell and autograph their books and talk to the people. It was also found necessary to establish an *Institut für Schriftsteller* under Alfred Kurella, an officially approved writer, because of the great dissatisfaction with the sales volume of the east zone literature, and it was felt that the writers were not sufficiently familiar with dialectical materialism, the ideo-

logical panacea in the Sovietized regime of Germany.

(J. C. OR.)

Germany. A country of central Europe, Germany is bounded north by the North sea, Denmark and the Baltic sea, east by Poland, south by Czechoslovakia, Austria and Switzerland, and west by France, Luxembourg, Belgium and the Netherlands. From 1949 Germany was partitioned into two republics with a special provisional regime for Berlin (*q.v.*). Areas and populations of the two states and Berlin are as follows:

	Area (sq.mi.)	Population (1950 census)	(1955 est.)
German Federal Republic	94,719*	47,695,672*	49,900,000*
German Democratic Republic . . .	41,380	17,313,734†	16,500,000
Berlin	341	3,336,475	3,369,000
	136,440	68,345,881	69,769,000

*Excluding the Saar (*q.v.*): area, 991 sq.mi.; pop. (1954) 980,858. †1946 census.

Language: German, with small admixture of Lusatian (260,000 in the Kottbus-Bautzen area), Polish (150,000, mainly in Westphalia) and Danish (120,000). Religion: (1938 est.) Protestant 62.7%, Roman Catholic 32.5%, Jewish 0.7%, other 4.1%; (1950 census, Federal Republic only) Protestant 52.2%, Roman Catholic 43.8%.

German Federal Republic.—Chief cities (with population of more than 200,000, 1953 est.): Bonn (cap.) 130,000; Hamburg 1,658,000; Munich 870,000; Cologne 629,200; Essen 624,100; Frankfurt 564,400; Düsseldorf 540,200; Dortmund 534,500; Stuttgart 521,800; Hanover 467,900; Bremen 463,000; Duisburg 426,700; Nuremberg 381,600; Wuppertal 375,100; Gelsenkirchen 329,800; Bochum 301,300; Kiel 259,500; Mannheim 256,300; Lübeck 234,600; Brunswick 230,400; Wiesbaden 228,700; Oberhausen 211,100; Karlsruhe 204,600. President of the republic in 1955, Theodor Heuss; federal chancellor, Konrad Adenauer (*q.v.*).

German Democratic Republic.—Capital, Berlin-Pankow. Chief cities (1953 est.): Leipzig 607,700; Dresden 510,100; Chemnitz (renamed Karl-Marxstadt) 298,500; Halle 278,400; Magdeburg 252,300. President of the republic in 1955, Wilhelm Pieck; premier, Otto Grotewohl. Soviet ambassador, Gheorghy M. Pushkin; Soviet commander in chief, Col. Gen. Andrey A. Grechko.

History.—During 1955 no progress was made over the most important subject for all Germans—that of the reunification of their country. The foreign ministers of the four occupying powers met in Geneva, Switz., in July, and again in October, without making the slightest progress. At each conference the differences in western and Soviet policies were starkly illustrated. The Soviet plan for the creation of a European security system and the later, step-by-step progress towards German reunification was countered by that of the western powers, entailing the holding of free, all-German elections, the signing of a German peace treaty and the later evolution of a security system. The failure of the great powers to make any progress caused increasing impatience among Germans.

The most important "all-German" event in 1955 was, therefore, the visit of Adenauer to Moscow in September. He was invited by the Soviet government on June 7, the invitation being passed through the Soviet and federal German ambassadors in Paris. Adenauer accepted, through the same channels on June 30. He flew to Moscow in a German "Lufthansa" plane on Sept. 8, having pledged himself to secure the return of German prisoners still in the Soviet Union and some progress over reunification. In return he was prepared to open diplomatic relations with the Soviet Union, as requested by N. A. Bulganin, the Soviet premier.

The Moscow talks lasted five days and Adenauer flew back on Sept. 14 to Bonn. He pointed out at once to the press and to the *Bundestag* that he had refused to budge from its commitments to the western powers under the Paris agreements and

had maintained his claim to represent the whole German people as head of the only democratically-elected German government. Bulganin had promised the return of the German prisoners, giving a figure of 9,626, and he had in return agreed to open diplomatic relations with the Soviet Union. There had been an change of views on the subject of German reunification, but practical progress on this subject was achieved. This was a bitter disappointment to the people of both eastern and western Germany.

The Soviet leaders promised to take immediate steps to turn the German prisoners. The first batch, consisting of 24 former generals, arrived in the Federal Republic on Oct. 6. Oct. 10 the first large group, of 598, arrived at the federal transit camp of Friedland and smaller groups reached both the Federal and the Democratic republics later.

In Moscow Adenauer made it clear that he would not take part in all-German talks with the German Communist government. The Soviet government had already proposed such talks subject to the annulment of the Paris treaties, on Jan. 15. Adenauer turned down this proposal in a radio broadcast on Jan. 16 when he said that he would not sacrifice the treaties to a German reunification which would be "dependent on Moscow." The Soviet *démarche* had been accompanied by notes to the Western European Union countries alleging that the treaties infringe the Geneva protocol of 1925 by allowing the stockpiling of biological and chemical weapons. The British and French governments were also accused of infringing their mutual security agreements with the Soviet Union.

German Federal Republic.—On May 5 the Federal Republic became a sovereign state, almost exactly ten years after the end of the war. In the morning Adenauer, the federal chancellor, had a final meeting with the three western high commissioners who became ambassadors on the same day and who presented their credentials to Heuss, the federal president. At an open ceremony at the chancellor's official headquarters of the Palace of Schaumburg in Bonn the German flag was hoisted and Adenauer made a short statement, announcing the end of the occupation and the birth of western German independence. A similar proclamation was read in the *Bundestag*.

The return of German sovereignty gave the Federal Republic the right to rearm; to build commercial aircraft; to enter into diplomatic relations with any country; to control its own internal security; and to enjoy freedom from Allied controls over industry. Immediately after the declaration of sovereignty the Federal Republic took part on May 8 in the first Western European Union meeting in Paris. Adenauer thanked the other powers for their reception of the Federal Republic and on the next day the German generals Hans Speidel and Adolf Heusinger were received at NATO (North Atlantic Treaty organization) headquarters in Paris. They wore civilian clothes.

The prelude to the events of May was the ratification of the Paris treaties by the *Bundestag* on Feb. 27 after a three-day debate. There were four treaties: the protocol on ending the occupation regime, the convention for the stationing of foreign troops on German soil, the agreement for the admission of the Federal Republic into NATO and the Western European Union and the Saar agreement between France and the Federal Republic. The majorities in favour of the first three agreements varied between 157 and 176 in the second and third readings of the ratification bills. In each reading 264 members voted for the Saar agreement and 204 and 201 respectively voted against it. Four cabinet ministers failed to support the government on the Saar agreement and one of them (Vice-Chancellor Franz Blücher) offered his resignation as a result. It was not accepted by Adenauer. The *Bundesrat* (or *Länder* assembly) accepted the treaties on March 18 and President Heuss signed them on March 20.



REPATRIATION OF GERMAN WAR PRISONERS, 1955

bove: Photographs of German soldiers missing after World War II posted in Hannover, Ger., in June during a meeting of former prisoners of war

bove, right: Moscow agreement in August. Chancellor Adenauer of West Germany (left) facing Premier Bulganin (right) and Foreign Minister Molotov the U.S.S.R. during discussions in the Soviet capital which resulted in the release of German prisoners and re-established diplomatic relations between the two countries

ght: Seeking news of relatives, German women wept as trains carrying the first groups of prisoners reached the town of Friedland in October



ve: Former Nazi officers—22 generals and 1 admiral—enjoying their first meals after reaching freedom in their homeland following 10 years of imprisonment

ht: Repatriated prisoners parading at Friedland carrying a banner saying "Thank you, Dr. Adenauer"





"THE GREAT TUG-OF-WAR," a 1955 cartoon by Justus of the *Minneapolis Star* (Minn.)

24, after deciding that there was no reason to wait for a decision as to their constitutionality by the federal constitutional court in Karlsruhe.

Ratification of the Paris treaties took place against a background of uncertainty. On Jan. 29 opponents of the treaties launched a "national" campaign against them when their leaders met in St. Paul's church in Frankfurt and signed a manifesto against rearmament. On Jan. 23 the leader of the Social Democratic party, Erich Ollenhauer, sent a grave warning against rearmament to Adenauer. Popular aversion to rearmament increased and applications for posts in the new armed forces fell away sharply. German youth in particular showed its doubts about rearmament but communist efforts to take part in the campaign were rebuffed.

The federal chancellor had a busy year. Apart from his Moscow visit, he went to both the United States and Great Britain in 1955. On June 16 he received a degree at Harvard university and on June 13 and 14 had talks with Pres. Dwight D. Eisenhower and J. Foster Dulles. He declared that the bonds of friendship between the two countries were closer than ever before and aired the possibility of bringing about "controlled disarmament" through negotiations with the Soviet Union. On June 19 he visited Sir Anthony Eden at Chequers.

On Jan. 14-15 Adenauer had talks with the French premier, Pierre Mendès-France, in Baden-Baden. They reached agreement over the Saar question but temporarily shelved the French plan for a European arms pool. On April 29 and 30 Adenauer had talks with the French foreign minister, Antoine Pinay, in Bonn. They completed arrangements for the Saar statute (which was rejected by the Saarlanders in a referendum held on Oct. 23), agreed to re-examine the project for a Moselle canal and declared their common desire to secure European integration. The communiqué had a cool reception from the German political parties. On Oct. 5 Adenauer met the French premier, Edgar Faure, in Luxembourg, in order to produce a joint declaration encouraging the Saarlanders to accept the "European" statute.

As a result of making this trip by car in raw weather Adenauer became seriously ill with pneumonia. He was unable to take any further part in affairs until shortly before Christmas.

On May 25 Adenauer interviewed the German ambassadors in London, Paris and Washington. The object of this meeting was to ensure close co-operation between these three "key" men and the new foreign minister, Heinrich von Brentano, who was officially appointed on June 7. At the same time Theodor Blank was appointed minister of defense.

Three *Land* elections were held in 1955. On April 24 the Lower Saxony election resulted in a coalition of the Christian Democratic, Free Democratic, German and Refugee parties coming into power with a narrow majority. On May 15 the Christian Democrats (C.D.U.) obtained 51 out of 100 seats in the parliament of Rhineland-Palatinate. On Oct. 9 the Social Democrats won the Bremen election by increasing their vote from 39% to 48% and taking 52 out of 100 seats. The general effect of these elections was to show that the C.D.U. vote had declined since the 1953 federal election but that this party was still the strongest in the Federal Republic. The C.D.U.'s position in the federal parliament was slightly weakened by the defection of the Refugee party from the coalition on July 23. The party went into opposition on Oct. 15.

Other political events included: the Yugoslav demand for 350,000,000 marks of reparations on July 27; the confiscation of German assets in Austria which provoked a German protest on May 16; the formation of a defense cabinet on Oct. 6; and the signing by Heuss of a volunteer law for the new armed forces on July 23.

The economic expansion of western Germany continued. Unemployment dropped to less than 500,000 in September, the number of employed people rose to nearly 18,000,000, the index of industrial production to 210 (1938=100). Coal and steel workers staged a protest strike in January and the first series of unofficial strikes took place in Hamburg and Kassel in August. The "Lufthansa" civil air lines began flights in Germany on April 1 and to European countries on May 15.

German Democratic Republic.—There were no sensational events in eastern Germany during 1955. This was because Soviet policy concentrated on the idea of "peaceful coexistence," based on the continuing partition of Germany and a slow, step-by-step progress towards reunification. The eastern German government, which in all important respects remained unchanged during 1955, collaborated fully with this policy. Thus on Feb. 20 the eastern German premier, Otto Grotewohl, appealed to Adenauer to join him in making an approach to the four great powers on the subject of reunification. Grotewohl asked for joint "all-German" consultations and a national referendum to be held on the subject of the Paris treaties. On March 25 Grotewohl again demanded the cancellation of these treaties and announced "measures to protect the German Democratic Republic." These included the closer scrutiny of people entering or leaving the country and the more thorough organization of the people's police into a paramilitary force. Grotewohl also pointed out that eastern Germany and the Soviet Union were no longer in a state of war since Jan. 25. During the year the state of war with Albania, Bulgaria, China, Czechoslovakia, Poland and Rumania was ended, and on July 6 a joint declaration was made with the Polish government which pronounced the Oder-Neisse line to be the "definite and irrevocable" eastern frontier of Germany.

On May 14 the Warsaw treaty was concluded between the Soviet Union and seven satellite states, including the German Democratic Republic. Grotewohl said that it was designed "to bar aggression in Europe," but eastern Germany was not a fully fledged member of the organization. Although a national army was proclaimed it was not integrated under the supreme

ommand created in Warsaw.

On July 24 eastern German-Soviet co-operation was again stressed by the visit of N. A. Bulganin and N. S. Khrushchev to eastern Berlin on their way back from the Geneva conference. There was complete agreement over the need to evolve a system of European security which could be joined by both German states and which would pave the way for German reunification. On Sept. 26 eastern German sovereignty was bolstered by the assumption, with Soviet permission, of control over frontiers and internal communications. This was regarded in some quarters as a threat to Berlin's communications with the west.

The internal history of the German Democratic Republic followed much the same pattern as in 1954. There were minor food shortages in the spring and autumn, after a bad potato and sugar beet harvest. The failures of the five-year development plan (1951-55) resulted in the intended increasing of the people's police from 110,000 to 135,000 men being temporarily abandoned. The announcement of April 3, that 18- to 22-year-olds could be conscripted for two years' service in that force, could not be implemented. Desertions from the people's police were frequent and the stream of refugees to the west continued. In 1955 those seeking refuge in western Berlin and the Federal Republic totalled about 150,000.

In January the sending of parcels to eastern Germany was restricted and closer control was exercised on traffic in and out of Berlin. Western Germans were not allowed to procure ration cards in eastern Germany, and were forced to pay in "westmarks" for purchases in eastern German shops and restaurants. Transfers from western to eastern German banks were fixed at parity, although one "westmark" was worth 4.80 ostmarks on the free exchanges. On Jan. 17 the government announced that all young people of the age of confirmation would take part in "youth initiation" ceremonies on April 1 and in preparatory classes for them. Only about 5% attended the ceremonies since the Christian churches threatened to withhold confirmation from the young, and the sacraments from parents. In October the bishop of Berlin, Otto Dibelius, once more drew attention to the deteriorating relations between church and state and warned against a much more resolute youth initiation campaign prepared for the winter of 1955-56.

Other events of interest included the agreement with the Soviet Union on Jan. 14 for the exchange of data on the peaceful uses of atomic energy; the return of the paintings of the winged museum in Dresden, including Raphael's "Sistine Madonna"; the formation of eastern German "Lufthansa" air lines on April 27; and the end of publication of the Soviet army German-language paper, the *Tägliche Rundschau*, on June 30. (See SO BERLIN; EASTERN EUROPEAN ECONOMIC PLANNING; GENEVA BIG FOUR CONFERENCES OF 1955; NORTH ATLANTIC TREATY ORGANIZATION; SAAR; UNION OF SOVIET SOCIALIST REPUBLICS.)

(T. P.)

Education.—*German Federal Republic.*—Schools (1954), excluding Hamburg and Bremen: primary 29,344, pupils 4,832,395, teachers 157,566; higher primary 759, pupils 309,512, teachers 12,785; secondary 573, pupils 774,317, teachers 41,152. Comprehensive (all-age) schools Bremen and Hamburg) 463, pupils 292,419, teachers 9,199. Vocational schools (Nov. 1953) 8,329, pupils 2,309,296, teachers 66,874. Teachers' training colleges (Nov. 1953) 81, students 11,837, teachers 1,693. Universities 17, students (1954) 81,949, professors, etc. (1953) 4,908. Other institutions of higher education 30, students (1954) 33,276, teachers (1953) 1,839. Music, art and physical training colleges (1954) 18, students 4,245.

German Democratic Republic.—Schools (1950): primary 10,900, pupils 2,440,000; secondary 560, pupils 233,000. Institutions of higher education (1955) 46, including 6 universities, students about 100,000.

Finance and Banking.—*German Federal Republic.*—Monetary unit: deutsche-mark, with an exchange rate of 4.20 DM. to the U.S. dollar. Budget (1954-55 closed account): revenue 27,962,000,000 DM., expenditure 28,189,000,000 DM.; (1955-56 estimate) balanced at 30,596,300,000 DM. Internal debt (March 1953) 9,293,000,000 DM.; external debt 1,551,000,000 DM. Currency circulation: (Dec. 1954) 12,780,000,000 DM.; (March 1955) 12,910,000,000 DM. Deposit money: (Dec. 1954) 13,630,000,000 DM.; (March 1955) 12,670,000,000 DM. Gold

and foreign exchange: (March 1955) U.S. \$2,762,000,000; (Dec. 1954) U.S. \$2,682,000,000.

German Democratic Republic.—Budget: (1952 est.) balanced at 31,695,000,000 deutschemark (ostmark); (1953 est.) balanced at 34,700,000,000 deutschemark (ost.). On Oct. 30, 1953, the deutschemark (ost.) was "revalued" at an exchange rate of deutschemark 1.00 = 1.80 roubles. Although officially pegged at 45 U.S. cents, its real purchasing value was only a fraction of that amount.

Foreign Trade.—*German Federal Republic.*—(1954) Imports 19,337,100,000 DM.; exports 22,035,200,000 DM. Main sources of imports: continental European Payments Union countries 43%; U.S. and Canada 14%; Latin America 12%; U.K. 4%; other sterling area 11%. Main destinations of exports: continental E.P.U. 57%; Latin America 10%; U.S. and Canada 6%; U.K. 4%; other sterling area 8%. Chief exports: motor vehicles 8.3%; electrical machinery 7.6%. Chief imports: raw cotton and cotton products 5.6%; wheat 5.4%.

German Democratic Republic.—Eastern German trade with 17 western European countries, excluding the German Federal Republic (1953): imports U.S. \$93,000,000; exports U.S. \$83,500,000. In 1953 the eastern German share in the total imports of eastern Europe from western Europe was 12%, while its part in the total exports of eastern Europe into western Europe amounted to 9%.

Transport and Communications.—*German Federal Republic.*—Railways (1954): 35,247 km.; passenger-km. (1953) 31,113,000,000; freight, ton-km. (1954) 52,055,000,000. Roads (Mar. 1954): classified 128,140 km., including 2,151 km. of *Autobahnen*; local (unclassified) approx. 120,000 km. Motor vehicles in use (Jan. 1955): cars 1,253,300; commercial vehicles 912,000. Shipping (July 1954): merchant vessels of 100 gross tons and over 1,798; total tonnage 2,227,195. Cargo in west German ports in external trade (metric tons, 1954): loaded 14,262,000; unloaded 26,771,000. Navigable inland waterways (1953): 4,259 km. Telephones (Mar. 1954): 3,255,971. Radio receivers (Jan. 1955): 12,284,434.

German Democratic Republic.—Railways (1951): 14,400 km. Roads (1950): 54,900 km. Telephones (1951): 332,200. Radio receiving sets (1952): 3,400,000.

Agriculture.—*German Federal Republic.*—Main crops (metric tons, 1954): wheat 2,892,000; rye 4,098,000; barley 1,920,000; oats 2,473,000; potatoes 26,769,000; beet sugar (raw) 1,295,000. Livestock (Sept. 1954): cattle 11,641,000; pigs 12,435,000; sheep 1,352,000; horses 1,271,000. Poultry (Dec. 1954): chickens 55,091,500; ducks 1,125,400; geese 2,201,500; turkeys 336,800. Production (metric tons, 1954): milk 17,054,000; butter 339,000; cheese 144,000; meat 1,730,400.

German Democratic Republic.—No reliable data published since 1950. Main crops (metric tons, 1950, except as indicated): wheat 815,000; rye 2,130,000; barley 515,000; oats 1,140,000; potatoes (1953) 12,618,000; sugar beets 5,400,000. Livestock (1953 est.): cattle 3,876,000; pigs 8,283,000; sheep 1,428,000; horses 750,000; chickens (1951) 18,786,000. Production (metric tons): butter (1949) 64,000; meat (1949) 419,000; sugar (1953) 750,000.

Industry.—*German Federal Republic.*—Index of employment (Sept. 1954; 1950 = 100): 127; unemployment 7.5%. Index of general industrial production (Feb. 1955; 1948 = 100): 297. Production (metric tons, 1954): coal 128,036,000; lignite 87,811,000; electricity 67,872,000 kw.hr.; manufactured gas 18,032,000 cu.m.; (metric tons) crude oil 2,669,000; iron ore (metal content 30%) 9,705,000; pig iron 12,582,000; crude steel 17,435,000; copper, primary (electrolytic) 164,800; lead (smelter) 110,200; zinc, primary 166,700; aluminum, primary 129,300; potash (K₂O content) 1,936,100; cement 16,269,000; (units) motor cars 518,190; commercial vehicles 162,140; (metric tons) cotton yarn 369,300; woven cotton fabrics 252,300; wool yarn 106,300; rayon filament yarn 59,800; rayon staple fibre 209,700; merchant vessels launched (1953) 818,221 tons; new dwelling units completed 508,497.

German Democratic Republic.—Production (metric tons, 1953 est.): coal 3,148,000; lignite 178,266,000; iron ore, 30% metal content 800,000; pig iron 765,000; steel 1,870,000; copper ore 1,230,000; potash salt, pure content 1,400,000; sulphuric acid 305,000; cement 2,560,000; synthetic petroleum (1952) 692,000; electricity 22,400,000,000 kw.hr.

G.I. Bill: see VETERANS ADMINISTRATION (U.S.).

Gibraltar. A British fortress colony, city and port, Gibraltar lies on a peninsula from the southwest coast of Spain at the western entrance to the Mediterranean. Area: 2½ sq.mi. (including reclamation). Pop., excluding armed forces (1951 census): 21,314; (1954 est.) 25,000. Language: Spanish (50% also speak English). Religion: mainly Roman Catholic. Governors in 1955: Lieut.-Gen. Sir Gordon MacMillan and (from May 22) Lieut.-Gen. Sir Harold Redman.

History.—In Jan. 1955 a delegation from the Commonwealth Parliamentary association visited Gibraltar under the leadership of Lord Balfour of Inchyre. Restrictions by Spain on its frontier with Gibraltar had some effect on trade and revenue, and it was estimated at midyear that there would be a deficit of £60,000 instead of a surplus of £32,000 in the budget. Consequently a bill was introduced to impose a 10% ad valorem duty on certain imports. Its defeat in the legislative council by six votes to four on July 27 led the governor to use his reserve powers to secure its passage, and five elected members of the council re-

signed in protest.

Half a million pounds was granted from colonial development and welfare funds for the period 1955-60. (J. J. Ty.)

Education.—Schools (1954): primary 18, pupils 2,949; secondary (including technical) 6, pupils 1,188.

Finance and Trade.—Currency: sterling, with local notes. Budget (1953-54 actual): revenue £1,058,216; expenditure £1,046,709. Foreign trade (excluding bunkers, 1954): imports £4,940,000; exports £936,000.

Gilbert and Ellice Islands Colony: see PACIFIC ISLANDS, BRITISH.

Girl Scouts: see SOCIETIES AND ASSOCIATIONS, U.S.

Glands: see ENDOCRINOLOGY.

Glass. In 1955 the glass industry continued the prosperous growth of recent years. In the United States several companies reported the highest sales in their histories during the first part of the year. Growth was particularly evident in the fibre-glass industry. Statistics for the German glass industry showed a business of 85,000,000 DM. per month for the first five months of 1955, an increase of 12,000,000 DM. over the corresponding months of 1954. Much of this resulted from increased foreign business. In the United States glass-container production was 76,000,000 gross for the first seven months of 1955 or 7.1% more than during the same period in 1954.

Several new glass products were introduced for the building industry. Spandrelite, ceramic colour fused to a plate-glass base, was brought out by the Pittsburgh Plate Glass company. Foam silica and Duraface Foamglas with a dense white surface were introduced by the Pittsburgh Corning corporation. A new method of assembling stained glass windows with strips of polyvinyl chloride plastic instead of lead was introduced by J. Vaessen in the Netherlands, while a new type of stained glass consisting of thick fragments with chipped jewellike surfaces set in cement was developed by P. Fourmaintraux-Winslow of Metz-Sablon, Moselle, Fr.

Construction of a modern plant with a capacity of 6,000 tons of window glass per year was begun at Inchon, Korea. The Ford Motor company started to build a new flat glass plant at Nashville, Tenn., with an area of 1,000,000 sq.ft. Vidno Plano S. A. of Monterrey, Mexico, installed a sheet-glass reannealing lehr to increase production. The Pittsburgh Plate Glass company constructed a \$34,000,000 plant in Cumberland, Md., and planned a new window-glass factory at Decatur, Ill.

The production of television tubes continued to expand, particularly in Europe. The development of colour television equipment was very active in the United States, with mass production just around the corner.

The Corning Glass works, with seven other companies, announced plans to build the first nuclear research reactor in the world to be owned and operated by private industry. Besides helping in the search for new and beneficial applications of glass, it was believed that research might throw more light on the fundamental structure of glass.

The Otto Schott Commemoration medal of the Deutsche Glastechnische Gesellschaft was presented to W. E. S. Turner, honorary president of the International Commission on Glass. This rare distinction, which had been awarded only three times previously, had never been given to a non-German before.

(C. H. G.)

Gliding. The Soaring Society of America held its 22nd national soaring contest at Elmira, N.Y., July 2-14, 1955. Twenty-seven pilots flew a total of 15,468 mi.; 59 flights ranged from 100 to 208 mi. K. Trager, flying a sailplane of his own design, earned the title of national soaring champion.

Again the Australian national soaring championships were held on a state basis in which each State Gliding association ran its own contest from Dec. 28, 1954, to Jan. 8, 1955. The final

score for a pilot was the sum of his two best flights. M. W. horn of New South Wales emerged as the champion. Three Australian records were set: a distance flight on Jan. 2 of 303 mi. M. Waghorn, flying an Olympia; on Jan. 5, S. Owen established a goal and return flight of 207 mi. in an Olympia sailplane; Goodhart flew around the 100 km. triangular course at 3 m.p.h. to set a speed record.

Four British records were established away from Great Britain. P. A. Wills set two records with one flight on Dec. 29, 1954, one for absolute altitude of 30,400 ft. and the other an altitude gain record of 28,200 ft., in the standing atmospheric wave record. New Zealand. A. Goodhart flew a goal and return distance record of 187 mi. on Jan. 8 in Australia, and L. Welch and F. Irving flew a Slingsby T-42 sailplane across the English channel and set a multiplace record of 250 mi.

In Canada F. Brame flew a Schweizer 1-23 for a goal and return record of 120 mi. on July 24.

In France a feminine world two-place goal record of 233 mi. was established on April 16 by F. Abadie and J. Trubert who flew a C25-S sailplane. On April 17 a two-place feminine distance record of 273.4 mi. was set by M. Choynet and A. Abelande.

In the United States B. Woodward reached two feminine world records on April 14 in a Pratt-Read sailplane: an absolute altitude of 39,994.1 ft. and an altitude gain of 27,994.5 ft.

The Federation Aeronautique Internationale announced the international records set in Poland: a feminine goal and return record of 203.92 mi. on June 18 by Maksymiliana Czielowna in the single-place Jaskolka sailplane; a goal and return record of 203.44 mi. on June 18 in the Jaskolka 2 sailplane.

Several new gliders were designed and built during the year. In Argentina a tailless glider by Horten, the Horten-X, an unusually light sailplane with the pilot in a prone position; in Germany the Greif 1, a single-place trainer turned out by Gr. Flugzeugbau; in Switzerland the Elfe III, a high performance single-place sailplane by Pfenninger; in the United States a tailless glider by A. A. Backstrom, the EPB-1, nicknamed the "Flying Plank," and the "Nucleon" single-place by A. B. Schuchman.

(B. Sk.)

Gold. World monetary gold reserves (excluding those of the U.S.S.R.) in Sept. 1955 stood at about \$37,900,000,000 (preliminary), as against \$37,210,000,000 a year earlier. Of the 1955 total, the United States held \$21,745,000,000 (\$118,000,000 below Sept. 1954); other countries, together with the Bank for International Settlements and the European Payments union, about \$14,400,000,000 (\$800,000,000 above Sept. 1954) and the International Monetary fund \$1,750,001,000 (preliminary). In Sept. 1955, the United States thus held 57% of the world monetary gold stock, as against 70% in Sept. 1949 and about 60% in 1945.

Of the rise in monetary gold holdings of countries other than the United States during the year ended Sept. 1955, about \$500,000,000 to \$600,000,000 accrued from new production outside the United States and the U.S.S.R.—worth about \$900,000,000—and about \$142,000,000 was purchased from the United States.

World Production of Gold (Refinery Production)

	(In thousands of fine ounces)					
	1948	1949	1950	1951	1952	1953
United States . . .	2,025	1,922	2,289	1,895	1,927	1,970
Canada	3,530	4,124	4,441	4,393	4,472	4,056
Mexico	368	406	408	394	459	483
Central America . .	255	289	304	314	316	334
South America . . .	946	1,075	1,071	1,009	995	1,004
India	180	164	197	226	253	223
Belgian Congo . . .	300	334	339	352	369	371
Gold Coast	672	677	689	699	691	731
Southern Rhodesia .	514	528	511	487	497	501
South Africa	11,584	11,705	11,664	11,516	11,819	11,941
Australia	886	890	868	896	980	1,075
Total (est.)	30,000	31,000	32,700	33,500	34,300	33,700

considerable amounts of dishoarded gold reportedly found their way into official reserves of certain countries, particularly France; and some Russian gold was sold on certain markets in western Europe. Such newly mined gold as cannot be accounted for by accretions to official reserves was used largely in the arts and industry. Hoarding demand for gold seemed the smallest in many years.

Besides gold, countries other than the United States in Sept. 1955 held about \$11,900,000,000 in the form of dollars, on both official and private account (including primarily deposits in United States banks and short-term and certain longer-term United States government securities), or about \$1,000,000,000 more than a year previous. Total gold and dollar holdings of these countries in Sept. 1955 amounted to \$26,300,000,000 or \$1,800,000,000 above Sept. 1954, and \$5,550,000,000 higher than in Dec. 1945 before the serious depletion of the earlier post-World War II years. They were also \$11,550,000,000 or nearly 80% higher than in Sept. 1949, the date of the general currency devaluations, and \$7,350,000,000 or about 40% higher than in March 1952, the low reached after the war in Korea.

These aggregates, however, conceal important changes in gold and dollar holdings of particular countries and areas. The holdings of continental western Europe increased by \$1,760,000,000 during the 12 months ended Sept. 1955, more than one half of the increment accruing to France and western Germany. The aggregate holdings of Latin-American countries rose by \$90,000,000 and those of Canada by \$80,000,000; the holdings of sterling Asian countries increased \$355,000,000. The aggregate gold and official and private dollar holdings of sterling area countries declined by \$500,000,000; central gold and official dollar holdings held by the United Kingdom as the area's banker fell by \$556,000,000. The distribution of reserves outside the United States was considerably influenced by transfers of gold and dollars among various countries.

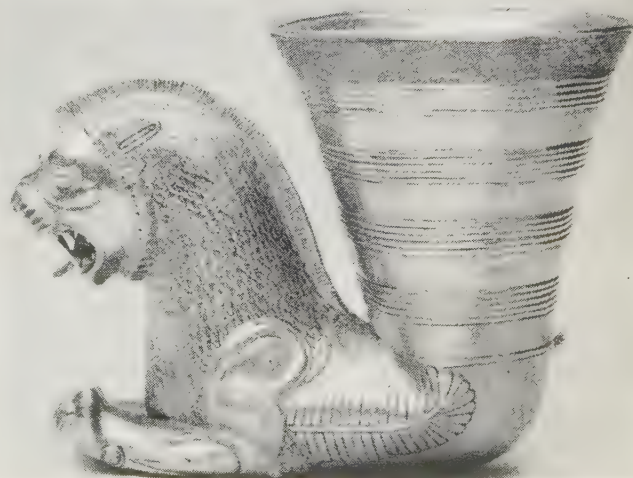
The growth of gold and dollar reserves by countries other than the United States thus continued in 1955, but on a somewhat more limited scale than in 1954. This reduced rate was primarily the outcome of transactions of other countries with the United States. Payments made by the United States for imported goods and services, and as a result of government grants, military expenditures and government and private capital outflows, exceeded current and capital payments made by foreign countries to the United States, as in 1954, but the difference was smaller; this was primarily because of a much larger increase in United States merchandise exports than imports. The rise in United States exports reflected primarily the growing demand for United States goods in much of the world because of rapidly growing investment and consumption; the reduction of discriminatory restrictions against dollar imports, especially by Europe and European currency areas, also tended to expand exports from the United States.

In countries where renewed inflationary strains reappeared in 1955, the ensuing balance-of-payments difficulties brought about sizable gold and dollar losses; most of this deterioration was, however, accounted for by developments in certain sterling area countries and in a few of the larger countries of Latin America. Despite these difficulties, the pattern of international trade remained freer and more nearly sustainable than in earlier years.

(M. A. K.)

World Production.—The gold output of the world by the principal countries contributing to it are shown in the table, as

GOLDSMITHS' WORK FROM ANCIENT IRAN, three objects from an exhibition of Assyrian and Persian art which opened at the Metropolitan Museum of Art, New York city, in March 1955. *Top*: 8th century B.C. plaque decorated with lions and the tree of life; *centre*: fluted bowl, 522-404 B.C.; *bottom*: rhyton, or drinking vessel, 6th-5th century, B.C.



reported by the U.S. bureau of mines. Because estimates only are available for the U.S.S.R., the grand totals are provisional.

United States.—Gold production by 10 states and Alaska declined 6% in 1954 compared with 1953. South Dakota, Utah, Alaska and California produced 78% of the domestic output of gold in 1954. The larger part of production in the U.S. is from straight gold mining—both lode and placer—the remainder being recovered as a by-product of base metal ores, chiefly copper.

Canada.—Output of gold rose to 2,599,719 oz. (329,311 oz. from base metals; 2,270,408 oz. from auriferous quartz and placers) in the first seven months of 1955 from 2,473,049 oz. in the same period of 1954.

Union of South Africa.—Output in the first half of 1955 totalled 7,119,022 oz. against 6,322,002 oz. in the first half of 1954. (See also EXCHANGE CONTROL AND EXCHANGE RATES; MINERAL AND METAL PRODUCTION AND PRICES.

(F. E. H.; B. B. M.)

Gold Coast: see BRITISH WEST AFRICA.

Golf. In the 1955 United States open golf championship, a play-off for the title developed between unheralded Jack Fleck, 32-year-old Davenport, Ia., professional and Ben Hogan, the Fort Worth Texan, who had won the championship on four previous occasions. Another triumph would have placed Hogan on a higher rung in the sport than any other golfer had attained.

To the surprise of those gathered at the Olympic Country club course, outside San Francisco, Calif., Fleck defeated Hogan after a thrilling 18 hole play-off. This was necessitated when they both finished the regulation 72 holes with identical scores of 287. In the extra session, Fleck beat Hogan, 69 to 72. After the tournament, Hogan, 42 years old, announced he was "through with competition."

While the big golf plum went to Fleck, the Professional Golfers association championship, in which Fleck also played, went to Doug Ford, registering from Kiamasha Lake, N.Y. Competing in the tournament for the first time, Ford defeated Cary Middlecoff of Memphis, Tenn., 4 and 3 in the scheduled 36-hole final at the Meadow Brook Country club, Detroit, Mich.

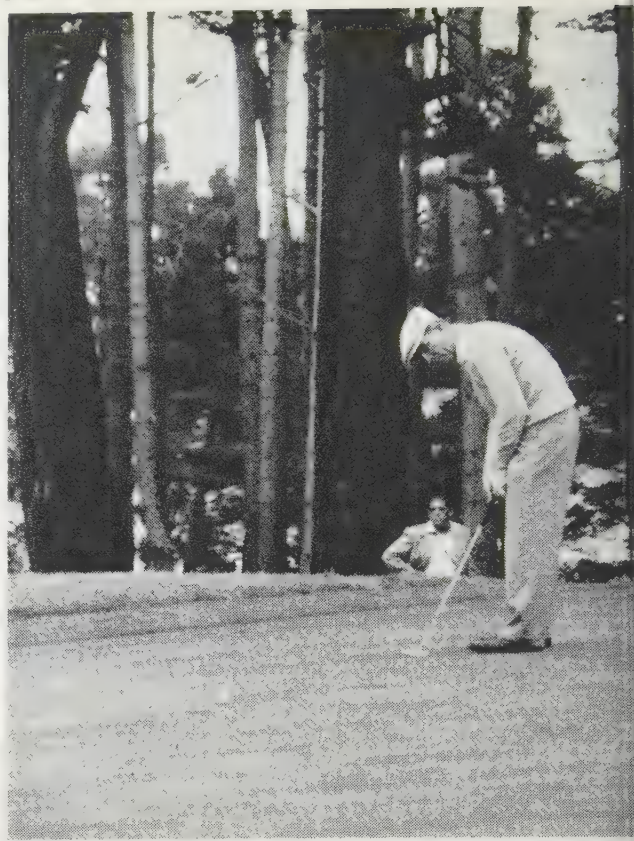
The top money winner among the professionals, however, was Julius Boros of Southern Pines, N.C., who collected more than \$61,000 in winnings for the playing year. The largest part of this total came from a triumph in the George S. May sponsored "world's championship" in Chicago, where Boros captured a \$50,000 first-place prize.

Middlecoff won the Western open in addition to the Masters tournament that is played annually at Augusta, Ga.

The British open crown was retained by Peter Thomson, 25-year-old Melbourne, Austr., representative. At St. Andrews, Scot., Thomson clinched the famed cup with an aggregate of 281 that was two below the score of second-place John Fallon of England. Lieut. Joe Conrad, U.S. air force, however, captured the British amateur championship, defeating Alan Slater of England, his final opponent at St. Anne's, Eng., by 3 and 2. Conrad was also low amateur scorer in the British open as well as a member of the U.S. Walker cup team. The team triumphed easily at St. Andrews by 10-2, after making a 4-0 sweep in the foursomes, which comprised the opening day's program.

The Canada cup matches, sponsored by John Jay Hopkins, president of the International Golf association, were held in Washington, D.C. The United States pair of Chick Harbert and Ed Furgol won with a team score of 560, while the Australians were second. Furgol won the individual title after a play-off with Flory Van Donck of Belgium and Peter Thomson of Australia.

The United States amateur championship was staged at the Country Club of Virginia, in Richmond. Harvie Ward, 29-year-



JACK FLECK sinking a putt on the sixth hole of the last round of the open golf championship at San Francisco, Calif., in June 1955. Fleck beat Ben Hogan over the regulation distance, then beat the four-time champion in a match play-off.

old San Francisco automobile salesman who was born in Waco, N.C., carried off this honour, defeating William Hynd of Philadelphia, Pa., in the 36-hole final by a decisive 9 and 6 margin. Ward previously had been a Canadian and international amateur champion and a 1955 Walker cup team member.

Arnold Palmer, the 1954 amateur winner, scored successfully during his first year as a pro by winning the Canadian open at Toronto with a score of 265.

In women's golf, Pat Lesser, a 22-year-old Seattle, Wash., college student, became the U.S. women's amateur champion. Miss Lesser succeeded the California girl, Barbara Romack, who lost in the second round of the 1955 tourney at the Myers Park Country club, Charlotte, N.C. Miss Lesser won the western amateur title prior to her national victory. In the final of the latter, she turned back an Indianapolis schoolteacher, Jane Ferguson, 7 and 6.

The U.S. women's open championship was won by Betty Crocker of Montevideo, Urug., over a windy Wichita, Kan., course, with a 72-hole score of 299. Mary Lena Faulk and Louise Suggs were tied for second at 303 in this \$7,500 consolation.

Beverly Hanson of Indio, Calif., won the ladies' Professional Golfers association title at Fort Wayne, Ind., beating Louise Suggs, 4 and 3, in the final.

The British Ryder cup team of professionals made a 600 mi. trip to oppose the United States group at Palm Springs, Calif., in the biennial series staged in November. The United States retained the trophy by 8 to 4, after gaining a 3-1 margin in the foursomes at the Thunderbird Country club. Chick Harbert was the U.S. captain.

Although 20-year-old Don Bisplinghoff of Orlando, Fla., reached the final of the men's amateur at Chantilly, Fr., he lost to Henri de Lamaze, French star, 5 and 4.

The United States Golf association sponsored a senior r

championship for the first time. This was won by J. Wood Platt Philadelphia and Bethlehem, Pa. The women's senior championship was won by Mrs. Harrison Flippin of Ardmore, Pa.

(L. A. Wn.)

Government Departments and Bureaus, U. S.

The principal departments and bureaus of the U.S. government, and their chief executive officers as of Oct. 1, 1955, were:

Department or bureau	Name	Post
Department of state	*Dulles, John Foster Hoover, Herbert, Jr.	Secretary Undersec'y.
U.S. mission to the UN	*Lodge, Henry Cabot, Jr.	U.S. Representative
International Cooperation administration	Hollister, John B.	Director ¹
Department of the treasury	*Humphrey, George M. Rose, H. Chapman	Secretary Undersec'y.
Office of the comptroller of the currency	Gidney, Ray M.	Comptroller
Office of the treasurer of the U.S.	Priest, Ivy Baker	Treasurer
Bureau of customs	Kelly, Ralph	Commissioner
Internal revenue service	Andrews, T. Coleman	Commissioner
Bureau of narcotics	Anslinger, Harry J.	Commissioner
Bureau of the mint	Brett, William H.	Director
U.S. savings bonds division	Shreve, Earl O.	Natl. Director
U.S. coast guard	Richmond, Alfred C., Vice-Adm.	Commandant Chief
U.S. secret service	Baughman, U. E.	Chief
Department of defense	*Wilson, Charles E.	Secretary
Joint chiefs of staff	*Radford, Arthur W., Adm. Taylor, Maxwell D., Gen. Burke, Arleigh A., Adm. *Twining, Nathan F., Gen. Shepherd, Lemuel C., Jr., Gen. ²	Chairman Chairman Undersec'y. Chief
Armed Forces Policy council	*Wilson, Charles E.	Chairman
Department of the army	*Brucker, Wilber M. Finucane, Charles C.	Secretary Undersec'y.
Chief of staff	*Taylor, Maxwell D., Gen.	Chief
Women's army corps	Galloway, Irene O., Col.	Director
Department of the navy	*Thomas, Charles S. Gates, Thomas S., Jr.	Secretary Undersec'y.
Chief of naval operations	*Burke, Arleigh A., Adm.	Chief
Asst. chief for women, bureau of naval personnel	Wilde, Louise Kathleen, Capt.	Ass't. Chief for Women
U.S. marine corps	Shepherd, L. C., Jr., Gen.	Commandant
Women marines	Hamblet, Julia E., Col.	Director
Department of the air force	*Quarles, Donald A. Douglas, James H.	Secretary Undersec'y.
Chief of staff	*Twining, Nathan F., Gen.	Chief
Women in the air force	Gray, Phyllis D. S., Col.	Director
Department of justice	*Brownell, Herbert, Jr. Rogers, William P.	Att'y. Gen. Deputy Att'y. Gen.
Deputy attorney general	Hoover, J. Edgar	Director
Federal Bureau of Investigation	Bennett, James V.	Director
Bureau of prisons	Swing, Joseph M.	Commissioner
Immigration and naturalization service	*Summerfield, Arthur E.	Postmaster Gen.
Post office department	*McKay, Douglas Woosley, Edward	Secretary Director
Department of the interior	Emmons, Glenn L.	Commissioner
Bureau of land management	Wrather, William E.	Director
Bureau of Indian affairs	Farley, John L.	Director
Geological survey	Dexheimer, Wilbur A.	Commissioner
Fish and wildlife service	Wirth, Conrad L.	Director
Bureau of reclamation	Forbes, John J.	Director
National park service	Lausi, Anthony T.	Director
Bureau of mines	Mittendorf, C. O.	Administrator
Office of territories	Pearl, William A.	Administrator
Defense Minerals Exploration administration	Wright, Douglas G.	Administrator
Donnellville Power administration	Leavy, Charles W.	Administrator
Southwestern Power administration	Benson, Ezra Taft Peterson, Ervin L.	Secretary Ass't. Secretary
Southwestern Power administration	Ritchie, Fred G.	Acting Administrator
Department of agriculture	Shaw, B. T.	Administrator
Federal-State relations	McArdle, Richard E.	Chief
Agricultural conservation pro- gram service	Williams, Donald A.	Administrator
*Agricultural Research service	Knapp, Joseph G.	Administrator
Forest service	Ferguson, Clarence M.	Administrator
*Soil conservation service	McConnell, James A.	Ass't. Secretary
Farmer co-operative service	Morse, True D.	President
Federal extension service	Hughes, Earl M.	Administrator
Agricultural Stabilization	Laidlaw, Charles S.	Manager
Commodity Credit corporation	Scott, K. L.	Director
Commodity Stabilization service	McLeish, Robert B.	Administrator
Federal Crop Insurance corpo- ration	Nelsen, Ancher Butz, Earl L.	Administrator Bus't. Secretary
Agricultural Credit services	Wells, O. V.	Administrator
*Farmers Home administration	Kauffman, Rodger R.	Administrator
*Rural Electrification administra- tion	Garnett, Gwynn	Administrator
Marketing and Foreign Agriculture Agricultural Marketing service	*Weeks, Sinclair Williams, Walter Rothschild, Louis S.	Secretary Undersec'y. Undersec'y.
Commodity Exchange authority	(transportation)	
Foreign agricultural service	Teetor, Lohair	Ass't. Sec'y. (domestic affairs)
Department of commerce	McClelland, Harold C.	Ass't. Sec'y. (international affairs)
	Moore, George T.	Ass't. Sec'y. (administration)

Department or bureau	Name	Post
*Bureau of the census	Burgess, Robert W.	Director
*National bureau of standards	Astin, A. V.	Director
*Coast and geodetic survey	Karo, H. Arnold, Rear Adm.	Director
*Civil Aeronautics administration	Lee, F. B.	Administrator
*Patent office	Watson, Robert C.	Commissioner
Weather bureau	Reichelderfer, Francis W.	Chief
Bureau of public roads	Curtiss, C. D.	Commissioner
Maritime administration	Morse, Clarence G.	Administrator
Business and Defense Services administration	Honeywell, Charles F.	Administrator
Department of labour	*Mitchell, James P. Larson, Arthur Clague, Ewan	Secretary Undersec'y. Commissioner
Bureau of labour statistics	Patterson, William F.	Director
Bureau of apprenticeship	Leopold, Alice K.	Director
Women's bureau	Gurske, Paul E.	Director
Bureau of labour standards		
Wage and hour and public contracts divisions	Brown, Newell	Administrator
Bureau of employment security	Goodwin, Robert C.	Director
Bureau of employees' compensation	McCauley, William	Director
Department of health, education and welfare	*Folsom, Marion B. Hunt, Harold C.	Secretary Undersec'y.
*Public health service	Scheele, Leonard A.	Surgeon Gen.
Office of education	Brownell, Samuel M.	Commissioner
*Social Security administration	Schottland, Charles I.	Commissioner
*Food and Drug administration	Larrick, George P.	Commissioner
Office of vocational rehabilitation	Switzer, Mary E.	Director
Independent offices and establishments		
*Atomic Energy commission	Strauss, Lewis L.	Chairman
Civil Aeronautics board	Rizley, Ross	Chairman
*District of Columbia	Spencer, Samuel	President of the Board
*Export-Import Bank of Washington	Waugh, Samuel C.	President
*Farm Credit administration	Robert B. Tootell	Governor
*Federal Civil Defense administration	Peterson, Val	Administrator
*Federal Communications commission	McConaughy, George C.	Chairman
*Federal Deposit Insurance corporation	Cook, H. Earl	Chairman
Federal Home Loan Bank board	McAllister, Walter W.	Chairman
Federal Mediation and Conciliation service	Finnegan, Joseph F.	Director
*Federal Power commission	Kuykendall, Jerome K.	Chairman
*Federal reserve system, board of governors of the	Martin, William McC., Jr.	Chairman
*Federal Trade commission	Gwynne, John W.	Chairman
Foreign Claims Settlement Com- mission of the United States	Gilliland, Whitney	Chairman
General accounting office	Campbell, Joseph	Comptroller Gen.
General Services administration	Mansure, Edmund F.	Administrator
Public buildings service	Strobel, Peter A.	Commissioner
National archives and records service	Grover, Wayne C.	Archivist of the U.S.
Federal supply service	Mack, Clifton E.	Commissioner
Emergency procurement service	Walsh, A. J.	Commissioner
Transportation and public utilities service	Hyde, Herbert	Commissioner
Government printing office	Blattenberger, Raymond	Public Printer
Housing and Home Finance agency	Cole, Albert M.	Administrator
Federal National Mortgage association	Baughman, J. Stanley	President
Federal Housing administration	Mason, Norman P.	Commissioner
Public Housing administration	Slusser, Charles E.	Commissioner
Community facilities administration	Hazeltine, John C.	Commissioner
Urban Renewal administration	Folfin, James W.	Commissioner
Indian claims commission	Witt, Edgar E.	Chief Commissioner
*Interstate Commerce commission	Cross, Hugh W.	Chairman
Library of Congress	Mumford, L. Quincy	Librarian
National Advisory Committee for Aeronautics	Hunsaker, Jerome C.	Chairman
National capital planning commission	Bartholomew, Harland Rodgers, Philip R.	Chairman Acting Chairman
*National Labor Relations board	O'Neill, Francis A., Jr.	Chairman
National Mediation board	Waterman, Alan T.	Director
*National Science foundation	Kelly, Raymond J.	Chairman
Railroad Retirement board	Armstrong, J. Sinclair	Chairman
*Securities and Exchange commission	Hershey, Lewis B., Maj. Gen.	Director
*Selective Service system	Barnes, Wendell B.	Administrator
Small Business administration	Carmichael, Leonard	Secretary
*Smithsonian institution	Murdock, J. Edgar	Chief Judge
Tax court of the United States	Vogel, Herbert D.	Chairman
*Tennessee Valley authority	Young, Philip	Chairman
*U.S. civil service commission	Streibert, Theodore C.	Director
U.S. Information agency	Brossard, Edgar B.	Chairman
U.S. tariff commission	Higley, Harvey V.	Administrator of Veterans
*Veterans administration		
Executive office of the president		
Bureau of the budget	Hughes, Rowland R.	Director
Council of economic advisers	Burns, Arthur F.	Chairman
National Security council	Lay, James S., Jr.	Executive Sec'y.
Central intelligence agency	Dulles, Allen W.	Director
Operations Coordinating board	Staats, Elmer B.	Executive Officer
Office of Defense Mobilization	Fleming, Arthur S.	Director
Quasi-official agencies		
*American National Red Cross	Harriman, E. Roland	Chairman
*National Academy of Sciences — National Research council	Bronk, Detlev W.	President
*See separate article.		
*See Societies and Associations, U.S.		
¹ The former Foreign Operations administration was abolished and its functions transferred to the departments of state and defense as of July 1, 1955; the new ICA was created within the department of state as a semi-autonomous organization to carry out the functions transferred to that department.		
² Sits as co-equal when marine corps matters are being considered.		

Graham, William Franklin ("Billy") (1918-), Southern Baptist evangelist, born Nov. 7, was reared on a farm near Charlotte, N.C. A graduate of Wheaton college (Ill.), he came into the limelight in 1949 following a campaign in Los Angeles, Calif., where his converts made headlines. Since then his city-wide campaigns have attracted multitudes and elicited world-wide publicity.

On March 21, 1955, he conducted the all-Scotland crusade at Kelvin hall, Glasgow (seating 15,000), for six weeks with 23,000 recorded "decisions for Christ." The aggregate attendance, excluding that at relay centres, was a little less than 1,000,000. The closing rally at Hampden park on April 30 drew 100,000. The unusual feature of this crusade was the relayed services conducted throughout Great Britain (in churches, theatres, concert halls and hospitals), linked by post-office land-lines and closed circuit television channels. It was estimated that Billy Graham preached each night to 1,000,000 persons, or more people than any other evangelist had ever reached. On May 14 he returned to Wembley stadium (seating 84,000) for an eight-day Greater London crusade, and was greeted with a more enthusiastic reception than the preceding one, held in 1954. Climaxing this campaign, Queen Elizabeth invited him to preach to the royal family in the private chapel at the royal lodge near Windsor castle. Following these crusades he toured the continent, and held rallies in Paris, Zürich, Frankfurt, Nuremberg, Dortmund, Rotterdam, Oslo, Göteborg, and Geneva (where a great prayer for peace was offered before 40,000 persons during the meeting of the Big Four in July). The tour attracted 500,000 people. On July 22 he addressed the Baptist World congress in London, where 7,612 official delegates met from 60 countries.

During the year he received an invitation to visit the U.S.S.R., and was also invited to visit Cambridge and Oxford, for a one-week campaign at each university. (Hl. T.)

Grain: see BARLEY; CORN; OATS; RICE; RYE; WHEAT.

Grange, National: see SOCIETIES AND ASSOCIATIONS, U.S.

Grapefruit: see FRUIT.

Grapes: see FRUIT.

Graphic Arts: see PRINTING.

Great Britain & Northern Ireland,

United Kingdom of. The United Kingdom in north-western Europe comprises the main island of Great Britain (kingdom of England, principality of Wales and kingdom of Scotland) and the six northeastern counties of Ireland, together with many small islands off the coast. It is a constitutional monarchy, with a sovereign and a parliament of two houses: the house of lords, which on Sept. 15, 1955, consisted of 4 peers of the blood royal, 824 hereditary peers, 26 spiritual peers, 16 Scottish representative peers, a number of Irish representative peers and 8 life peers; and the house of commons, 630 members (including the speaker) elected by universal suffrage. Table I shows areas and populations of the component parts and home dependencies of the United Kingdom. Language: English is almost universally spoken, but in Wales, according to the 1931 census, 3% of the population spoke Welsh only and 31% spoke both languages; in Scotland, (1951 census) 2,652 spoke Gaelic only and 91,630 spoke both languages; in the Isle of Man 528 spoke English and Manx. Queen: Elizabeth II (q.v.). Prime ministers in 1955: Sir Winston Churchill (q.v.) and (from April 6) Sir Anthony Eden (q.v.).

The following were members of the cabinet of Great Britain on Dec. 31, 1955:

Post	Name
Prime minister and first lord of the treasury . . .	Sir Anthony Eden
Lord president of the council . . .	Marquess of Salisbury
Chancellor of the exchequer . . .	Harold Macmillan
Secretary of state for foreign affairs . . .	Selwyn Lloyd
Lord chancellor . . .	Viscount Kilmauir
Chancellor of the duchy of Lancaster . . .	Lord Selkirk
Lord privy seal and leader of the house of commons . . .	Richard Austen Butler
Secretary of state for the home department and minister for Welsh affairs . . .	Gwilym Lloyd-George
Secretary of state for Scotland . . .	James Gray Stuart
Secretary of state for commonwealth relations . . .	Earl of Home
Secretary of state for the colonies . . .	A. T. Lennox-Boyd
Minister of labour and national service . . .	Iain Macleod
Minister of defense . . .	Sir Walter Turner Mond
Minister of housing and local government . . .	Duncan Sandys
President of the board of trade . . .	Peter Thorneycroft
Minister of agriculture, fisheries and food . . .	D. Heathcoat-Amory
Minister of education . . .	Sir David Eccles
Minister of works . . .	Patrick Buchan-Hepburn

History.—In June 1955 Queen Elizabeth II and the duke of Edinburgh paid a state visit to Norway; and in October welcomed the president of Portugal and his wife to London. Princess Margaret spent a month in the West Indies in February-March.

Later in the year, as her 25th birthday approached, there was much speculation in newspapers abroad about the possibility of a marriage between Princess Margaret and Group Captain Peter Townsend, a former equerry to King George VI. British press took up the subject widely in October when group captain left the Brussels embassy, where he was then air attaché, for a month's leave in England, and visited Clarence House, the princess' London home.

On Oct. 31 the princess announced that she would not marry Group Captain Townsend, and that "mindful of the Church's teaching that Christian marriage is indissoluble" and of her duty to the Commonwealth, she had resolved to put these considerations before any others.

The general election took place on May 26, preceded on April 5 by the resignation from the office of prime minister of Winston Churchill. Sir Anthony Eden formed his government and ten days later announced an appeal to the country. In September 1955, Sir Anthony Eden was elected to the post of



SIR ANTHONY EDEN campaigning in the rain at the village of Wycombe, Eng., during the general elections of 1955. Eden and his associates were returned to office by a large majority

of its acute internal differences, the Labour party went to the polls protesting confidence and maintaining that even a minor "swing" of the electorate in its favour would give it a majority, and that such a swing was all but inevitable. Although every constituency in the United Kingdom was contested—for the first time since 1832—the Labour party and its associates polled 1,500,000 fewer votes than in 1951. The Conservative poll also fell, but by less than 500,000 votes, so that they increased their share of the total vote from 48% in 1951 to 49.6% and gained 23 seats.

The Labour percentage was 46.4, and the new house of commons was composed of 345 Conservatives and associates (as compared with 319 at the dissolution); 277 Labour members (293); 6 Liberals (6); 2 Sinn Feiners (—).

The Conservative strength was later raised to 347 (including the speaker of the house of commons) because the Sinn Fein candidates, who were elected for two nationalist constituencies in Northern Ireland, were held to be disqualified on the grounds that they were serving a term of imprisonment (they were captured after an Irish Republican army raid on a military barrack); and their Unionist opponents were declared elected. A feature of the general election was the elimination of all independent candidates. (See POLITICAL PARTIES, BRITISH.)

After the election the Conservative party settled down under Sir Anthony Eden, disturbed only by back-bench dissatisfaction with the rate of government expenditure, which was marked by some coolness toward the supplementary budget. Signs of eco-



LADY AND SIR WINSTON CHURCHILL greeting Queen Elizabeth at No. 10 Downing St. as she arrived for a small dinner party given the night before the former prime minister announced his retirement in April 1955. Churchill is attired in the uniform of Knight of the Garter

Table I.—The United Kingdom

Division	Area (sq. mi.)	Population (1951 census)	(1953 est.)
England	50,871	41,584,328	44,090,000
Wales	7,474	2,173,560	5,117,600
Scotland	29,795	5,096,415	106,000
Isle of Man*	221	55,213†	56,000
Channel Islands*	75	102,776	106,000
Great Britain	88,436	49,012,292	49,369,600
Northern Ireland	5,459	1,370,921	1,384,000
United Kingdom	93,895	50,383,213	50,753,600

*Not part of legislative territory of U.K., but included in it for census purposes.

†Preliminary.

Table II.—Principal Cities of the United Kingdom

(With population over 200,000)

	1951 census	1953 est.		1951 census	1953 est.
London (greater), Eng.	8,346,137*	8,334,000	Nottingham, Eng. . .	306,055	311,500
London (county and city), Eng. . .	3,347,982	3,343,000	Hull (Kingston-upon- Hull), Eng.	299,105	299,400
Birmingham, Eng. .	1,112,685	1,118,500	Bradford, Eng. . . .	292,403	286,600
Glasgow, Scot. . . .	1,089,767	1,085,000	Newcastle-upon- Tyne, Eng.	291,724	289,700
Liverpool, Eng. . . .	788,659	789,700	Leicester, Eng. . . .	285,181	286,500
Manchester, Eng. . .	703,082	701,800	Stoke-On-Trent, Eng.	275,115	273,700
Sheffield, Eng. . . .	512,850	507,600	Coventry, Eng. . . .	258,245	263,000
Leeds, Eng.	505,219	505,500	Cardiff, Wales . . .	243,632	246,600
Edinburgh, Scot. . .	466,761	470,500	Portsmouth, Eng. . .	233,545	245,800
Belfast, N. Ire. . . .	443,671	444,200	Plymouth, Eng. . . .	208,012	221,400
Bristol, Eng.	442,994	444,200			

*Preliminary.

Table III.—United Kingdom, Membership of Main Religious Groups,
1953 Estimates

(In thousands)

	England	Wales	Scotland	Northern Ireland*	Total
Anglican†	5,470	250	108	353*	6,180
Roman Catholic . . .	2,746	111	765	471*	4,095
Presbyterian‡	69	213§	1,283||	410*	1,975
Methodist¶	689	41	14	67*	815
Congregational** . .	205	138††	35	2	380
Baptist***	201	100	19	5	325
Jewish	429	4	15	2	450

*Figure for four largest denominations in Northern Ireland represent "professions" (1951 census) rather than full membership or communicant status: they are therefore probably too high in comparison with those for corresponding denominations in the other three countries. †Established Church of England; disestablished Church in Wales, Episcopal Church in Scotland, Church of Ireland; figures are for "persons definitely attached", according to parish records. ‡Figures are for full membership. §Calvinistic Methodist Church. ||Communicants, established Church of Scotland; other small Scottish Presbyterian bodies are excluded. ¶Figures are for full membership, Methodist conference churches only; Independent Methodists (U.K., 1953) 9,000, Wesley Reform Union (G.B., 1952) 6,000. **Figures are for full membership, 1954 est. ††Mainly Welsh Independents.

Note: In England, Presbyterians, Methodists (incl. Indep. Methodists and Reform Union), Baptists, Congregationalists (incl. Countess of Huntingdon's Connexion chapels) and Moravians (1954: 3,000 communicants) are linked by the Free Church Federal council. Other important Christian bodies were (1954 U.K. figures): the Brethren (Plymouth Brethren) 80,000; Churches of Christ (164 churches); Salvation Army (132,000), Friends (Quakers) 21,000.

nomic strain in the last half of 1954 led to an increase in the bank rate in January from 3% to 3½% and, barely a month later, to 4½%, coupled with restrictions imposed by the government upon instalment purchases and measures to check disadvantageous dealing in sterling abroad. Few changes were made by the April budget: 6d. off the standard rate of income tax as "a fresh incentive to the forces of growth and expansion" and some relief in purchase tax, chiefly for the benefit of the textile trades, now feeling the effect of foreign competition. R. A. Butler, chancellor of the exchequer, warned that further fiscal legislation might be necessary later in the year. In July he was forced to announce new credit restrictions on banks, to appeal to local authorities to delay capital expenditure, and to impose a slow-down of capital expenditure by nationalized industries and stiffer terms for instalment purchases. Even these did not suffice and, on Oct. 4 the chancellor, in a speech at Mansion house, London, said the imperative need was to use less at home and send more abroad.

When Butler introduced his supplementary budget on Oct. 26, increasing all rates of purchase tax by one-fifth, profits tax from 22½% to 27½%, and imposing higher postal and telephone charges, he was accused by the Labour party of having misled the electorate by his earlier budget. Local authorities, whose interest rates on loans had been raised in February and again in September, were told that the volume of lending to them would be checked, and that the housing subsidy was to be abolished as soon as possible and in the meantime, cut. The imposition of purchase tax on household articles was unpopular and an immediate effect was a renewal or a raising of wage claims by trade unions. Building operatives who had asked for 4d. an hour more increased their demand to 6d. because of the budget. The prime minister, the chancellor and Sir Walter Monckton, minister of

labour, had a discussion on Nov. 1 with leaders of the Trades Union congress, who after the meeting issued a statement saying that the budget was inequitable and that government policy was to be blamed for the overstretching of the economy.

With the economic strain and the inflationary pressure of home demand, reflected in rising prices, there went a spirit of industrial unrest. In May there began a strike of dock workers affecting Liverpool, Manchester and Hull, and lasting six weeks. The immediate cause was the demand of the National Amalgamated Stevedores' and Dockers' union for recognition on the negotiating committees of the ports along with the much larger Transport and General Workers' union. A railway strike, narrowly averted in the closing days of 1954, was begun on May 28 by locomotive men and firemen, and for 17 days caused a drastic curtailment of services. The dispute was over the "differential" in rates of pay. Concerned at the effect of strikes upon working people not directly involved, the Trades Union congress in September amended its constitution to allow it to intervene in disputes before negotiations had broken down. The vote against this change was, however, substantial, the small unions fearing the effect of T.U.C. pressure upon their bargaining powers. In the coal mining industry production failed to keep pace with the demands of industry, partly through losses caused by "unofficial" stoppages of work, partly by insufficient manpower and other causes. In July coal prices were advanced by 18%, causing protests from industry. A committee was formed by the National Coal board and the National Union of Mineworkers to inquire into manpower and production in the pits. Meanwhile, miners were opposed to the introduction of any more foreign labour and their union, responding to demands at its annual conference, formulated fresh demands, including a longer holiday period and shorter hours of work. Other disputes in the latter half of the year affected sections of the aircraft and car manufacturing industries. In March and April a pay dispute stopped publication of national newspapers for 26 days.

In February the government announced plans to build 12 nuclear power stations in the next 10 years at a cost of £300,000,000, the first two stations to be completed in 1960-61.

In an effort to bring Great Britain's road system into line with modern traffic needs, the government announced a four-year plan costing £147,000,000 and comprising among other things two motor roads connecting London with Lancashire and Yorkshire. Certain tolls were to be charged, and the scheme was a "first instalment." A much more costly scheme to modernize the railways was announced by the British Transport commission in a 15-yr. plan which was to include a widespread change from steam to diesel and electric traction. Parliament accepted the scheme, the cost of which was put at £11,240,000,000.

The government white paper on defense (Feb. 17) set out plans for a better equipped active fleet and a reduced but more highly prepared reserve fleet; a smaller, better disposed, more mobile army (a cut of 100,000 men was later announced); and a more powerful air force using an effective strategic bomber force. A mobile defense force, forming part of the army and R.A.F. and trained in fire fighting and rescue work, would defend the home base and act as a link between the armed forces and the civil defense services. Despite the protests of lovers of the Hebrides, the government pursued its plan to make the island of South Uist a base for testing guided missiles and, arising out of this, the uninhabited islet of Rockall, 250 mi. west of the Hebrides, was formally annexed to the crown by a naval landing party. Another change in defense organization was the appointment of an independent chairman of the chiefs of staff committee, and the marshal of the royal air force, Sir William Dickson was selected for the new post, an indication of the importance of air power.

Interest in the affair of the "missing diplomats," Donald Maclean and Guy Burgess, who disappeared from England in 1951, flared up again when an article in a Sunday newspaper by Vladimir Petrov, formerly of the Soviet embassy in Australia, alleged that they were long-term Soviet agents and had left England to seek asylum because they were under investigation. The government thereupon published a white paper setting out the known facts: it was widely criticized for not having made the information public earlier. The whole subject was debated in parliament and Sir Anthony Eden offered to convene a small informal conference of privy councillors from both sides of the house to examine security procedures in the public services. The foreign secretary, Harold Macmillan, denied that anybody had been shielded or that Maclean or Burgess had been protected by senior officials.

The outstanding event in foreign affairs was the conference of the heads of state of the Big Four powers at Geneva in July when they succeeded in easing international tension without removing the causes. The U.S.S.R.'s "new look" policy was reflected in the visit of several delegations to the United Kingdom and the arrival at Portsmouth of some Soviet warships while the British force was visiting Leningrad. Hopes were dashed when the subsequent conference of foreign ministers at Geneva in November ran into difficulties over the problem of German reunification, and by the announcement a few weeks earlier that Egypt was securing arms from Czechoslovakia. (See GENEVA, BIG FOUR CONFERENCES OF 1955.) In the middle east Great Britain adhered to the Turco-Iraqi treaty and replaced the treaty of alliance with Iraq by a new defense agreement. The absence of conflict with Egypt over the canal zone was welcomed, but the building up of a British garrison and base in Cyprus gave new impetus to a local movement for union with Greece—a movement that Greece supported in spite of British protests. A London conference between Great Britain, Greece and Turkey failed to reach agreement, and Cyprus continued to be the scene of many violent events directed against the British forces. Trouble also continued with Saudi Arabia (*q.v.*) over the Buraimi oasis dispute, which had been referred to an international arbitration tribunal. In the Sudan, which was to complete its transitional period of self-government in Feb. 1957, the last British troops marched out of Khartoum on Oct. 10. An event which gave great satisfaction was the conclusion of an agreement with the United States for military and civilian nuclear-scientific co-operation.

The *Economic Survey for 1955* recorded 1954 as a successful year with production expanding, but pointed to the worsening state of the balance of payments. In the first two months of 1955 gold and dollar reserves fell, and also the exchange rate of sterling. There was a danger that economic expansion would imperil the maintenance of a proper balance between imports and exports. Gold and dollar reserves, which amounted to £1,078,000,000 at mid-1954, were down to £986,000,000 at the end of the year, and the fall continued. At the end of Sept. 1955 the reserves stood at less than £838,000,000, or £240,000,000 below the peak of 1954. Prices continued to rise but according to a government statement in February, earnings rose by about 220% between 1938 and 1954, retail prices by 131%, and interest and dividends by about 60%. (See also ATOMIC ENERGY; BUDGET, NATIONAL; COAL; COMMONWEALTH OF NATIONS; EGYPT; EMPLOYMENT; EUROPEAN UNITY; INTERNATIONAL TRADE; IRAN; LABOUR UNIONS; NORTH ATLANTIC TREATY ORGANIZATION; STRIKES; UNITED NATIONS.) (R. G. HN.)

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LONDONERS QUEUING UP for buses during the railroad strike of 1955

(York); J. F. S. Ross, *Elections and Electors*; L. S. Amery, *My Political Life*, 3 vol. (1953-55); A. Maude and E. Powell, *Biography of a Nation* (London, New York); T. H. Pear, *English Social Differences* (London, New York); Geoffrey Gorer, *Exploring English Character* (Toronto, London).

Education.—*England and Wales* (1954): grant-aided, direct grant and recognized independent schools: nursery 466, pupils 23,728, teachers 90,511; primary (including 4,336 all-range schools) 24,570, pupils 4,741,886, teachers 156,872; secondary (including 300 technical and 52 with technical departments) 5,469, pupils 1,472,184, teachers 98,078; special for physically or mentally handicapped children and institutions 719, pupils 57,664, teachers 4,186. Further education (including art schools, 1954): full-time 493, students 59,181; part-time (day) 696, students 72,067; evening 9,684 (including 9,032 evening institutes), pupils 1,021,742; all teachers 10,701. *Scotland* (1954): public and grant-aided schools: nursery 75, pupils 4,495, teachers 117; primary 2,213, pupils 90,577, teachers 17,902; secondary (including 649 with primary departments) 817, pupils 224,768, teachers 13,153; special 81, pupils 10,076, teachers 735. Independent schools, pupils 21,088. Approved schools, pupils 1,564. Further education (1954): pupils 230,725 of which 27,022 in central institutions and 203,703 in further education centres. *Northern Ireland* (1953-54): grant-aided schools: primary 1,642, pupils 202,971, teachers 6,001; intermediate (including technical intermediate) 47, pupils 3,876, teachers (excluding technical intermediate, who are also employed in institutions of further education) 262; secondary (grammar) 81, pupils 30,332, teachers 1,554; special 13, pupils 1,017, teachers 66; centres for further education 150 (of which 91 permanent), students 30,518. *Universities* (1954-55): *England* 14, full-time students 60,755; *Scotland* 1, full-time students 13,366; *Wales* 1, full-time students 4,454; *Northern Ireland* 1, full-time students 2,144. University colleges: *England* 3, full-time students 2,052; *Wales* 1, full-time students 133; *Northern Ireland* 1, full-time students 80.

Finance and Banking.—Official exchange rate, £1=U.S. \$2.80. Budget (1954-55 actual): revenue £4,737,900,000, expenditure £4,304,700,000; 1955-56 est.) revenue £4,710,200,000 (revised est., Oct. 1955, £4,725,000,000), expenditure £4,561,900,000. *Northern Ireland*: (1954-55 actual) revenue £59,046,324, expenditure £58,959,276; (1955-56 est.) revenue £66,422,000, expenditure £66,371,000. Total public debt (Aug. 1955) £28,014,000,000; (Aug. 1954) £26,944,000,000. Currency circulation (Sept. 1954): £1,565,000,000; (Sept. 1955) £1,673,000,000. Total deposits, London clearing banks: (Sept. 1954) £6,539,000,000; (Sept. 1955) £6,345,000,000. Gold and dollar reserves of the sterling area (Sept. 1954): U.S. \$2,901,000,000, (Sept. 1955) U.S. \$2,345,000,000.

Foreign Trade.—Imports (1954; 1955, nine months, in parentheses) £3,379,200,000 (£2,895,000,000); exports £2,674,800,000 (£2,123,300,000); re-exports £100,800,000 (£85,100,000). Main sources of imports (1954): sterling area 44%; continental European Payments Union countries 22%; U.S. and Canada 16%; Latin America 7%. Main destinations of exports (1954): sterling area 48%; continental E.P.U. countries 26%; U.S. and Canada 11%; Latin America 4%.

Transport and Communications.—Railways (Dec. 1953): Great Britain, route length 31,022 km.; Northern Ireland (1954) 749 km. Passenger journeys originating (British railways, 1954) 991,200,000. Freight traffic (1954) 36,120,000 ton-km. Roads (1953) Great Britain: 295,800 km. Motor vehicles licensed (May 1955): 5,930,000 including 3,309,000 cars. Air transport (U.K. airlines, all services, 1954; 1955, six months, in parentheses): mi. flown 58,044,000 (29,425,000); passengers carried 4,377,200 (1,164,000); passenger-km. 2,429,916,000 (1,221,734,000); freight (including mail) ton-km. 76,092,000 (43,038,000). Shipping: mer-

chant vessels on British Commonwealth registers, 500 gross tons and over (Sept. 1955): nontankers 15,093,000 gross tons; tankers 5,325,000 gross tons. Shipping movements at U.K. ports (net tons registered, 1954; 1955, nine months, in parentheses): entered with cargo, mail only 948,000 (365,000), other 71,424,000 (59,305,000); entered in ballast with passengers only 5,952,000 (4,767,000), calling for bunker only 372,000 (268,000), other 11,856,000 (8,952,000). Telephones (March 1954): 6,139,229 (75.3% with automatic dial).

Radio licences (Sept. 1955): sound only 9,271,000; sound and television 4,884,000.

Agriculture and Fisheries.—Production (long tons, 1954; 1955 est. in parentheses): wheat 2,783,000 (2,474,000); barley 2,244,000 (2,777,000); oats 2,440,000 (2,507,000); rye, threshed, 39,000 (19,000); mixed corn 555,000 (497,000); potatoes 7,325,000 (6,009,000); sugar beet 4,521,000 (4,351,000). Livestock (June 1955): cattle 10,672,000; sheep 23,074,000; pigs 5,827,000; poultry 86,925,000. Fisheries (total landings, 1954) 76,200 tons.

Industry.—Establishments employing 11 or more persons 58,921. Total working population (Dec. 1954) 23,816,000 of whom 16,049,000 were men, (Aug. 1955) 24,009,000 of whom 16,130,000 were men. Armed forces (Dec. 1954) 830,000 of whom 21,000 were women, (Aug. 1955) 793,000 of whom 19,000 were women. Registered unemployed (excluding temporarily stopped) 266,000 in Dec. 1954, 182,000 in Aug. 1955. Index of production: Total (1948=100) 121 in 1953, 129 in 1954; manufacturing (1953) 123, (1954) 133. Industrial production (1954): coal 223,496,000 long tons; gas (available at gas works) 587,080,000 cu.ft.; electricity generated 72,900,000,000 kw.hr.; iron ore (about 28% metal content) 15,548,000 long tons; pig iron 11,908,000 long tons; crude steel 18,517,200 long tons; phosphatic fertilizers (P₂O₅ content) 331,100 long tons; cement 11,964,000 long tons; motor cars 769,164; tractors (10-belt h.p. and over) 137,304; trucks 268,716; steam locomotives 583; diesel locomotives 687; railway coaches 2,402; freight cars 61,972; aircraft (excluding military types except those for export) 338 of which 351 for export; merchant vessels completed, 100 gross tons and over, 1,493; permanent houses and flats completed 353,929; woven cotton cloth 1,991,600,000 yd.; woven woollen and worsted fabrics 414,360,000 sq.yd. (excluding 26,520,000 sq.yd. of blankets); rayon filament yarn 219,600,000 lb.; rayon staple fibre 228,000,000 lb.

Great Lakes Traffic: see CANALS AND INLAND WATERWAYS.

Greece. The kingdom of Greece occupies the southern part of the Balkan peninsula. Area: 51,182 sq.mi.; the mainland accounts for 41,328 sq.mi.; the islands, of which the largest is Crete (3,235 sq.mi.), for 9,854 sq.mi. Pop.: (1951 census) 7,603,587; (1954 est.) 7,900,000. Language (1940): Greek 93%; Turkish 3%; Macedonian Slav 1.4%; Albanian 0.9%; Macedo-Rumanian 0.8%. Religion (1940): Greek Orthodox 96.5%; Roman Catholic 0.4%; Moslem 1.9%; Jewish 0.7%. Chief towns (1951 census, municipal area only): Athens (cap.) 565,084*; Peiraeus 186,014; Salonika or Thessaloniki 217,049;

*The population of greater Athens, which included the populations of Peiraeus and suburbs, was 1,378,586.

Patras 79,014; Volos 51,144; Larissa 41,016. Ruler, King Paul I; prime ministers in 1955: Field Marshal Alexandros Papagos and (from Oct. 5) Konstantinos Karamanlis.

History.—The negotiations begun the previous year between Greece and Bulgaria for a settlement of outstanding problems broke down over the question of payment of Bulgarian war reparations to Greece and were suspended indefinitely. An Albanian approach, through the United Nations, for the resumption of Greco-Albanian diplomatic relations was not taken up by the Greek government, which replied that technically a state of war still existed between Greece and Albania and any negotiations should, therefore, be conducted by the general staffs of the two countries.

At the same time the Greek government indicated that any re-establishment of diplomatic relations should be linked with an agreement on frontiers, and that Albania should cease aiding and abetting Greek communist agents in their subversive activities and should also repatriate Greek hostages taken to Albania during the guerrilla war.

King Paul and Queen Frederika paid a state visit to Yugoslavia during Sept. 6–14, returning Marshal Tito's visit to Greece the previous year.

Relations with Britain deteriorated even further as a result of the intensification of Greece's demand that the right of self-determination should be accorded to Cyprus. Greece's appeal to the United Nations in Dec. 1954 was eventually shelved by a resolution of the general assembly which decided, by 50 votes to none with 8 abstentions, that it did not consider it appropriate "for the time being" to adopt any resolution on the question of Cyprus. This decision gave rise to anti-British and anti-U.S. manifestations in Greece, and on June 30 the British government invited Greece and Turkey to a conference "on political and defence questions which affect the eastern Mediterranean, including Cyprus." During this conference, which was held in London from Aug. 29 to Sept. 7, the British government proposed the offer to Cyprus of a new constitution providing for an assembly with an elected majority—the governor retaining reserve powers for foreign affairs, defense and public security—and the setting-up of a special British-Greek-Turkish committee to deal with problems arising from the gradual application of self-government. At the same time Harold Macmillan, British foreign secretary, made it clear that Great Britain did not intend to relinquish possession of Cyprus in the foreseeable future and that the British government did not accept the principle of self-determination as one of universal application but considered that exceptions should be made "in view of geographical, traditional, historical, strategical, and other considerations." The British proposals were rejected by Greece, and Turkish opposition to the Greek viewpoint on Cyprus culminated on Sept. 6 in violent anti-Greek riots in Istanbul and Smyrna (Izmir), where hundreds of Greek-owned shops and houses were wrecked and looted and many Greek churches were desecrated and destroyed. Although the Turkish government expressed its regrets at the riots and its willingness to compensate the victims, and moral reparation was made to Greece at a symbolic ceremony on Oct. 24, Greco-Turkish relations suffered a severe setback. (See CYPRUS; TURKEY.)

Greece again raised the question of Cyprus at the United Nations, but on Sept. 23 the general assembly decided, by 28 votes to 22 with 10 abstentions, not to place the question of Cyprus on its agenda.

The death in October of the premier, Field Marshal Papagos, deprived the country of its outstanding political and military personality, and revealed certain disintegrating tendencies within the Greek Rally which had already been initiated by the secession of Spyros Markezinis, who by August had become leader

of the opposition with his newly formed Progressive party mustering about 30 followers in the chamber. On Oct. 6 Karamanlis who, as minister of public works, had earned himself wide popularity by his energetic road construction program was sworn in as premier in succession to Papagos and on Oct. 11 obtained a vote of confidence in the chamber by 200 votes to 77, with 2 abstentions. In his statement of policy he announced that general elections would be held by April 1956.

(See also NORTH ATLANTIC TREATY ORGANIZATION.)

(S. L. H.)

Education.—Schools (1952–53): primary 10,343, pupils 931,177; teachers 19,094; secondary 589, pupils 215,393, teachers 6,078. Teacher training colleges 14, students (average since 1950) 3,000. Institutions of higher education 5, students 11,711, of which 6,658 at 2 universities.

Finance and Banking.—Monetary unit: drachma (introduced on May 1954, and equal to 1,000 old drachmas), with an exchange rate of dr. 34 to U.S. \$1. Budget (1953–54 actual): revenue dr. 10,620,000,000, expenditure dr. 10,320,000,000. Internal debt (June 1954) dr. 6,432,900,000; external debt dr. 2,403,000,000. Currency circulation: (Dec. 1954) dr. 3,470,000,000. (July 1955) dr. 3,970,000,000. Bank deposits: (Dec. 1954) dr. 5,470,000,000. (April 1955) dr. 6,200,000,000. Gold holdings: (Aug. 1955) U.S. \$10,800,000. (Sept. 1954) U.S. \$10,700,000.

Foreign Trade.—(1954) Imports dr. 9,902,000,000; exports dr. 4,550,000,000. Main sources of imports (1954): Germany 16%; Italy 16%; U.S. and Canada 14%; U.K. 11%; other continental European countries 26%. Main destinations of exports: Germany 24%; Italy 13%; other continental E.P.U. 18%; U.K. 13%; U.S. and Canada 10%. Main exports: tobacco 14%; raisins 21%.

Transport and Communications.—Roads (1953): 22,900 km. Motor vehicles in use (1953): cars 10,500; commercial vehicles 24,100. Railways (1954): 2,573 km., including 21 electrified; passenger kilometers (1953) 845,000,000; freight ton-kilometres (ten months, 1954) 319,500,000. Shipping, merchant vessels of 100 gross tons and more (Jan. 1954) 355; total tonnage, 1,176,862. Telephones (Jan. 1954): 104,234. Licensed radio receivers (1953): 426,000.

Agriculture.—Main crops (metric tons, 1954): tobacco 67,500; wheat 1,218,000; barley 236,000; oats 152,000; rye 49,000; maize 255,000; potatoes 455,000; rice 88,000; grapes 1,367,000; oranges, etc., 153,000; lemons, limes, etc., 41,000; cotton lint 39,000; cottonseed 80,000; olives 539,000; raisins 110,000; figs (1953) 128,600; currants (1953) 77,000; sultanas (1953) 38,000. Wine production (1954) 414,000 metric tons. Livestock (Sept. 1954): cattle 904,000; sheep 8,376,000; pigs 603,000; horses 314,000; mules 199,000; asses 490,000.

Industry.—Fuel and power (1954): lignite 802,800 metric tons; electricity (1953) 903,000,000 kw.hr.; ores (metal content, metric tons 1953): bauxite 328,000; magnesite 107,000; iron pyrites 237,000; chrome 14,700. Index of industrial (manufacturing) production (1948=100): (1954) 238, (Jan. 1955) 242.

Greenland. A large island (840,000 sq.mi., more than four fifths covered by an ice cap), Greenland is part of the kingdom of Denmark, in the north Atlantic ocean northwest of Iceland. Pop. (1951 census): 24,159 distributed in settlements along west coast except for 1,697 on the east coast; 1,269 Europeans (mostly Danes), the rest native Greenlanders (Eskimos); (1954 est.) 25,000. Language: Danish and Eskimo. Religion: Lutheran. Capital, Godthaab (second governor's seat, Godhavn) (1945 census) 970. Governor general, 1955, Poul Hugo Lundsteen.

History.—Investments during 1955 aimed at the improvement of medical facilities and communications. A new tuberculosis hospital was inaugurated, Dronning Ingrid's sanatorium named after the queen. It had more than 200 beds. A ship for X-ray examination of tuberculosis patients at distant places was maintained in connection with the hospital. A sum of 4,800,000 Kr. was voted for expansion and improvement of the Greenland broadcasting system.

(See also DENMARK.)

(H. LN.)

Education.—Schools (1951): infants and primary 163, pupils 4,117; teachers 228; post-primary 3, pupils 71, teachers 12; technical 1, pupils 43, teachers 6; evening schools 15, pupils 500, teachers 48. Institutions of higher education 3, students 35, lecturers 6.

Finance.—Monetary unit: Danish krone, valued in 1955 at 14.4 cents U.S. Budget (1951–52; 1952–53 in parenthesis): revenue 22,300,000 Kr. (40,100,000 Kr.); expenditure 54,800,000 Kr. (65,900,000 Kr.); investments 26,500,000 Kr. (18,000,000 Kr.).

Foreign Trade.—(1953) Imports 57,891,000 Kr. including 48,513,000 Kr. from Denmark, 6,280,000 Kr. from the U.K. Exports 40,289,000 Kr. including 26,675,000 Kr. to Denmark, 8,908,000 Kr. to the U.S.

Agriculture and Fisheries.—Livestock (1953): sheep 18,879; poultry 2,577; horses 143; goats 20; cattle 58. Fisheries, exports (metric tons 1953): salted fish 3,044.8; split cod, etc. 2,410.4; other fish 1,068.

other fish products 388.7; whale blubber 1,128.1; whale and fish oil 44.8; hides and skins 130.6.

Mining.—Exports (metric tons, 1953): cryolite 45,132.2, including 28,044.6 to Denmark and 17,087.6 to the U.S.

Grenada: see WINDWARD ISLANDS.

Gronchi, Giovanni (1887–), Italian statesman, was born at Pontedera, near Pisa, It., Sept. 10, the son of a bookkeeper. He was educated at Pisa university and joined the Christian Democratic movement, founded in 1902 by Romolo Murci. A volunteer, he served in the army in World War I and in 1919 he helped Luigi Sturzo to found the Partito Popolare Italiano. From 1919 he sat in the chamber of deputies and was also the secretary-general of the (Christian) Confederazione Italiana dei Lavoratori. In the first Mussolini cabinet, formed in Oct. 1922, Gronchi was undersecretary for industry and commerce. He resigned when in Aug. 1923 the P.P.I. went over to the opposition. In 1927 he retired to private life and devoted his energies to industry. Returning to politics in 1943, he represented with A. de Gasperi the underground Partito Democratico Cristiano in the National Liberation committee. From June 1944 to June 1946 he was minister for industry and commerce in four successive cabinets. Elected in June 1946 to the constituent assembly, he became the leader of the P.D.C. group. In April 1948 he was elected to the new chamber of deputies and on May 8 was elected speaker. Re-elected to the chamber in June 1952, he continued to serve as speaker. On April 29, 1955, on the fourth ballot, he was elected president of the republic, receiving 658 votes out of a possible 843.

Group Insurance: see INSURANCE.

Guadeloupe. This French overseas *département* in the Lesser Antilles consists of two main and five smaller islands. Total area: 687 sq.mi. Pop.: (1946 census) 278,464; (1954 census) 229,120, mainly coloured (Negro or mixed). Language: French and Creole French. Religion: Roman Catholic. Chief towns (pop., 1954 census): Basse-Terre (cap.) 11,837; Pointe-à-Pitre 8,039. Prefect in 1955, Jacques Ravail.

During 1955 two Radical councillors were elected to the general council. (Hu. De.)

Foreign Trade.—(1954) Monetary unit: metropolitan franc, valued at 350 francs to the U.S.\$1. Imports 3,500,000,000 fr., including 2,593,000,000 fr. from France. Exports 11,700,000,000 fr., including 10,200,000,000 fr. to France. Production (metric tons, 1953): bananas 108,000; rum 102,837 hectolitres; sugar (exports) 21,000.

Guam. Guam is the largest and southernmost island of the Marianas, lying in the Pacific ocean at 13° 26' N. lat. and 144° 39' E. long., about 5,100 mi. W. of San Francisco, 3,340 mi. W. of Honolulu, and 1,500 mi. E. of Manila. Area: 206 sq.mi. Population (1950 census) 59,498; (1952 est.) 75,000. Agaña is the capital with a population in 1950 of 1,330. Other important towns are Sinajana and Inarajan. The Guamanians are Chamorros, and their religion is predominantly Roman Catholic.

History and Government.—Guam is an unincorporated territory of the United States and an organized sovereignty, governed under the Organic Act of Guam of 1950. The island has been administered since 1950 by the U.S. department of interior. Guamanians are citizens of the U.S., with all rights and privileges thereof, replacing their former status as citizens of the territory and nationals of the United States.

The governor of Guam, who must be a civilian, is appointed by the president for a term of four years. Ford Q. Elvidge, who was appointed in April 1953, was governor in 1955. The second

ranking member of the executive branch of the government is the secretary of Guam, who is likewise appointed by the president for a four-year term. R. S. Herman was secretary in 1955.

The legislature of Guam in 1954 passed a law extending suffrage to all citizens of Guam over 18 years of age, thus becoming the first territory of the U.S. to reduce the voting age below 21 years.

In 1955 Guam served as the headquarters of the government of the Trust Territory of the Pacific Islands and of the Air Force's Strategic Air command in the Pacific.

Education.—In 1954 there were 22 public elementary and junior high schools with 8,517 pupils and 293 teachers; 1 high school with 2,106 students; and the Territorial college at Agaña. There were also 8 parochial schools, and a missionary junior college. Instruction is given in English. About 84% of the population was literate according to the 1940 census. About 17% of the island's expenditures went for educational purposes during the 1953–54 fiscal year.

Finance.—During the fiscal year ending June 30, 1954, Guam's expenditures amounted to \$10,957,600 and revenues totalled \$11,801,400. The Bank of America operates a branch on Guam and in 1954 the Guam Savings and Loan association, formed by a group of local businessmen, began operations.

Production and Trade.—There were 1,380 farmers as of June 30, 1954, and 312 persons engaged in fishing. Agricultural production in the year ending June 30, 1954, included (in pounds): corn 665,140; citrus fruit 8,350; muskmelon 162,040; bananas 550,661; taro 196,440; sweet potatoes 63,030; cassava 142,275; pineapple 24,680; yams 32,895; watermelon 36,275; papaya 258,340; sugar cane 33,040; avocado 37,270; mango 42,335; green beans 56,426; eggplant 47,911; tomatoes 21,770; cucumber 57,820; squash 13,810; and rice, grown for the first time in many years, 13,735. The fish catch in the same period totalled 405,164 lb. In 1954 Guam had 11,895 hogs, 6,136 cattle, and 171,840 chickens.

In 1954 there were 16 industrial establishments which produced 14,707 cu.yd. of concrete, 641,485 cases of soft drinks, 6,552 tons of ice, 3,900,000 cu.ft. of oxygen gas and 5,428 lb. of soap. In the fiscal year ending June 30, 1954, imports totalled \$20,518,700 and exports \$4,428,633. Guam's imports came in descending order of importance from the United States, Japan, the Philippines and the Trust Territory. Exports went in order of importance to the Trust Territory, Japan and the United States.

Transportation and Communications.—There are about 80 mi. of paved highways in Guam, about 60 mi. of improved secondary roads and about 100 mi. of village streets. There are no railways, but five military airfields, two of which, Andersen field and Northwest airfield, are major air bases. Guam is a port of call for the Pacific Far East lines and the American President lines. It is the home port of the Pacific Micronesian lines, a subsidiary of the Pacific Far East lines. The U.S. navy maintains the Agaña Naval Air station. The Navy operates the island's electricity system and the government of Guam operates the telephone system. Guam's first commercial radio station, WKUAM, began operations in 1954. Radio facilities also exist through the U.S. armed forces radio network and the Andersen Field radio station. Pan-American World airways, Philippine airlines and Transocean airways provide air service for the island. There are three newspapers, of which one is an English daily and the other two an English and a Chamorro weekly. There are 15 motion-picture theatres. (S. Nr.)

Guaranteed Annual Wage: see AUTOMOBILE INDUSTRY; LABOUR UNIONS.

Guatemala. A Central American republic, Guatemala is bounded by Mexico, British Honduras, Honduras and El Salvador. Area: 42,042 sq.mi.; pop.: (1950 census) 2,788,122; (1954 estimate) 3,201,000. Capital: Guatemala city (1950 census) 283,100; (1953 estimate): 319,379. Other urban centres (1950 census, with 1953 est. in parentheses) are Antigua Guatemala 10,691 (12,545), Chiquimula 8,848 (12,146), Cobán 6,854 (11,765), Escuintla 9,822 (12,380), Mazatenango 10,735 (13,045), Puerto Barrios 15,659 (18,193), Quezaltenango 27,782 (31,352), Retalhuleu 7,677 (11,436) and Zacapa 8,282 (11,652). Language: Spanish; religion: predominantly Roman Catholic. President in 1955, Col. Carlos Castillo Armas.

History.—Pres. Carlos Castillo Armas paid an official visit in 1955 to the United States. He was entertained in Washington by Vice-Pres. Richard M. Nixon, who in February had visited Guatemala and had extended to him an invitation from Pres. Dwight D. Eisenhower to visit the United States. Castillo Armas later called on Eisenhower at the hospital in Denver, Colo., where he was convalescing.

The Guatemalan chief executive received assurances from Undersecretary of State Herbert Hoover, Jr., of continued eco-

conomic aid, scheduled to rise from \$10,000,000 in 1954 to \$24,500,000 in 1955 and early 1956. He also conferred with United Fruit company president Kenneth Redmond on the company's plans for large-scale expansion of its banana plantations and electric power plants; the company had almost been driven from Guatemala by the pro-communist government that had been overthrown in 1954.

In speeches before the Organization of American States and the United Nations general assembly, Castillo Armas stressed the fact that Guatemala was the first nation ever to oust a communist-dominated government, and pledged the restoration of Guatemala's traditional co-operation with the inter-American system. He promised free elections in 1956, following the early completion of a new constitution.

Castillo noted the co-operation of United States and Guatemalan capital in erecting hotels, improving transportation and exploring for oil under new laws encouraging foreign investments. The previous regime had persecuted foreign enterprises and allowed roads to deteriorate badly.

The government early in 1955 faced discontent, brought about largely by shortages of maize, beans and rice which resulted from drought and the bad financial and agricultural situation inherited from the previous administration. Small farms were given to more than 12,000 landless peasants, despite opposition from rightist landowners. Labour resented a temporary trend toward severe curbs, which was to be rectified in the new constitution. Unemployment was large until road contracts were let. Coffee, the source of 80% of the government income, fell on world markets from 85 cents to less than 60 cents per pound, which necessitated a reduction in imports. Discontent and ambition to seize power led a few officers to attempt on Jan. 20 a revolt which was crushed.

Guatemala revived its claim to the crown colony of British Honduras (Belize). Castillo Armas called for economic and anti-communist unity at the first conference of the Organization of Central American States (*q.v.*), held in Antigua in August.

Late in the year the constituent assembly which was completing the constitution resisted clerical demands for special Catholic privileges. (See also HONDURAS.) (R. HN.)

Education.—In 1953 there were 3,537 primary schools with 7,809 teachers and 191,330 pupils and 125 postprimary schools with 2,234 teachers and 17,251 pupils. University education was available at the University of Guatemala which had 8 faculties and matriculation of 4,005 in 1954. The 1950 census showed that 72.2% of those seven years of age and over were illiterate.

Finance.—The monetary unit is the quetzal, at par with the U.S. dollar. The 1954-55 budget (July 1-June 30) as revised balanced revenue and expenditure at \$66,413,001. The 1955-56 budget balanced revenue and expenditure at \$66,385,825. The national debt was said to total \$41,000,000 on June 30, 1954. Currency in circulation (June 30, 1955) was \$49,300,000; demand deposits, \$34,700,000. U.S. direct investments in 1954 were estimated roughly at \$139,500,000. The cost-of-living index (Guatemala city) stood at 133 in July 1955 (1948=100).

Trade and Communications.—Exports in 1954 (unadjusted for banana undervaluation) totalled \$95,700,000; imports, \$86,300,000. Leading exports were coffee (78%), bananas (11%), essential oils and lumber. Leading customers were the U.S. (71%), western Germany (8%), the Netherlands (8%) and Belgium (4%); leading suppliers, the U.S. (64%), western Germany (8%), the Netherlands Antilles (6%) and Mexico (4%).

Total length of railways is 817 mi., of which 581 mi. are operated by the International railways. Surfaced highways totalled about 3,470 mi. in 1951. On Jan. 1, 1955, there were 9,658 automobiles, 7,696 trucks and 1,712 buses. Telephones (Jan. 1, 1954) numbered 6,428, 84.7% of which were automatic and 85% of which were located in Guatemala city.

Agriculture.—Coffee production in the 1954-55 season totalled 1,319,507 bags of 132 lb. each. In 1954, 892,000 bags of coffee and 6,102,788 banana stems were exported. Other crops, with 1954-55 production estimates, were cotton 40,000 bales of 480 lb. each; wheat 450,000 quintals (1 Spanish quintal=101.43 lb.); maize 10,000,000 quintals; rice 200,000 quintals; leaf tobacco 41,250 quintals; white sugar 900,000 quintals. The 1950 livestock census showed 902,915 cattle, 415,295 pigs, 711,579 sheep and 182,580 horses.

Manufactures.—The 1953 industrial census (preliminary figures) showed 943 industrial establishments with five or more employees; they had a total of 17,637 employees. Most important were beverages, textiles, foodstuffs and clothing. Cement production totalled 64,200 metric tons in 1954; beer 11,211,400 l.; electric energy 93,720,000 kw.hr.

(J. W. Mw.)

Guggenheim Memorial Foundation, John Simon: SOCIETIES AND ASSOCIATIONS, U.S.

Guiana, British: see BRITISH GUIANA.

Guiana, Dutch: see SURINAM.

Guiana, French: see FRENCH GUIANA.

Guided Missiles: see MUNITIONS.

Guinea: see FRENCH UNION; PORTUGUESE OVERSEAS TERRITORIES; SPANISH COLONIAL EMPIRE.

Guinea, French: see FRENCH WEST AFRICA.

Gymnastics. The senior championships of the Amateur Athletic union were held on April 29-30, 1955, the Columbus auditorium in Rochester, N.Y. A record number of 218 entries competed for the men's events while 111 women sought titles in their division. The tournament, held under the auspices of the Catholic Youth organization of Rochester, was marked by a tie for the men's all-around title for the first time in the 68-year-old history of the competition. At the completion of 12 events, John Miles of the Florida State (Tallahassee) gymkhana and Karl Schwenzfeier of Penn State university (State College, Pa.) were deadlocked with 327.0 points each. Joseph Kotys of the Cleveland (O.) Swiss Turners was only a point back with a score of 326.8. Florida State gymkhana won team laurels with 413½ points. Ernestine Russell of the Windsor Gym club of Ontario dominated the women's contest and gained all-around honours with 227.0 points. Leaders in the individual events follow:

Men's Events

Tumbling—first, James Sebbo, Jersey City Department of Recreation; second, Steve Mitakis, unattached; third, Jeffry Austin, Pond's Paladium, Champaign, Ill.

Horizontal bar—first, Abe Grossfeld, West Side (N.Y.) Y.M.C.A.; second, Carl Rintz, unattached; third, John Miles.

Long horse—first, Miles; second, Joseph Kotys; third, Milan Trnava, New York A.C.

Free calisthenics—first, John Beckner, U.S. Army; second, Grossfeld; third, Bob Stout, Philadelphia Turners.

Trampoline—first, Robert Elliott, Maverick Boys' club, Texas; second, Don Harper, unattached; third, Richard Albershardt, unattached.

Side horse—first, James Bown, Los Angeles State College Gym club; second, Sam Bailie, Iowa university (Iowa City); third, Kotys.

Parallel bars—first, Edward Scrobe, St. Mary's Recreation centre, New York; second, Kotys; third, Karl Schwenzfeier.

Still rings—first, Miles; second, Leonard Harris, Los Angeles City college; third, Don Holder, Florida State gymkhana.

Rope climb—first, Bob Hammond, U.C.L.A.; second, John Goldman, Pasadena City college; third, Ferdinand Fournies, Syracuse Gym club.

Swinging rings—first, Bailie; second, Rintz; third, Miles.



SWEDISH GYMNASTS in mass calisthenics at Paterson, N.J., in preparation for the opening of their 1955 U.S. tour

Women's Events

Free Calisthenics—first, Ernestine Russell; second, Olive Schneider, Kansas School of Acrobatics, Chicago; third, Arendine Ostendorp, New York Turn Verein.
 Balance beam—first, Ernestine Russell; second, Arendine Ostendorp; third, Jacquelyn Klein, Lincoln Turners, Chicago.
 Side horse—first, Ernestine Russell; second, Judy Hult, Rochester (N.Y.) Central Turners; third, Joyce Recek, Lincoln Turners, Chicago.
 Parallel bars—first, Ernestine Russell; second, Doris Fuchs, Rochester (N.Y.) C.Y.O.; third, Patricia Fitzpatrick, Roxborough (Pa.) Turners.
 Flying rings—first, Doris Fuchs; second, Arendine Ostendorp; third, Virginia Rodenbeck, Rochester (N.Y.) C.Y.O.
 Tumbling—first, Barbara Gallaher, Dallas (Tex.) A.C.; second, Susan Il, Pond's Palaestra; third, Olive Schneider.

The University of Illinois (Urbana) won the National Collegiate Athletic association team title at Los Angeles, Calif., on March 26. The Big Ten squad amassed 82½ points as Penn State, with 69 points, placed second. The Payne Whitney gymnasium of Yale university in New Haven, Conn., was the scene of the national A.A.U. junior tournament on May 7 and Abe Grossfeld of the West Side Y.M.C.A. of New York city won all-around honours with 301.0 points. The American season was brightened by the visit of a Swedish team of 11 women and 10 men for a series of exhibitions (Jan. 7–March 4) in the United States and Canada.

Boris Schaklin of the Soviet Union took all-around laurels in the first European meet held at Frankfurt-on-Main, Ger., April 10–11. (T. V. H.)

Haiti. The western third of the island of Hispaniola comprises the republic of Haiti. (The other two-thirds is occupied by the Dominican Republic.) Mountains and arid plateau dominate its 10,748 sq.mi., but the valleys sustain the densest population of any American republic, about 3,400,000 (est. Oct. 1954), of whom more than 150,000 live in the capital, Port-au-Prince, and about 30,000 in the second city, Cap-Haïtien. The 1950 census gave the populations of the principal cities as follows: Cap-Haïtien 24,957; Gonaïves 13,534; Jérémie 11,138; Les Cayes 11,835; Port-au-Prince 142,840; St. Marc 10,485. Not over 5% of the population is predominantly of European origin. The official language is French, and the majority speak Creole, but patois of the various African stocks is spoken in the villages.

Paul E. Magloire was president in 1955. He visited the United States extensively during the year.

History.—The economic paralysis wrought by the hurricane of Oct. 1954 continued through early 1955, and some areas of the southern peninsula went through periods of near-starvation. The national income was estimated to have declined 30% in one year. Conditions in the north were much better. Extensive relief from the United States was granted in the way of public works and building reconstruction.

The 1955 coffee crop was favourable even though the hurricane of 1954 did \$13,000,000 damage to the coffee plantations. An exportable surplus of 360,000 bags (176 lb. each) was harvested. Sisal production was likewise increased in consequence of foreign demand. The sugar crop as usual was sold chiefly in Europe.

A cement plant, designed to produce 60,000 tons annually, was completed about the end of the year. The long-discussed technical study of the electric power possibilities of the Artibonite valley was finally begun under arrangements with the Export-Import Bank of Washington.

As a result of the disaster of 1954, the public debt increased by nearly 40% in a single fiscal year (ending Sept. 30). But the money supply fell, and the assets of the National bank shrank 19% in the year ending with May 1955.

New factories were established for the manufacture of soap, oils, paint, rubber heels, leather soles and vegetable oils; and others were projected for glass, porcelain, paper and cardboard.

Bauxite mining received additional foreign capital.

The Banco Popular of Colombia established an affiliate, the Banque Populaire Colombo-Haïtienne.

A treaty of mutual military assistance was signed with the United States on Jan. 28, and on March 3, U.S. Vice-president Richard Nixon signed at Port-au-Prince a new treaty of friendship, commerce and navigation. (C. E. Mc.)

Education.—In 1953 urban primary schools were reported to have 2,001 teachers and 79,859 pupils and rural schools 1,514 teachers and 92,833 pupils. In addition, there were 14 national *lycées*, 19 private secondary schools and 15 professional schools with a total of 8,869 pupils. In the 1950 population census only 7.9% claimed to have more than two years of schooling, and estimates of illiteracy ranged from 85% to 95%. In the 1953–54 fiscal year 11.1% of government expenditures was for education.

Finance.—The monetary unit is the gourde, valued in 1955 at 20 cents U.S. currency, official rate. Actual government revenue in the fiscal year ended Sept. 30, 1954, was \$32,218,222; expenditure, \$31,500,765. The budget for the fiscal year 1955 (the same as that for 1954) estimated revenue at \$25,840,000 and expenditure at \$25,839,380; that for the year 1956 estimated revenue at \$25,641,763 and expenditure at \$25,630,027. The public debt totalled \$27,625,823 on April 30, 1955; the deficit in treasury general funds was \$12,979,752. Currency in circulation (Dec. 31, 1954) was \$13,260,000. The U.S. department of commerce estimated U.S. direct investments in 1954 at \$16,000,000.

Trade and Communications.—Exports in the trade year 1954 (Oct. 1, 1953–Sept. 30, 1954) were \$55,532,626; imports were \$47,556,494. The chief exports were coffee (78%), sisal (9%), cacao (4%), sugar (3%) and essential oils (1%); leading imports, cotton textiles (16%), wheat flour (11%), iron and steel and manufactures (8%), machinery and apparatus (7%) and vehicles (5%). Leading customers were the U.S. (45%), Belgium (22%), France (11%), Italy (8%) and the Netherlands (5%); leading suppliers, the U.S. (63%), Canada (8%), the U.K. (4%), Germany (4%) and the Netherlands Antilles (3%).

At the end of 1952 there were upward of 2,000 mi. of roads, more than half of which were unimproved earth and unsurfaced roads. There were 88 mi. of public railway and about 75 mi. of industrial trackage. On Jan. 1, 1955, there were 4,970 automobiles, 2,921 trucks and 233 buses. Telephones (Jan. 1, 1954) numbered 4,182, 91% of which were automatic and 84% of which were located in Port-au-Prince.

Agriculture.—Coffee production totalled about 500,000 bags of 132 lb. each in the 1954–55 season; exports in the calendar year 1954 were 517,000 bags. Other exports in the trade year 1954 were sisal, 23,975 metric tons; cacao, 2,246 tons; sugar, 15,359 tons; raw cotton, 777 tons; and bananas, 393,116 stems. Exports of essential oils included vetiver, 60,276 lb.; lemon grass, 50,550 lb.; and oil of lemon, 37,238 lb. Sugar production in 1954–55 by three sugar mills, one not operating at full capacity, was estimated at 56,057 metric tons. (J. W. Mw.)

Hammarskjöld, Dag (1905–), Swedish economist and statesman and United Nations official, was born at Jönköping, Swed., July 29, the son of a former Swedish prime minister. He graduated from Uppsala university in 1925, receiving a law degree in 1930. During 1930–34 he was secretary to the Swedish government committee on unemployment, and in 1933 became associate professor of political economics at Stockholm university. From 1936 to 1945 he was undersecretary in the Swedish department of finance, and in 1937 became also an economic adviser to the government. From 1941 to 1948 he was chairman of the Bank of Sweden. During 1940–48 he was a member of the Board of Foreign Exchange. Hammarskjöld entered the diplomatic service in 1946 as specialist in finance. He became chief Swedish delegate to the Organization for European Economic Cooperation in 1948 and was vice-chairman of its executive committee, 1948–49. Becoming assistant foreign minister in 1949, he entered the cabinet as deputy foreign minister in 1951. On April 7, 1953, he was elected secretary-general of the United Nations.

As a result of the resolution adopted by the UN general assembly (Dec. 10, 1954), requesting him to take immediate action toward the release by the Chinese People's Republic of all captured personnel of the UN command still detained in that country, Hammarskjöld arrived in Peking on Jan. 5, 1955. He had four meetings with Chou En-lai, the premier, returning to New York on Jan. 13. On June 25, receiving an honorary degree from the University of California, he recommended more "quiet diplomacy" through the United Nations. On Aug. 7, in his annual report to the general assembly, he urged the great powers to make use of the UN charter's provisions for participation of the heads of government at the meetings of the Security council.

Hammer Throw: *see* TRACK AND FIELD SPORTS.

Handball. Although two separate national tournaments were held in four-wall handball in 1955, as had been the custom since the schism of 1951, some of the leading players participated in both tournaments. The independent U.S. Amateur Handball union held its tournament at the Los Angeles (Calif.) Athletic club March 19–26, whereas the National Amateur Athletic union tournament was held April 16–23, on the courts at Yale university in New Haven, Conn. The winners in the two tournaments were as follows:

Amateur Athletic Union

Singles

First	Sam Costa, Brooklyn, N.Y.
Second	William Lauro, Brooklyn, N.Y.
Third	Thomas Ginty, New York, N.Y.

Doubles

First	John Abate and Joseph Ingrassia, New York, N.Y.
Second	Sam Costa, Brooklyn, and Thomas Fasano, Philadelphia, Pa.
Third	Jack Emas, Philadelphia, and Mel Dorfman, Brooklyn.

Amateur Handball Union

Singles

First	Jim Jacobs, Los Angeles, Calif.
Second	Victor Herszkowitz, Brooklyn, N.Y.
Third	Phil Collins, Bryan Air Force Base, Tex.

Doubles

First	Sam Haber and Ken Schneider, Chicago, Ill.
Second	Jack Gordon, Chicago, and Harry Dreyfus, St. Louis, Mo.
Third	Art Decker and Hyman Rose, Hollywood, Calif.

(FR. RO.)

Harbours: *see* RIVERS AND HARBOURS.

Harness Racing: *see* HORSE RACING.

Harriman, Averell (1891–), U.S. political leader, was born on Nov. 15 at New York city and was graduated from Yale university in 1913. Two years later he was a vice-president of the Union Pacific railroad, becoming chairman of the board of directors in 1932. During World War I he organized a shipbuilding and operating company, and in 1920 he helped found a firm of investment bankers. During the Franklin D. Roosevelt administration he was an officer of the National Recovery administration and during 1940–41 served with the National Defense Advisory commission and its successor agency, the Office of Production Management. In 1941 Pres. Roosevelt named him lend-lease expediter to Great Britain and later to the U.S.S.R. He was U.S. ambassador to the U.S.S.R. from Oct. 1943 to Feb. 1946, and ambassador to Great Britain from April to Oct. 1946, when Pres. Harry S. Truman named him secretary of commerce. From 1948 to 1950 he was special U.S. representative in Europe to supervise administration of the European Recovery program; in the latter year he was named special assistant to the president and in 1951 director of the Mutual Security agency.

He was an early leading contender for the Democratic presidential nomination at Chicago, Ill., in July 1952, following President Truman's decision not to run again for the presidency. On the first ballot of the convention he received 123½ votes, and on the second 121; he then withdrew and transferred his support to Adlai E. Stevenson. He was named ambassador to Great Britain again in 1953.

Harriman was elected governor of New York on the Democratic ticket Nov. 2, 1954, defeating the Republican candidate, Sen. Irving M. Ives, by a narrow margin. Soon he was again considered a major candidate for the Democratic presidential nomination of 1956.

Hatoyama, Ichiro (1883–), Japanese statesman, was born at Tokyo on Jan. 1 and graduated from Tokyo imperial university law school in 1907. Entering

politics as a young man, he was elected to the Tokyo city council, later becoming its chairman. In 1915 he was elected to national diet's house of representatives as a member of Seiyukai (Constitutional) party. In the early 1930s he was minister of education. During World War II he was out of favor with Japan's ruling military clique but nevertheless was elected again to the diet, in 1942. After the war he established the Liberal party as successor to the Seiyukai, but he was proscribed by Gen. Douglas MacArthur from holding any political office.

Hatoyama took his seat in the diet, however, after the Japanese peace treaty with the western nations went into effect in Aug. 1952. Soon thereafter he split with Premier Shigeru Yoshida and organized a new dissident Democratic party in Nov. 1954. Yoshida resigned as premier Dec. 7, 1954, and Hatoyama succeeded him on Dec. 9. Dissolving the Japanese diet on Jan. 1955, Hatoyama called for new elections which were held March 27 and in which his Democratic party won 185 seats—more than any other group. The lower house of the diet re-elected Hatoyama premier March 18, 1955, by a vote of 254 to 160.

Hatoyama's foreign policy platform called for recognition of both Communist and National China, and for attention to improvement of relations with other Asiatic nations, including the U.S.S.R., as well as continuation of Japan's security pact with the U.S.

Hawaii. Hawaii is an incorporated, organized territory of the United States. The territory of Hawaii consists of a group of eight large islands and numerous islets in the Pacific ocean between latitudes 18° 55' and 22° 15' N. and between 154° 50' and 160° 30' W. long. The total area of the group is 6,423 sq.mi. From southeast to northwest, the islands are Hawaii, Kahoolawe, Maui, Lanai, Molokai, Oahu, Kauai, and Niihau. In addition, stretching northward beyond Niihau is the Line Islands, an archipelago of rocks, reefs and shoals. The Line Islands, 960 mi. S. of Honolulu and included as part of the city and county of Honolulu lies Palmyra, a coral atoll consisting of islets, 5 mi. long and 2½ mi. wide. The largest island in the territory is Hawaii, with an area of 4,021 sq.mi. The capital of the territory is Honolulu, situated on the island of Oahu. Honolulu is a modern city with a population of 259,196 as of July 1, 1955.

The population of the entire territory was approximately 597,600 as of July 1, 1955, exclusive of military and naval personnel. The Japanese and Caucasian groups are the largest. Other groups include native Hawaiians and part Hawaiians, Chinese, Filipinos, Koreans, Puerto Ricans and Samoans.

History.—On Feb. 16, 1955, the legislature convened, for the first time in the history of the territory, with a majority of Democrats in both the senate and the house of representatives.

In an attempt to complete its work, the legislature extended the normal 60-day session for 28 extra days by stopping legislative clocks on the 60th day. Among important measures passed were a "model" civil service bill and one creating an Economic Planning and Coordination authority.

For the 20th time since 1903, the U.S. congress failed to pass a statehood bill for Hawaii. In November, Gov. Samuel W. King, in his capacity as president of the 1950 constitutional convention, called the delegates of that body together to consider the reapportionment provision of the proposed state constitution. The convention passed a resolution reaffirming its demand for statehood and requesting the congress of the United States to permit reapportionment of the legislature as provided by the state constitution.

A volcanic eruption on the island of Hawaii began on Feb. 1955 and was active over a period of three months, causing extensive property damage to sugar and farm lands and necessitating

vacuation of several villages in the Puna area of Hawaii (south-east coast). In April, Puna was declared a federal disaster area. Although Hawaii's mainland dollar earnings declined in 1954, a favourable balance was maintained of income (\$683,000,000) over expenditures (\$636,000,000). Internal income from goods and services locally produced again amounted to more than \$300,000,000. The growing tourist industry brought an estimated 1,060,000 visitors to the islands in 1955. They spent about \$56,000,000 in the territory.

Representatives of the eight-nation Southeast Asia Collective Defense Treaty organization (SEATO) met in Honolulu in November to integrate subordinate committees' plans working toward a regional defense pact. (See SOUTHEAST ASIA TREATY ORGANIZATION.)

Education.—During the school year 1954-55 there were 203 public schools including kindergartens and schools through the twelfth grade. These public schools had an enrolment of 119,046. The number of teachers and principals in the public schools was 4,146. Expenditures for public instruction for the 1954-55 fiscal year amounted to \$25,070,972.

The territory operated one prison system with three units, two of which were minimum security projects. In addition, there were two training schools. In 1954-55, the average number of inmates of the prisons was 97; training schools, 151. Expenditures for the same period were \$980,221 for the former and \$430,509 for the latter.

Public Assistance.—The following table shows the average number of cases assisted monthly and expenditures, exclusive of administrative costs, during the fiscal year 1954-55 by the territorial department of public welfare:

Type of assistance	Average number of cases assisted monthly during fiscal year 1954-55	Expenditures for fiscal year 1954-55
Old age	1,844	\$ 799,198
Indigent	111	61,645
Dependent children and their parents	3,195	3,420,114
Children under foster care	(9,629 children)	
Disabled persons	825	388,114
General assistance	1,276	735,150
	1,836	1,260,133
Total expenditures for assistance.		\$6,664,354

During the same period, the territorial department of health allocated \$1,062,500 to the counties for hospital and medical aid to the indigent and medically indigent.

Gross unemployment benefit payments, including those to veterans, totalled \$3,995,477. Claims allowed numbered 176,222.

Transportation and Communications.—There were 141,326 taxable passenger cars in the territory on Dec. 31, 1954. Public roads, including both urban and rural paved highways, covered 2,287 mi. During the year ending June 30, 1955, 996 overseas vessels arrived and departed from Honolulu harbour. Overseas incoming freight at this port was 2,557,518 tons; outgoing freight, 941,569 tons. Fifteen airports were in operation in the 1954-55 fiscal year. In Dec. 1954, 131,752 telephones were in use in the territory. Of the 13 commercial radio stations in the territory, 8 were in the city and county of Honolulu. There were also three television stations in Honolulu.

Banking and Finance.—In the fiscal year, 1954-55, bank clearings amounted to \$2,615,371,264. Five banks, operating 46 branches, had deposits totalling \$386,748,755 and their assets were \$418,498,095.

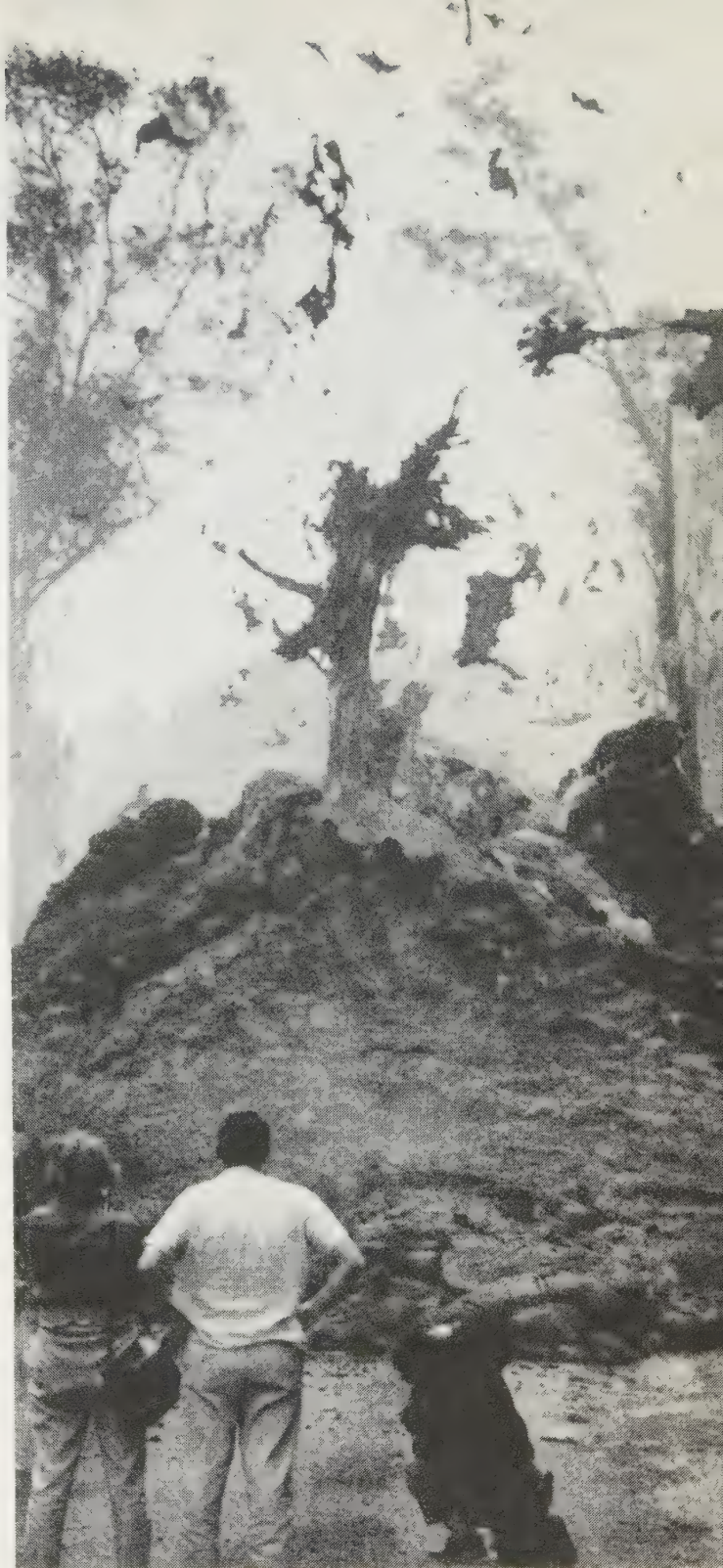
Territorial government expenditures for the fiscal year 1954-55 amounted to \$62,627,496; the bonded indebtedness of the territory was \$47,875,000.

The net assessed valuation of real property was \$676,100,000 for the calendar year 1955; the average, unweighted rate of real property tax was \$17.71 per \$1,000. For the fiscal year 1954-55, territorial general revenues were \$57,433,917.

Production.—Sugar is Hawaii's principal industry and the value of 1,177,347 tons of sugar produced in 1954 was approximately \$141,000,000, including the value of by-products. About 220,138 ac. were utilized for sugar cane production. In 1953-54 pineapples were grown on 73,200 ac. of land to produce a pack of 29,411,000 cases of canned fruit and juices valued at more than \$108,000,000. The 1953-54 coffee crop was 8,264,000 lb., valued at \$5,537,000. The value of fruits, vegetables and other commercial crops produced in 1954 was about \$11,974,000, while the value of livestock and poultry products was \$24,763,000. During the calendar year 1954-55, the commercial fish catch totalled 19,245,366 lb., valued at \$3,575,253.86. (S. W. K.)

Mineral Production.—The following table shows the tonnages and value of those mineral commodities produced in Hawaii in 1952 and 1953 (preliminary) whose value exceeded \$100,000.

Mineral Production of Hawaii				
	1952		1953	
	Quantity	Value	Quantity	Value
Gold	8,894	\$ 240,786	7,431	\$ 223,575
Copper	705,994	1,545,301	1,518,649	2,918,423
Other nonmetals		161,913		190,002
Total		\$1,948,000		\$3,332,000



ERUPTING CONE BLOWING LAVA high into the air during the volcanic activity on the slopes of Mt. Kilauea, Hawaii, in March 1955

Hay and Pastures. U.S. hay crops in 1955 reached a record total of 109,908,000 tons as compared with 104,380,000 tons in 1954 and an average of 102,199,000 tons for 1944-53. The 74,667,000 ac. devoted to hay were about average, but 2.6% more than in 1954. The average yield of 1.47 tons per acre was high compared with 1.43 tons in 1954 and 1.38 tons per acre for 1944-53.

The 52,703,000 tons of alfalfa hay was by far the largest on record; Wisconsin was the leading producer (5,142,000 tons), followed by California (4,884,000 tons) and Minnesota (4,235,-

ooo tons). The average yield of 2.10 tons per acre was slightly below 1954 or the average. Quality was generally high. Clover and timothy hay amounted to 26,731,000 tons as compared with 27,579,000 tons in 1954 and an average for 1944-53 of 31,115,000 tons. An average yield of 1.48 tons per acre was well above 1954 or average, but only 18,064,000 ac. were harvested as compared with 19,312,000 ac. in 1954 and 22,097,000 ac. average for 1944-53. The 13,404,000 ac. of wild grass cut for hay yielded about three-quarters of a ton per acre, or 9,939,000 tons, as compared with 10,184,000 tons in 1954 and 12,367,000 tons average 1944-53. Lespedeza, grown primarily in the southeast, recovered from a severe spring freeze to yield 1.13 tons per acre and a total crop of 4,875,000 tons as compared with .82 ton per acre and 3,052,000 tons in 1954.

The carry-over of hay from previous crops was estimated at 14,797,000 tons, slightly less than in 1954. The average price to producers of all baled hay in September was \$20.30 per ton as compared with \$22.00 one year earlier.

Pasture.—The 55% of the total land area of the U.S. which is devoted to pasture and grazing, a large factor in livestock feeding and total feed requirements, made a slow start in 1955. The western area, in particular, was at an extremely low early level; with improved weather and rainfall after May 1, there was great and general recovery to a much more favourable condition in July than existed a year earlier. August weather resulted in sharp deterioration of pasture conditions in the upper Mississippi valley and the Great Plains. Autumn drought-breaking rains improved the situation to a level higher than in the two previous years, but nevertheless it continued sharply below average. Studies indicated that green-chopping, sometimes called zero-grazing or soiling (bringing the pasture to the livestock), resulted in forage yields about double those from grazing.

Hay and Pasture Seeds.—Seed production in 1955 was moderately abundant; carry-over stocks from prior crops of 36 legume and grass seeds totalled 202,254,000 lb. on June 30, 13% less than a year earlier but 63% above the 1946-50 average. Nevertheless, supplies of some types were inadequate, particularly if millions of acres diverted from other crops should require seeding. Alfalfa seed, forecast at 213,656,000 lb., was a new record both in regard to yield per acre (158 lb.) and the 1,354,800 ac. harvested. Seed prices were lower in 1955 than in 1954 for a majority of seeds.

Extensive amendment of the Federal Seed act regulations was proposed. (J. K. R.)

Health, Education and Welfare, U.S. Department of: see DRUG ADMINISTRATION, U.S.; EDUCATION; PUBLIC HEALTH SERVICE, U.S.; SOCIAL SECURITY.

Health, Industrial: see INDUSTRIAL HEALTH.

Hearing. During 1955 there were known to be more than 100,000 totally deaf people in the United States, of whom 51.3% were males and 48.7% were females. About 10,000,000 people had hearing losses of sufficient degree to need some remedial measures.

Between 3,000,000 and 5,000,000 school children had significant hearing disabilities. Five per cent of all school children had sufficient hearing loss to be of educational significance, and 2% of these were of great enough degree to be considered a handicap. It was believed that about half would respond to medical treatment. There were 27,483 deaf children receiving special education in schools and classes of the United States.

In 1955 there were 79 public residential schools, 181 public day schools and 50 denominational and private schools for the deaf. There were also a great many classes within the regular public schools for children with hearing losses. Every state in



COMBINATION HEARING AID AND GLASSES marketed by a New York firm in 1955. Equipment was imbedded in clear plastic frames for the photograph; in actual use, all of the hearing device is concealed except the small ear plug

the country had provision for educating deaf children either at a state-operated school or by agreement with an adjoining state.

Great impetus had been achieved in the development of centres throughout the country to assess hearing problems and attack them. In 1954 there were approximately 140 of these centres, either under the direction of a qualified otolaryngologist or in some way associated with one or more competent practitioners. All had audiological equipment for accurate testing the degree of hearing loss, and advisers for the proper fitting and use of hearing aids or comparable available types of amplification.

By 1954, the general problem of hearing loss attributable to noise exposure was at a point where the many elements of society involved could hope to reach some common ground. Much attention was being given to the complex problem raised by the noise hazard by medical societies, standards committees, insurance carriers, industrial hygienists and safety engineer societies, state departments of labour, noise abatement societies, acoustical and engineering societies, industrial accident commissions and legal and legislative groups.

The essential attitude was one of seeking information on which to base a reasonable solution.

Certain handicaps were imposed by lack of appropriate information. Many years before, physicians had called attention to the relationship between certain trades and the incidence of hearing loss in members of those trades. The peculiar difficulties imposed by the measurement of the quantities involved delayed the delivery of accurate and quantitative information until recently. It was virtually impossible to deal with the problem without modern vacuum-tube equipment, such as the sound level meter and analyzer and the audiometer.

The following three aspects of this problem were receiving attention in 1955: (1) the determination of onset and rate of progression in hearing loss resulting from industrial noise; (2) the study of the characteristics of efficient ear protectors; (3) the detection of the individual who is hypersusceptible to noise-induced hearing loss.

The existing methods of determining percentage of hearing loss were not entirely satisfactory and considerable time had been spent in developing new methods. Progress also was made

the diagnostic implications of the functional hearing tests. Recruitment and diplacusis, the inclusion of two sounds in place of one, were found to be present in cochlear disease and absent in neural disease. Exceedingly poor speech intelligibility was found in impairments resulting from tumours of the eighth nerve.

The development of the Bekesy audiometer facilitated the measurement of threshold fatigue and of recruitment.

Much was done to aid patients with otosclerosis, which is the formation of additional bone in the capsule of the labyrinth of the ear, thus reducing the transmission of sound. The fenestration operation had completely rehabilitated great numbers of those having this type of hearing loss. The operation had developed into a delicate procedure to create a new window through which sound passes from the middle to the inner ear. In most cases the patient's hearing improved to a level of practical serviceability after a fenestration operation, making a hearing aid unnecessary.

In a few cases the hearing sensitivity remained unchanged, and in others hearing retrogressed, because of the ravages of age on the ear tissue and the natural, predestinate degeneration of the hearing nerve.

Another operative procedure for otosclerosis was revived by Samuel Rosen in 1952. In performing this operation, the stapes is exposed by turning down a flap of the tympanic membrane. Under magnification with special instruments an attempt is made by proper pressure applied at the correct area on the stapes to free it. The deposit which binds it tight must be broken up, thus permitting the stapes to vibrate again. This operation had been done previously, and generally speaking the results were not satisfactory.

The use of modern instruments and magnification were largely responsible for its recent success.

An operative procedure known as mobilization had earlier been employed only incidentally in the process of eliminating infection. Stapedectomy was later substituted, but this was abandoned. Mobilization is now done by a number of otologists, but as of 1955 it was still too early to predict the value of the procedure. Otologists reported about 30% of the operative results as being successful. The operation is a delicate procedure and requires more than average dexterity, but is a minor one as far as the patient is concerned. It is done under local analgesia and requires little hospitalization and the patient may usually return to work within a period of 48 hours. Fenestration may still be done if the mobilization operation is not a success. Serious complications are rare.

People with impairments resulting from changes in the tissues of the middle ear usually obtain excellent results with hearing aids. The middle ear changes reduce the mechanical efficiency and mobility of the vibratory structures within the middle ear, leaving the function of the remainder of the hearing mechanism impaired. An effective hearing aid merely delivers sufficient sound pressure to set the inefficient ossicular system in vibration. Unfortunately, many persons with cochlear or neural pathology because of recruitment, diplacusis, auditory fatigue, and severe attenuation of high frequencies which contribute significantly to the perception of certain speech sounds, obtain disappointing results from amplification. However, it must be emphasized that a considerable proportion of patients with less severe cochlear or neural involvements do obtain gratifying results with hearing aids. (See also EAR, NOSE AND THROAT, DISEASES OF.)

(D. LE.)

Heart and Circulatory Diseases.

The year 1955 saw increasing interest in the international epidemiological studies of coronary artery

disease, the major type of heart disease in the United States. Growing awareness was apparent of the prevalence of coronary degeneration as a factor influencing employability of men over 45 years of age, especially in view of the trends of interpretation of workmen's compensation laws.

The influence of tobacco smoking in producing heart and blood vessel disease was hotly disputed. Statistics were presented incriminating cigarettes. Suggestive direct evidence in this problem was offered by J. W. Gofman and his coworkers. They showed by ultracentrifuge studies of the blood serum that regular cigarette smoking is associated with an appreciable elevation of the cholesterol and certain lipoproteins which they incriminated in the causation of coronary artery disease. This effect was greatest in young men, and they stated that this elevation had a prediction of a 40% increase in coronary heart disease mortality in regular cigarette smokers as compared with nonsmokers.

The relatively good prognosis of men disabled by heart disease was shown by the Metropolitan Life Insurance company statistics. If able to return to work after the disabling attack, the majority lived many years. Of those who had a coronary occlusion, four-fifths lived at least five years and more than one-half lived at least ten years.

The causes of congenital heart disease remained obscure, although several were known, such as infection of the mother by virus diseases during early pregnancy. However, in rats, it was demonstrated by a California group that deprivation of pregnant females of the vitamin folic acid for only two or three days during a critical period resulted in offspring with a high incidence of congenital defects, preponderantly of the heart and blood vessels.

Some doubt was cast upon the complete effectiveness of present methods of preventing rheumatic fever following scarlet fever by a report by L. Weinstein, N. H. Boyer and M. Goldfield who followed a series of 110 children treated with penicillin in 1946. They concluded that penicillin therapy of streptococcus pharyngitis in children, even when applied early, may not significantly decrease the occurrence of acute rheumatic carditis. Abnormal electrocardiograms appeared following the original infection in 7.9% of the series, and prolonged conduction from atrium to ventricle or within the ventricle was shown to be an early important evidence of carditis following streptococcal infection. Only this group had rheumatic heart disease seven years later.

The superior effect of treatment of acute rheumatic fever by Cortisone and ACTH as contrasted with salicylates had little statistical support in the joint report from the Medical Research Council of Great Britain and the American Heart Association, but there was a growing clinical opinion that patients treated very early were more likely to escape heart damage.

Cardiovascular surgery continued to develop in technique and in scope. Plastic tubes were utilized to replace arteries and even a section of the aorta in a case of ruptured aneurysm when no graft was available. A white nylon braided shoelace treated to prevent crimping was utilized to replace an artery supplying a leg which was in danger of amputation.

The plastic valve of C. A. Hufnagle was successfully used by him in the aorta to replace the function of an aortic valve of a 17-year-old boy, which had been ruptured by a kick from a horse.

C. P. Bailey and W. Likoff reported advances in methods of introducing artificial valves at the aortic valve itself designed to prevent leakage back through the deformed leaflets.

Dramatic surgical attacks upon badly diseased hearts were made. One in Germany consisted of operation upon three patients with aneurysms of the heart, one of the auricle and two of

the ventricle. Skin from the patient's leg was used as a patch to sew over and around the bulging area of the heart wall.

The first successful operation of dissecting out and removing such a bulging area or aneurysm of the left ventricle following a myocardial infarction was performed by Likoff and Bailey in a 56-year-old man. The operation relieved the congestive failure and the pain of coronary insufficiency.

An unrecognized type of heart failure related to extreme obesity was reported by H. O. Sieker and associates. It was found to be related to respiratory trouble interfering with oxygen exchange in the lungs, producing somnolence, irregular breathing and right heart strain. It is reversible by weight reduction.

In the treatment of hypertension, the drug most widely used was *Rauwolfia serpentina*. R. J. Vakil of India noted that it was mentioned in a Hindu manuscript of 1000 B.C. and had been used by him for the treatment of high blood pressure for about 20 years. Its wide use was evidenced by Vakil's statement that it was said to be prescribed by more than 60,000 physicians, and one manufacturer claimed to have sold, prior to 1954, 98,000,000 tablets of the dried root. (See also RHEUMATIC DISEASES; SURGERY.)

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Hebrew Literature: see JEWISH LITERATURE.

Helicopter: see AVIATION, MILITARY; CIVIL AERONAUTICS ADMINISTRATION.

Highways: see ROADS AND HIGHWAYS.

Hispaniola: see DOMINICAN REPUBLIC; HAITI.

Hockey, Field. The sport continued during 1955 to gain in popularity in the United States following a two-month tour by a squad representing the Irish Ladies Hockey union. Playing in 10 states, the visitors completed their trip undefeated late in 1954. An American squad, led by Capt. Nancy Sawin, paid a return visit to Great Britain late in 1955. Members of the All-America first team, chosen at the annual national tourney at Ann Arbor, Mich., in November of 1954 follow: Joan Schenerlein, Wheeling, W.Va.; Eleanor Pepper, Ambler, Pa.; Ann Volp (captain), Bergey, Pa.; Joan Edenborn, Philadelphia, Pa.; Betty Shellenberger, Germantown, Pa.; Alice Willetts, Swarthmore, Pa.; Pat Nuckols, North Hills, Pa.; Blanche Pendergast, Effington, Pa.; Nancy Sawin, Hockessin, Del.; Mary Fetter, Media, Pa.; and Elizabeth Burger, Farmville, Va.

There was a marked revival of interest in men's field hockey with the result that the Men's National Field Hockey league saw more action in 1955 than it had in many seasons. The Greenwich (Conn.) Academy field was the site of a two-day tourney April 30-May 1 (1955). Scoring victories over Westchester, N.Y. and the Toronto B team in the four-team pool made up of first-day winners, Toronto's A eleven carried off top honours. (T. V. H.)

Hockey, Ice.

Closing the regular season with a nine-game winning streak, Detroit's Red Wings came off the National Hockey league title for the seventh straight time in 1954-55 and went on to retain the Stanley cup, symbol of the world professional championship. The Wings kept the title in the regular campaign after a close race with Montreal, Toronto, Boston, New York and Chicago followed in order of the final standing. The Detroit skaters continued at top speed sweep their semifinal match against Toronto's Maple Leafs, winning by 7-4, 2-1, 2-1, 3-0. Meanwhile Montreal advanced to the final round by eliminating the Boston Bruins, four games to one.

The Stanley Cup final again required the full seven contests. Playing at home on April 3, the Red Wings won by 4-2, as Stasiuk, Marty Pavelich and Ted Lindsay each tallied once in the last seven minutes. Detroit took the second game, 7-1, April 5 as Lindsay accounted for four tallies. The decision of the Wings' 15th consecutive victory in league play and set a record for the National circuit. When the series shifted to the Forum in Montreal on April 7 the Canadiens came back to win 4-2. Bernie Geoffrion proved the big star of the third contest with three goals. The Canadiens then tied the play-offs by winning the fourth encounter, 5-3, after which the action moved to the Olympia in Detroit. There on April 10 the Wings triumphed by 5-1 as Gordie Howe led the attack with two goals. The sixth encounter took place at Montreal on April 14 and the Dominion skaters drew even once more by winning 2-2 as Geoffrion paced the offense with a pair of tallies. Detroit captured the seventh and deciding game on its home ice April 14 to successfully defend the trophy. With Alex Delvec scoring twice, Detroit won by 3-1. Howe accounted for two of the Wings' other tally, giving him a total of nine, a new record for the Stanley cup play-offs.

Geoffrion, with 75 points on 38 goals and 37 assists, gave the Art Ross trophy as the league's top scorer for the regular season, his teammate Maurice (Rocket) Richard being a close second with 74. Richard's chances of capturing the title were hurt when he was suspended for fighting in a game at Boston March 13. The penalty, which barred the idol of Montreal for the rest of the campaign including the cup play-offs, had serious repercussions in a game between the Canadiens and Detroit at the Forum on March 17. Spectators pelted Clarence Campbell, league president, with fruit, programs, overshoes, before and during the game and when a smoke bomb was exploded at the intermission fire department officials ordered the building emptied. The game then was forfeited to the Detroit Wings. Goalie Terry Sawchuk of Detroit won the Vezina trophy given annually to the goalie with the best record. Sawchuk permitted 134 goals while Harry Lumley, Toronto, winner of the previous season, allowed 135. Ted Kennedy, Toronto, received the Hart trophy as the circuit's most valuable player and Alex Smith, Toronto, won the Lady Byng trophy, given to that player who best combines sportsmanship and ability. The J. H. Norris Memorial prize, for the most valuable all-around defenseman, went to Doug Harvey, Montreal, and the Calder trophy was won by Eddie Litzenberger, Chicago, when he was named rookie of the year.

The Pittsburgh (Pa.) Hornets won the final play-offs for the Calder cup in the American league, defeating Buffalo's Bisons 4 games to 2. Pittsburgh reached the ultimate round by beating Springfield (Mass.) 3 games to 1 while Buffalo was eliminated by the Cleveland (Ohio) Barons, 3-1. The Hornets also took first place in the regular league drive. Washington (D.C.) triumphed in the Eastern league play-offs.

The University of Michigan, Ann Arbor, Western conference (Big Ten) champion, took National Collegiate Athletic association honours when it halted Colorado college, 5-3, in the

ound at Colorado Springs on March 12. Harvard beat St. Lawrence, 6-3, for the consolation prize. Harvard had retained the Eastern (Ivy) league laurels earlier with a mark of seven victories and one tie.

The Penticton V's of Canada furnished one of the season's big upsets by defeating the Soviet Union's skaters, defending champions, 5-0, in the final of the world amateur tournament at Garmisch, Ger., in March. Czechoslovakia placed third and the United States fourth. (T. V. H.)

Hoffman, Paul Gray (1891-), U.S. industrialist, was born on April 26 at Chicago, Ill., and studied at The University of Chicago. In 1911 he became a salesman for a Studebaker automobile dealer in Los Angeles, Calif., and later was sales manager and then district branch manager for the Studebaker corporation in that city. After serving in World War I as an artillery officer, he bought the Studebaker retail branch in Los Angeles and in 1925 became vice-president of the Studebaker corporation at South Bend, Ind. In 1933 he and another vice-president successfully reorganized the corporation as receivers, and he was president from 1935 to 1948. One of the founders of the Committee for Economic Development, Hoffman was chairman of that organization's board of trustees from 1942 to 1948. On April 5, 1948, Pres. Harry S. Truman appointed him administrator of the Economic Cooperation Administration, and he supervised the European Recovery program until his resignation on Sept. 30, 1950. Shortly thereafter he was named president of the Ford foundation. One of the earliest supporters of Dwight D. Eisenhower for the Republican presidential nomination, Hoffman devoted much of his time in 1951 and 1952 to advancing the Eisenhower boom. He declined after Eisenhower's victory in the national election of Nov. 1952, however, to serve in the latter's cabinet. On Feb. 1953, he resigned as president of the Ford foundation to return to the Studebaker corporation as chairman of its board of directors. When Studebaker merged with the Packard Motor Car company in 1954, Hoffman was named board chairman of the new company.

dogs: see LIVESTOCK.

Holland: see NETHERLANDS.

Home Building, Federal: see HOUSING.

Home Economics. Membership in the American Home Economics association in 1955 included 1,544 professional memberships, 446 college clubs, 109 home-maker groups and four affiliated foreign associations. The association granted two fellowships for graduate study and 11 fellowships and scholarships to assist students from abroad to study home economics at U.S. colleges and universities.

During the year, the association conducted its annual meeting and exposition and a conference on "Space and Equipment for Home Economics in Higher Education," sponsored in co-operation with the home economics education branch of the office of Education, U.S. department of health, education and welfare.

Home Economics Research.—During the year the U.S. department of agriculture organized its home economics research into three branches, the Human Nutrition Research branch, the Household Economics Research branch and the Clothing and Housing Research branch.

Research in the field of human nutritional requirements continued to contribute information basic in planning nutritionally adequate diets. Completed co-ordinated research under contract with three institutions provided the first metabolic data indicating the amino acid requirements of women. Other studies with laboratory animals showed that the kind of carbohydrate (sugar

or dextrin) in the diet affects amino acid requirements, information basic in planning diets adequate in protein. Progress was also made on studies to determine the influence of fatty acids on the growth and development of children and infants.

A nation-wide food consumption survey covering approximately 6,000 families was undertaken. Data collected included quantities of all food items used during a week in the spring of 1955 and amounts spent by urban, rural nonfarm and rural farm households, classified by family income in four geographic regions.

Two new aids for improving school lunches were produced in co-operation with the Agricultural Marketing service's School Lunch branch and the Fish and Wildlife service of the U.S. department of the interior. One was a set of recipe cards providing more than 400 recipes and much additional information. The second was a food buying guide for type A lunches.

Agricultural Experiment Stations.—The broad scope of the research program at the agricultural experiment stations in the 48 states, Alaska, Hawaii and Puerto Rico in 1955 served many interests of the home and family.

Foods of better quality resulted from research to improve production and marketing practices. New and improved food products were developed, as well as guides for preservation and utilization of foods in the home. Nutrition investigations provided basic information on human nutritional requirements, on the role of nutrients in serving the body's needs, and on the value and interrelationship of different foods in supplying essential nutrients. Studies of farm family spending provided a background toward improving family diets and levels of living at various incomes.

Guides for the improvement of rural housing were developed through researches on space standards and functional designs and arrangements for home storage and activities; construction methods and utilization of materials; farm home utilities; farm home safety; influence of geography and environment on housing design; and housing needs in relation to family composition and economic means.

Research on home equipment design and performance and on work simplification in household tasks provided help in problems of home management. Co-operative regional researches dealt with homemakers' problems in the selection, use and care of clothing.

Home Economics Extension Service.—Approximately 3,453 white and 416 Negro home demonstration agents estimated that their work reached more than 5,736,000 families in 1955. Of these, more than 2,276,000 were farm families, about 1,327,000 were rural nonfarm and 2,133,000 were urban. The number of volunteer leaders actively engaged in forwarding the home demonstration program was 700,000. There were 64,454 home demonstration clubs with a membership of 1,520,900, an all-time high.

Nearly 4,200,000 families were helped to improve their family diets and more than 5,570,000 were assisted with consumer information on agricultural products. The program helped 1,526,000 families to adopt better health and sanitation practices. Families assisted with housing totalled 1,600,000; and those assisted with home furnishings and equipment numbered more than 2,300,000.

The increase in the availability of electricity has meant running water and labour-saving equipment for many farm homes. This has often required redesigned work space, and the kitchen research serves as a basis.

Land-Grant Colleges.—The home economics division of the American Association of the Land Grant Colleges and State Universities gave special attention to research needs in home economics during 1955. The need for more research on aspects of home and family life by all groups concerned with the prob-

lem was studied, as well as the unique responsibility of home economics programs in land-grant colleges for such research. The place of research in the farm and home development program of the extension service received special consideration. The division also centred its attention on the study of the responsibilities of home economics in developing the intellectual potential of women of all ages.

Public Schools and Colleges.—A wide variety of homemaking courses was offered in secondary schools during 1954–55, with approximately 2,400,000 pupils enrolled. Part-time or evening classes for adult homemakers continued to be in demand as a part of the public school homemaking program. Open-house days, homemaking clinics and consultant services were provided in many localities where special adult classes could not be conducted regularly.

Future Homemakers of America and New Homemakers of America, national organizations for junior and senior high school homemaking pupils, celebrated their tenth anniversaries, and membership increased to 461,442. National meetings of these groups stressed ways in which youth could further contribute to better family living. Representatives of both organizations participated in the National Citizenship conference. Throughout the year the F.H.A.-N.H.A. chapters sponsored "Families Together" projects, leadership training conferences and activities to promote international understanding.

Colleges and universities with home economics curriculums reported an enrolment of approximately 69,000 undergraduates, graduates and nonmajors. (See also AGRICULTURAL RESEARCH SERVICE.)

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Home Furnishings: see FURNITURE INDUSTRY; INTERIOR DECORATION.

Honduras. A republic of Central America, Honduras is bounded by Guatemala, El Salvador and Nicaragua. Area: 43,277 sq.mi. Pop. (1950 census): 1,368,605, including approximately 35,000 tribal Indians; (1954 est.) 1,608,000. Capital: Tegucigalpa, pop. (1950) 72,385. Other principal cities are San Pedro Sula, 21,139; La Ceiba, 16,645; Tela, 12,614; and Puerto Cortés, 12,228. Language: Spanish. Religion: predominantly Roman Catholic. President in 1955: Julio Lozano Díaz.

History.—Hondurans seemed ready to admit that Julio Lo-

zano Díaz had led the country during 1955 with a skill which combined political tightrope walking with executive ability. He had assumed power on Dec. 6, 1954 with the title of chief of state, when the indecisive election impasse threatened to develop into internal strife. Previously vice-president under Juan Manuel Gálvez, then acting president when the latter left Honduras on sick leave, Lozano Díaz took control under the Honduran electoral code which endows the incumbent executive with total interim dictatorial authority when congress fails to resolve a presidential contest in which no candidate receives a majority.

Lozano Díaz had been thrust into his position by the struggle for power between Tiburcio Carías Andino, who was backed by the Nacionalista party, and Ramón Villeda Morales, backed by the Liberal party. Carías Andino had ruled the country from 1932 through 1948 and was attempting a comeback to follow the term of his protégé and successor, Juan Manuel Gálvez. Abraham Williams Calderón, who had once been vice-president under Carías Andino, however, also ran as the candidate of his Reformista party and succeeded in drawing sufficient strength from the Nacionalistas to prevent Carías Andino's election. Ballot reform was to have been decided by majority vote, but no candidate qualified, the distribution of votes being approximately as follows: Villeda Morales, 121,000 (about 4,500 short of a majority); Carías Andino, 78,000; and Williams Calderón, 53,000. Carías Andino forestalled the newly elected congress in deciding the election by requiring the Nacionalista members to boycott its meetings, paralyzing congressional action for lack of quorum.

Confronted by this rupture in electoral procedure, Lozano Díaz took complete control, hoping to keep the country at peace until new elections could be held. At first, he estimated that this might take from one to two years, and by Aug. 1955, it seemed likely that he would attempt to resolve the crisis early in 1956. He proposed to hold elections for a constituent assembly which would rewrite the constitution, choose a president and presumably also act as the unicameral congress. For the constituent elections, all male voters were required to register before Oct. 31, 1955, and for the first time, female voters could register voluntarily.

While preparing for the new *de jure* administration, Lozano Díaz secured co-operation by taking members of all three parties into the government. This included the cabinet as well as the member advisory council which was created from the deadlocked congress. This council was comprised of 24 Liberals, 12 Nacionalistas and 12 Reformistas, but as its name suggested, functioned in an advisory capacity only. Labour, which had supported Villeda Morales heavily, was appeased by the decree of a preliminary code, the country's first, granting such concepts as the right to organize, the right to strike and minimum wages. The disastrous strikes of 1954 were not repeated, but the threat of strikes in the banana industry brought a new contract from the Standard Fruit company. The United Fruit company also announced certain new benefits for its workers.

The foreign relations of Honduras were generally peaceful. A border dispute flared with Nicaragua in May but proved to be of little consequence. However, it served as a pretext for President Somoza of Nicaragua to suggest that the two countries should combine to settle all difficulties. He was referring in part to the old dispute involving the area of Mosquitia awarded to Honduras through arbitration by King Alfonso XIII of Spain in 1906. Nicaragua had never recognized this award. Mention of this dispute somehow involved Honduran ambassador to the United States, Rafael Heliodoro Valle, in difficulties with the government in March. The resignation of this scholar-diplomat was much deplored in Washington, D.C., where he had brought substantial recognition to his country in the literary field.

Salvador and Honduras took certain retaliatory trade measures in May, but no further action was reported. Honduras co-operated in the charter meetings of the Organization of Central American States (*q.v.*) which began in August.

Economically, Honduras was still suffering during 1955 from the twin blows of strike and flood which it experienced in 1954. These were added drought in 1955. For the first time since 1950, the Tela Railroad company, a principal United Fruit company subsidiary, did not pay its dividend in June. However, a public works program to cost about \$50,000,000 was being financed by the International Bank for Reconstruction and Development, the United Fruit company had announced a \$30,000,000 expansion program, and a large land reclamation project was about to go into operation in the Sula Valley. Mineral prospecting continued, especially oil exploration, which was beginning on a large scale.

(R. HN.)

Education.—In the 1953-54 school year there were 2,214 public and private primary schools with 4,007 teachers and 117,292 pupils. Secondary, normal and commercial schools had 884 teachers and 6,847 students. The National university at Tegucigalpa had 843 students. According to the 1950 census, 64.8% of those 10 years of age and over were literate.

Finance.—The monetary unit is the lempira, officially valued at 49.5 U.S. currency in 1955. Government expenditure in the fiscal year 1953-54 (July 1-June 30) totalled 54,723,291 lempiras; net revenue, 53,668 lempiras. The deficit was financed out of the accumulated surpluses from previous years and by the issuance of bonds. The 1955-56 budget was reported at the equivalent of \$38,000,000. The internal debt was 7,277,224 lempiras on June 30, 1954; there was no external debt. Currency in circulation (June 30, 1955) totalled 37,000,000 lempiras; bank deposits, 29,100,000 lempiras. The cost-of-living index (Tegucigalpa) stood at 152 in Aug. 1955 (1948=100).

Trade and Communications.—Exports during the fiscal year 1953-54 amounted to 133,753,294 lempiras (unadjusted for banana undervaluation); imports were 98,466,668 lempiras. Chief exports were bananas (51%), coffee (19%), silver (7%), lumber (5%) and cattle (1%); important imports included machinery and transport materials, including vehicles (21%), chemical products (15%), textiles (14%) and petroleum products (7%). Leading customers were the U.S. (77%), Canada (7%), Salvador (6%), the Netherlands (5%) and Cuba (2%); leading suppliers, the U.S. (69%), the Netherlands Antilles (5%), Germany (5%), Salvador (3%) and Japan (3%).

Highway mileage totalled 816, confined to the northern banana area. Railway mileage (1952) was 1,124. On Oct. 1, 1954, there were 2,260 automobiles and 3,376 trucks. According to *Lloyd's Register of Shipping*, 10 vessels (100 tons and over) aggregating 438,834 gross tons were registered under the Honduran flag on June 30, 1954. Telephones (Jan. 1954) numbered 7,000, 60% of which were automatic.

Agriculture.—Banana exports in the 1953-54 fiscal year totalled 12,771 stems, of which 9,798,492 went to the U.S. and 1,328,831 to Canada. Other exports in 1953-54 were coffee 159,440 bags of 132 lb. 1; cotton 681 metric tons; coconuts 5,063,956 nuts; copra 519 tons. Coffee production in the 1954-55 season was estimated at 221,000 bags. The (1952) numbered 907,000. Forest exports in 1953-54 included 2,200 bd.ft. of mahogany logs and lumber and 45,542,000 bd.ft. of lumber.

Minerals.—In the fiscal year 1953-54, 5,216.283 troy ounces of silver and 49,516 ounces of gold were exported.

(J. W. Mw.)

Honduras, British: see BRITISH HONDURAS.

Money: see SUGAR.

Hong Kong. This British colony on the southeast coast of China consists of Hong Kong Island and the New Territories (the latter of Kowloon peninsula and numerous islands, leased from China in 1898 for 99 years). Area: colony 36 sq.mi. (Hong Kong Island 32 sq.mi.); New Territories 355 sq.mi. (incl. Lantau Island 58 sq.mi.). Total pop.: (1931 census) 849,751; (1954) 2,277,000. Language: Chinese (Cantonese): approximately 2,277,000. Chief towns: Victoria (cap.), pop. (1955) 767,000; Kowloon about 900,000. Governor in 1955, Sir Alexander Grantham.

History.—A. T. Lennox-Boyd, United Kingdom secretary of state for the colonies, visited Hong Kong in July 1955. On July 1 he announced the extension for two years of the term of office of the governor, Sir Alexander Grantham, following representations by all the British and Chinese commercial and political bodies in the colony. This was Grantham's third extension. Investigation of the crash near the Great Natuna Islands,

Borneo, on April 11 of the Air India "Kashmir Princess" led to the almost certain conclusion that a time bomb had been put aboard the plane at Kai Tak airport, Hong Kong. On June 12 the Hong Kong police offered \$100,000 (Hong Kong) for information leading to the arrest of those responsible.

Private building activity, mostly domestic, increased in 1955 by 40% over the preceding year. Another section was added to the huge secretariat. More than 130,000 squatters had now been resettled, more were currently being rehoused in seven-story concrete blocks at the rate of 5,000 squatters a month. In two years no more flimsy, inflammable squatters' huts would be left. A low-cost housing society was building 2,000 flats for 16,000 manual and clerical workers, on the North Point waterfront.

The entrepôt trade with China still suffered acutely from the embargoes and the diversion of Chinese commerce to Soviet bloc countries. But compensation was afforded by the great success and expansion of local industry which in 1955 provided 30% of the total exports. Cargo tonnages handled at Hong Kong in 1954 were up by 150,000 tons from 1953. But value of trade was 11% lower. However, at the end of the first quarter of 1955 trade was up 12½%, compared with the same period of 1954. For the first time since the rehabilitation of the colony after World War II, the government budgeted for a deficit. Expenditure was rising far more rapidly than revenue, largely because of the great public works building expenditure.

The elaborate tomb of a Chinese country gentleman of some time between A.D. 220 and 618 was unearthed in Kowloon. It had three chambers, one with hemispherical ceiling, and a T-shaped antechamber.

(W. V. Pl.)

Education.—Schools (1953-54): 1,106. Pupils: primary 170,800; secondary 42,700. Teachers' training colleges 3, students 233. University of Hong Kong (1954-55): students 863, academic staff 130.

Finance and Trade.—Monetary unit: Hong Kong dollar, valued in 1955 at 17.5 U.S. cents. The following budget figures are in Hong Kong dollars (1953-54 actual; 1954-55 est. in parentheses): revenue \$396,881,966 (\$389,480,000); expenditure \$355,407,770 (\$388,262,050). Foreign trade (1954): imports £215,000,000; exports and re-exports (excluding bunkers) £151,000,000. Main sources of imports (1954): China £43,200,000; U.K. £23,920,000; U.S. £18,240,000; nonsterling O.E.E.C. (Organization for European Economic Cooperation) countries £43,428,000; Malaya £10,116,000; other Asian and African countries £44,880,000. Main destinations of exports (1954): China £24,480,000; Malaya £20,040,000; nonsterling O.E.E.C. countries £21,012,000; U.K. £10,188,000; U.S. £9,132,000; other Asian and African countries £46,440,000. Main exports: entrepôt trade, chiefly textiles.

Honours and Awards: see AMERICAN LIBRARY ASSOCIATION; ANTHROPOLOGY; ART EXHIBITIONS; GEOGRAPHY; LIBRARIES; LITERARY PRIZES; MINERALOGY; MOTION PICTURES; NOBEL PRIZES; PULITZER PRIZES; RADIO AND TELEVISION; ROMAN CATHOLIC CHURCH; SOCIETIES AND ASSOCIATIONS, U.S.; THEATRE; etc.

Hoover Commission. The Commission on Organization of the Executive Branch of the Government, popularly known as the Hoover commission because its chairman was former Pres. Herbert Hoover, was created under an act unanimously adopted by both houses of congress and approved by Pres. Dwight D. Eisenhower on July 10, 1953. It concluded its work on June 30, 1955, after having been granted an extension of one month because of inability to complete its assignment by the time limit set in the original act, which was May 31, 1955.

The results of the commission's studies and appraisals were embodied in 19 separate reports. These reports contained 314 recommendations designed to reduce the cost of government operations, to discontinue unnecessary government activities, to end duplication and overlapping, to bring about such changes in government policy as are deemed to be in the public interest, and to make the federal departments and agencies generally more serviceable to the public.



"ONE BABE THAT'S REALLY LOST IN THE WOODS," a cartoon of 1955 by Holland of the *Chicago Tribune*

Chairman Hoover in the commission's final report to congress on June 29, 1955, pointed out that the problems considered "have by no means been purely financial" and that, broadly speaking, the following six objectives were sought:

- To preserve the full security of the nation in a disturbed world.
- To maintain the functioning of all necessary agencies which make for the common welfare.
- To stimulate the fundamental research upon which national security and progress are based.
- To improve the efficiency and eliminate waste in the executive agencies.
- To eliminate or reduce government competition with private enterprise.
- And, perhaps the most important of all, to strengthen the economic, social and governmental structure which has brought us, now for 166 years, constant blessings and progress.

The first Commission on Organization of the Executive Branch of the Government, of which Hoover also was the chairman, was created by congressional act of July 7, 1947. That commission concerned itself chiefly with reorganization of departments and agencies and their relations with each other. Its proposals were directed "to removing the roadblocks to more effective organization and the reduction of expenditures."

The second commission "dealt more extensively with the functional organization of the executive branch and with questions of policy" than did the previous commission. This was in accordance with the wider authority granted in the 1953 act and with the expressed wish of congress. That act directed that the commission "study and investigate the present organization and methods of operation of all departments, bureaus, agencies, boards, commissions, offices, independent establishments and instrumentalities of the Government, except the Judiciary and the Congress of the United States, to determine what changes therein are necessary in their opinion to accomplish the purposes set forth . . ."

The second commission was also directed by congress to "submit interim reports at such time, or times, as the commission deems necessary" and was authorized to propose "such constitutional amendments, legislative enactments and administrative actions as in its judgment are necessary to carry out its recommendations." The commission did not propose any constitutional amendments, although it did recommend various legislative remedies. It had occasion frequently, as its reports and recommendations were made public and provoked con-

trovery, to draw attention to the wide scope of its authority as expressed in the act.

For the investigative phases of its work, the commission created "task forces" or study groups, composed of eminent citizens with experience in government, business, the professions and academic fields. Among the members of these task forces were many who had had experience in the executive agencies of government, including the military establishment.

In the course of their work, the commission and its task forces inquired into 17 functional activities. Of the 64 federal executive agencies, 60 were studied. The agencies examined accounted for 95% of the expenditures in the executive branch of the federal government.

The recommendations of the commission did not necessarily coincide with those of the task forces. Aside from the facts, information and conclusions submitted by the task forces, the commission in arriving at its own recommendations drew upon the experience and knowledge of its individual members, as well as upon the results of independent investigations by the commission's staff.

Reports were submitted by the commission to congress on the following subjects:

Personnel and civil service; paperwork management; federal medical services; federal lending, guaranteeing and insurance agencies; transportation; legal services and procedure; use and disposal of federal surplus property; subsistence services (food and clothing); business enterprises in competition with private industry; depot utilization (warehousing and storage); research and development in the government; overseas economic operations; real property management; budget and accounting; business organization of the department of defense; intelligence activities; and water resources and power.

Chairman Hoover estimated that savings sufficient to balance the federal budget and to permit a reduction in taxes could be realized through the adoption of the commission's recommendations. (The federal budget was out of balance by nearly \$4,000,000 at the end of the fiscal year on June 30, 1955.) The task forces which studied the various executive departments estimated potential annual savings at more than \$8,500,000, which admittedly contained some duplication. The return from \$10,000,000,000 to \$15,000,000,000 in capital funds to the treasury could be accomplished, according to unofficial estimates based upon commission and task force reports, through the liquidation of unnecessary agencies, the disposal of surplus personal and unneeded real property, and the recovery of government's investment in various federal agencies.

"The primary purpose of the Commission," it said in its final report to congress, "was to recommend methods by which savings could be made in the expenditures of the executive branch without injury to the security or welfare of the country." Concern for the national interest pervaded the entire series of reports. The commission also sought to eliminate any suggestion that meritorious governmental activities or services, for which there was a demonstrated need, be eliminated. The commission did, however, recommend the elimination of nonessential government activities of various types, and the substitution of private enterprise for government enterprise where the former can perform a service or a function more efficiently and at less cost.

The commission and its task forces drew attention to high subsidies in various government enterprises and recommended that such subsidies, except where clearly in the national interest, be discontinued, or be fully disclosed to the public. The commission repeatedly in its reports expressed disapproval of conditions under which the general taxpayer is levied upon to pay for special benefits to a fraction of the population. Except

what was characterized as "gold-bricking," this criticism, however, was not directed toward the benefits and privileges allowed to war veterans. The commission urged that where government competes with private business it impose charges sufficient to cover true costs.

Almost half the recommendations submitted by the commission would not require congressional action. They could be put into effect by the executive departments. An extensive program of executive action on these recommendations was initiated. About 50 identifiable administrative recommendations were adopted by various departments on their own initiative within a short time after the commission submitted its reports. A number of anticipated recommendations were effectuated while they were being discussed by task force members with executive departments.

More than 175 bills relating to the commission's various recommendations were introduced in congress before that body adjourned in August. Bills implementing various recommendations were expected to receive active consideration at the session beginning in Jan. 1956.

Clarence Francis, chairman of the Citizens Committee for the Hoover Report, reported the results of an analysis of the commission's recommendations, saying (Aug. 24, 1955) that the "controversial aspects of the program can easily be exaggerated. . . . There is very general support for, and no known opposition to, 194 of them," he said. "There is general support for, and mild opposition to another 75. The remaining recommendations have drawn strong opposition, but they are also warmly supported in other quarters."

Chairman Hoover in a statement June 30, 1955, the day the commission ceased to exist, described the complexity of the federal government's activities in the following language: "The Federal medical services are carried on by 26 different executive agencies; legal services by 54 different agencies; research and development by 29 agencies; lending, guaranteeing and insuring by 104 different agencies; transportation by 22 agencies; activities in competition with private enterprise by a dozen agencies, and so on."

"A large part of our wasteful methods in the government arise," Hoover said, "from systems of administration which were efficient enough before the fabulous growth of the federal executive branch by about 14 times the size of 25 years ago. Some of these faulty systems are due to obsolete legislation which obstructs progress. Some are due to the tenacity of government agencies to the idea that their empires are sacrosanct. Some are due to the pressure groups that profit from the present set-up of these agencies and resent all change. The problems we deal with are mostly beyond the remedy of any single official. And I may say at once that there are many able and dedicated officials in government who are struggling to unwind these tangles."

Under the act creating the commission and defining its duties, the following members were appointed:

By the president—Herbert Brownell, Jr., attorney general of the United States; Arthur S. Flemming, director of Office of Defense Mobilization; James A. Farley, former postmaster general of the United States; Herbert Hoover, former president of the United States.

By the president of the senate—the then Sen. Homer Ferguson (resigned April 4, 1955); Sen. Styles Bridges (succeeded former Senator Ferguson April 4, 1955); Sen. John L. McClellan; Solomon C. Hollister, dean of the college of engineering, Cornell university; Robert G. Storey, dean of the school of law, Southern Methodist university.

By the speaker of the house—Rep. Clarence J. Brown of Ohio and Rep. Chet Holifield of California; Joseph P. Kennedy,

former ambassador to Great Britain, and Sidney A. Mitchell, who was the executive director of the first Hoover commission.

The commission comprised seven Republicans and five Democrats. The notation was made in the final report to congress that the commission "never once divided upon party alignment." (See also CIVIL SERVICE.) (E. LY.)

Hormones: see ENDOCRINOLOGY.

Horse Racing. Nashua, bay colt from the Belair Stud stable of William Woodward, Jr., gained laurels as top three-year-old of 1955 and clinched honours as "horse of the year" by defeating Swaps, pride of the west, in a match race at Chicago, Ill., on Aug. 31. Nashua, champion of the east, was ridden by Eddie Arcaro and at the end of the 1¼-mi. run was 6½ lengths ahead of Swaps, owned by Rex C. Ellsworth. Each horse carried 126 lb. in the \$100,000 winner-take-all contest. Willie Shoemaker was aboard Swaps, who entered the race with eight straight victories as a three-year-old. Nashua had a record of eight triumphs in nine starts, having lost to Swaps in the Kentucky Derby. The Ellsworth colour-bearer injured his right front foot in the match race and was retired for the balance of 1955. Nashua went on to win the Jockey club Gold cup at Belmont Park, Elmont, N.Y., on Oct. 15. Winning \$52,850 in the Gold cup, Nashua raised his earnings to \$945,415, a total surpassed only by Calumet farm's Citation, who won \$1,085,760. Nashua suffered his second setback of the campaign on Sept. 24 when he ran third in the \$106,700 Sysonby stakes at Belmont Park. The King ranch's High Gun took that event by a head from Jet Action.

Sunny Jim Fitzsimmons, 81-year-old dean of trainers, who handled the Belair string, including Nashua, and the Wheatley racers, was among the year's top trainers. Arcaro, with numerous stake victories, was leading jockey in money earned while Willie Hartack, with more than 375 winners early in November, was far ahead in number of victors ridden.

Highlights of some of the major U.S. races of 1955 follow:

Kentucky Derby.—Swaps, ridden by Shoemaker, defeated favoured Nashua by 1½ lengths in the blue-ribbon classic before 100,000 at Louisville, Ky., on May 7. The winner paid his backers \$7.60 for \$2. Third money went to John W. Galbreath's Summer Tan. Swaps earned \$108,400.

Preakness.—Nashua set a Pimlico record of 1 min. 54.6 sec. for 1⅜ mi. in winning the 79th running of the stakes at Baltimore, Md., on May 28. In giving Jockey Arcaro his fifth Preakness triumph, Nashua defeated Mrs. Marion du Pont Scott's Saratoga by a length, with Clifford Moer's Traffic Judge third.

Belmont Stakes.—The 87th running of this classic at Belmont Park on June 11 resulted in an easy triumph for Nashua and Arcaro as they took first money of \$83,700. Blazing Count was second and Portersville third.

Dwyer Stakes.—Arcaro rode Nashua to a five-length decision over Saratoga at Aqueduct, N.Y., on July 2.

Arlington Classic.—A 3-10 favorite, Nashua was extended to the limit to win the \$148,500 race at Arlington Park, Chicago. Arcaro got his mount home with only a half length to spare over Traffic Judge.

Wood Memorial.—Nashua beat Summer Tan by a neck in the \$111,700 event at Jamaica, N.Y. Ted Atkinson rode Nashua, who won \$75,100.

Flamingo.—Arcaro and Nashua survived a claim of foul to win the \$141,800 Flamingo at Hialeah Park, Miami, Fla. Saratoga was second and Cup Man third. The victor's reward was \$104,600.

Florida Derby.—Nashua, with Arcaro aboard, defeated Blue Lem by only a neck in the \$148,750 race at Gulfstream Park, Hallandale, Fla. The event, run over a sloppy track, added \$100,000 to Belair's earnings.

Santa Anita Derby.—Swaps scored a half-length victory over Jean's Joe in this \$137,500 race at Arcadia, Calif. Johnny Longden was up on the victor.

Californian.—The Kentucky Derby victor set a world mark of 1 min. 40½ sec. for 1⅜ mi. on June 11 at Hollywood Park, Inglewood, Calif. Ridden by Dave Erb, Swaps defeated Determine to earn \$63,700.

Westerner.—Swaps took the \$57,750 race at Hollywood Park, by six lengths.

American Derby.—Swaps beat Traffic Judge by a length in the \$146,425 test at Washington Park, Chicago. In his debut on a grass course, Swaps tied the American turf mark of 1 min. 54½ sec. for 1⅜ mi.

Belmont Futurity.—Nail, owned by Mrs. A. A. Bigelow of Palm Beach, Fla., took \$100,425 of the purse of \$125,125 at Belmont. Head Man was second.

Gardenia Stakes.—H. E. Jackson's Nasrina won the \$130,300 stake at Garden State Park, Camden, N.J. The winner gained \$87,575 of the world's richest purse for two-year-old fillies.

Hawthorne Gold Cup.—Hasseyampa won the \$94,050 race that marked closing day at Hawthorne track, Chicago.

Ladies Handicap.—C. T. Chenery's Manotick was a surprise winner in the \$62,000 test at Belmont Park.

Trenton Handicap.—Social Outcast set a Garden State Park record for 1 1/4 miles in winning the \$50,000 added event in 2 min. .01 sec.

Gallant Fox Handicap.—Misty Morn took the \$85,550 race by three lengths at Jamaica.

Remsen. Nail won the \$64,425 stake by defeating the 9-2 favorite, Prince John, at Jamaica.

Washington (D.C.) International.—El Chama and Prendase, Venezuelan entries, ran first and second at Laurel, Md. El Chama, owned by Carlos Rincones of Caracas, Venez., finished a head in front of Prendase, carrying the silks of José Siccaldi. Favoured Social Outcast was third. The victor earned \$50,000.

Arlington Handicap.—Hasty House farms' Platan, with Johnny Adams in the saddle, earned \$104,650 by winning at Chicago. The gross purse of \$161,600 made the event the world's richest race on grass. Platan set a new American record of 1 min. 54 3/8 sec. for 1 1/8 mi.

United Nations Handicap.—Mrs. H. L. Nathenson's Blue Choir won the \$104,600 turf event at Atlantic City, N.J.

Garden State Stakes.—The richest purse in the history of the sport was won on Oct. 29 when the Elmendorf farm's Prince John was victor at Camden, N.J. Jockey Angel Valenzuela rode the 24-1 shot to a nose victory over C. V. Whitney's Career Boy. The event had a gross purse of \$282,370 of which \$157,918.50 went to the winner.

Temple Gwathmey Handicap.—The world's richest jumping race, grossing \$57,300, was taken by Neji at Belmont. Carrying the top weight of 167 lb. that included Frank (Dooley) Adams, number one steeplechase rider, Neji brought his year's earnings to \$91,405.

San Fernando Stakes.—Poona II, ridden by Shoemaker, was first at Santa Anita, setting a world turf record for 1 1/8 mi. of 1 min. 40 3/8 sec.

Widener.—Surviving a claim of foul, Hasty Road won the \$132,800 Widener at Hialeah. He earned \$95,600 in leading Capeador by a neck, with Social Outcast third.

Santa Anita Handicap.—Shoemaker and Poona II teamed to capture the \$140,300 contest.

Swift Stakes.—Nance's Lad, owned by H. A. Dabson, scored one of the year's major surprises by winning at Belmont. Boston Doge met his first setback in 11 starts when he ran third in the seven-furlong sprint. Informant was second.

Washington Park Handicap.—Jet Action, with Shoemaker up, was first in the \$152,950 race at Chicago.

Washington Park Futurity.—Swoon's Son, owned by E. G. Drake, won the \$147,845 stake for his sixth straight victory and became the leading juvenile money winner of the year with \$221,120.

Arlington Lassie.—Judy Rullah took the \$95,505 stake for a fourth straight triumph.

Sunset Handicap.—Social Outcast won the \$110,500 race at Hollywood Park.

Chicagoan.—Honey's Alibi, owned by H. M. Warner, won the first running of the \$62,500 Chicagoan at Washington Park.

Arlington Futurity.—Swoon's Son took the \$144,580 race by three lengths.

Delaware Handicap. Parlo, a four-year-old miss, won the richest race in the world for fillies and mares on July 2. Parlo took \$99,900 of the \$151,500 purse.

Hollywood Gold Cup.—King ranch's Rejected beat Alidon by a nose with Determine third, in the \$137,100 race.

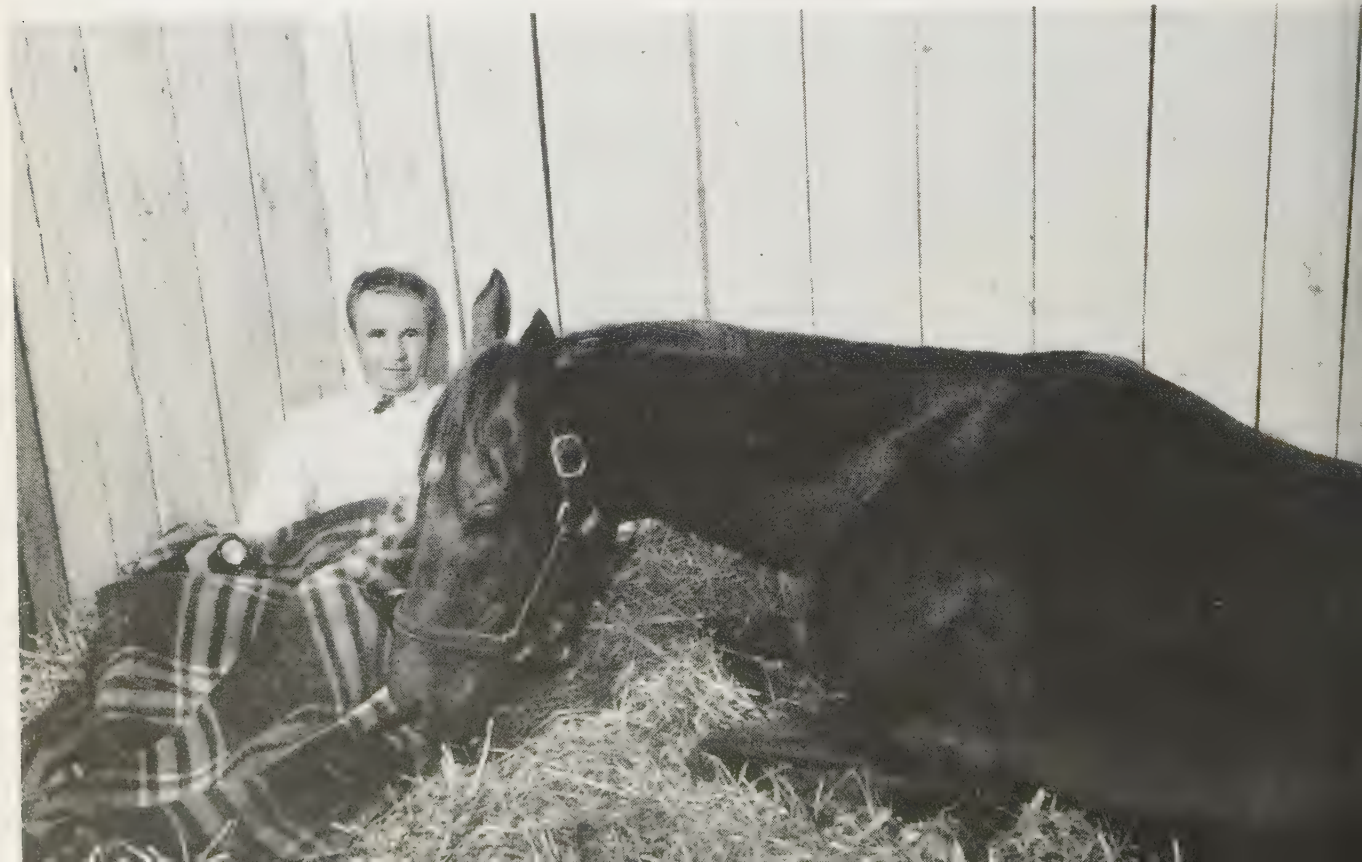
Harness Racing.—Scott Frost from the Shafter (Calif.) stables of Sol Camp became the first winner of the sport's triple crown by taking the Hambletonian, Kentucky Futurity and Yonkers Futurity. The nation's leading three-year-old trotter driven by Joe O'Brien, captured the 30th running of the Hambletonian at Good Time Park, Goshen, N.Y., in straight heats on Aug. 3. The race grossed \$86,863.32, with the winner taking \$51,075.63. Scott Frost took the \$73,840 Yonkers (N.Y.) Futurity, richest night race of the sport, on Sept. 1. Defeating Galophone, the victor earned \$36,550.80 and set a one-year earnings record for a harness racer, bringing his total to \$119,651.80. Scott Frost added to his winnings on Oct. 6, taking the \$62,700 Kentucky Futurity at Lexington.

Quick Chief, owned by John Froehlich of Brookville, N.Y., won the Little Brown Jug race that grossed \$66,683 at Delaware, O., and was first in the \$71,040 William H. Cane contest at Yonkers (N.Y.) raceway. Adios Harry, owned by J. Howard Lyons of Greenwood, Del., and Adios Boy, property of the estate of J. S. Turner, Sr., of Nassawadox, Va., were other prominent racers during the year.

A record total of \$500,000 was paid for Adios, 15-year-old stallion, on Aug. 29. The price was four times higher than the previous record paid for a standardbred. Hanover Shoe Farm of Hanover, Pa., owned by L. B. Sheppard, bought the stallion from D. Miller, owner of Meadowlands farm at Meadowlands, Pa.

Halls of Fame.—The new \$300,000 home of the National Museum of Racing was dedicated by Gov. Averell Harriman of New York on Aug. 16. Located at Saratoga Springs, N.Y., site of the 91-year-old Saratoga track, the museum became the second in New York state to represent horse racing, the harness sport.

TRAINER MESHACH TENNEY AND SWAPS prepare to bed down the night before the Kentucky Derby. Swaps beat highly favoured Nashua in the 193 classic, but later lost a match race with the same horse at Washington Park, Chicago, Ill., in August.



Hall of Fame being located at Goshen. Earle Sande, rider of three Kentucky Derby winners, eleven other jockeys and six trainers were named to the Hall of Fame in 1955. Gallorette, second leading money-winning mare of all time (\$445,535), was voted first place in nation-wide balloting to determine America's greatest racing mares. Also named were Twilight Tear, Regret, Top Flight, Miss Woodford, Busher, Beldame, Princess Doreen, Bewitch and Imp. The balloting was conducted by the Delaware Steeplechase and Race association. (T. V. H.)

Canada.—Prior to June 1955 subsection 3 of Section 178 of the Criminal Code of Canada provided that all pari-mutuel betting on horse races in Canada be under the supervision of an officer appointed by the minister of agriculture and that the cost of such supervision be borne by the racing association conducting the race meeting.

In administering this section, the department of agriculture, under whose jurisdiction this duty falls, found that the rising cost of providing supervision was creating a hardship on the smaller racing associations in Canada. For this reason, legislation was enacted at the second session of the 22nd parliament, 1955, which now provides that the person or association conducting a race meeting shall pay to the receiver general of Canada one-half of one percent of the total amount of bets made through the agency of a pari-mutuel system operated under such supervision, on any race run at such meeting.

The moneys derived through this levy would be used to finance the carrying out of the supervision and would enable the department of agriculture to provide a more adequate and uniform supervision on all race tracks. The federal government does not derive any revenue from pari-mutuel betting. A pari-mutuel tax is collected by the provincial government of the province in which the betting is conducted. (J. D. HN.)

Great Britain.—In the National Hunt season for 1954-55, the Champion hurdle was won by Clair Soleil and the Gold cup steeplechase by Gay Donald. The Grand National steeplechase went to the Irish horse Quare Times. T. Molony was National Hunt champion jockey for the fifth time.

The flat racing in 1955 suffered various disruptions—because of the newspaper strike the first month passed in obscurity; the railway strike caused the royal Ascot meeting to be postponed a month and consequently training schedules were dislocated; the unusually fine summer brought hard ground and small fields; and, lastly, the coughing epidemic in August and September was very severe.

The three-year-old filly Meld won the Thousand Guineas, the Oaks and the St. Leger, being the first filly to accomplish such a feat since Pretty Polly at the beginning of the century. The other champion was the three-year-old sprinter Pappa Fourway, who won all his eight races and could stand comparison with the flying Abernant, the greatest sprinter since World War II. Our Babu ran on determinedly to take the Two Thousand Guineas; and the Derby was won by Mme. Suzy Volterra's Phil Drake from Panaslipper and Acropolis. But Acropolis failed only by a head to hold off Vimy in the King George VI and Queen Elizabeth stakes.

The Ascot Gold cup was won by the Italian Botticelli. The Eclipse stakes went to Darius and the Coronation cup to Nartor. Royal Palm took the Nunthorpe stakes; and at Ascot, Camerlane the St. James's Palace stakes, Nucleus the King Edward VII stakes, Elopement the Hardwicke stakes and Prince Earle the Gold vase.

The two-year-old filly Star of India remained unbeaten. P. Smith was champion jockey again. (R. M. GN.)

Horses: see LIVESTOCK.

Horse Shows: see SHOWS.

Horticulture. World horticulture made important advances in 1955. New pesticides and fertilizers and improved methods of applying them proved helpful. Attention was given to killing weed seeds in the ground. Means were found to release nitrogen in the soil gradually. Spraying with planes was stepped up, about 7,000 planes being used in the United States alone.

Marketing of flowers through supermarkets was a trend appearing in Europe, while in Germany automats for vending flowers were noted. A greatly increased sale of flowers in Germany was reported, but the people of the Netherlands bought more flowers per capita than those of any other country, Great Britain coming next and Italy third. The use of plastic pots in place of clay pots was spreading rapidly, especially in Germany. This practice was also making some headway in the U.S., and pointed toward the eventual elimination of clay pots, at least by amateurs.

The British government began an examination of horticultural marketing methods, about which there had been much complaint. An international competition for new irises was founded by the Italian Horticultural society in co-operation with the mayor of Florence. In Australia 95% of the currant crop was set by spraying with hormones. The spraying of corn in Peru was reported to have increased the crop by 400%. The production of vegetables in Haiti was increased 40% through United States help. Iran's pistachio trees, unproductive for 18 years, were reported to have produced \$3,000,000 worth of nuts.

There was, however, another side to the picture. The freeze in April, which completely ruined the peach crop in Georgia, took a heavy toll of gardens throughout the southern states of the United States. Hurricanes brought floods in August which caused enormous losses in the northeastern states, losses of market gardeners in Massachusetts alone being estimated at \$3,000,000. Amateur gardeners and commercial florists suffered great damage. The California flower industry had heavy losses in September, when the temperature remained at more than 100° for seven days. New England suffered throughout the summer from a heavy infestation of Japanese beetles, making the growing of roses and certain other flowers difficult. The U.S.S.R., Bulgaria and Poland were reported to be short of pesticides with which to control insects.

A Better Lawn and Turf institute was organized by seed growers and experiment stations with headquarters in Kansas. The Weed Society of America was formed in Fargo, N.D., with R. H. Beatty as president. Work was begun on the construction of a \$1,000,000 flower market in San Francisco, Calif. The National Council of State Garden Clubs accepted an invitation of the St. Louis Botanic garden to construct a building on the garden's grounds in which to establish its permanent headquarters. The Allied Florists association of Washington, D.C., presented Pres. Dwight D. Eisenhower a complete flower garden covering 840 sq. ft. for his home at Gettysburg, Pa. The garden contained 155 specimen boxwood plants and when finished would be surrounded by a serpentine fence. Richard P. White, executive vice-president of the American Association of Nurserymen, was awarded the George Robert White medal of honour. The New York International Flower show was omitted, but announcement was made that it would be held in 1956 in the huge building formerly occupied by the John Wanamaker store. R. B. Farnham was named director. The building boom in the U.S. caused a heavy demand for nursery stock for new gardens. Few large estates were being planted. Almost 95% of all nursery stock delivered went to home gardeners.

The biennial International Succulent Plant congress was held in London in September with speakers from many parts of the world. The world congress of Interflora was held in Vienna,

Aus., June 4-9, with 300 delegates representing 19 nations. Interflora is the European counterpart of the American Florist Telegraph Delivery association.

Once in five years an international flower show is held at Ghent, Belg. The one held early in May 1955 had a tremendous display and a very large attendance. The 14th International Horticultural congress was held in Scheveningen, Neth., Aug. 29-Sept. 6. There were 894 delegates, representing 63 countries, with 73 from the U.S.

The Netherlands had a good growing year for bulbs, but shipments were about one week late in reaching the United States. New and serious complications arose from the fact that England was now growing tulips in quantity, but was reputed to be sending out smaller bulbs than is permitted in the Netherlands, where ten-centimetre bulbs are the minimum allowed in the trade. It was reported that English bulbs were sent to Canada and reached the U.S. from that country, interfering with the market for guaranteed-size bulbs. Japan also started shipping out tulip bulbs which were undersized, according to the claims of Dutch growers. Paper white narcissi, grown chiefly in France, were in short supply. Shipments of lily-of-the-valley pips from Germany were adequate.

The daffodil crop in the Pacific coast states of the United States was satisfactory.

Cranberry growers in the U.S. found themselves again building up a surplus. The total estimated yield of 1,068,900 bbl. was only slightly less than in 1954. Vegetable and fruit growers in the eastern states had a disappointing season. (See also BACTERIOLOGY; FRUIT; VEGETABLES.) (E. I. F.)

Hospitalization Insurance: see HOSPITALS; INSURANCE.

Hospitals. During 1954 a total of 20,345,431 persons were hospitalized and 3,342,599 infants were born in the 6,970 hospitals in the United States listed by the American Hospital association. An average of 1,342,508 patients and 45,337 newborn infants were cared for in these hospitals every day. In addition, an estimated 65,397,318 persons went to these hospitals for treatment that did not necessitate their remaining overnight.

Comparison of these figures with those of 1953 shows that more persons were receiving medical treatment in hospitals and more babies being born in them than ever before.

Of the 6,970 hospitals, 79% had fewer than 200 beds per hospital and 61% had a bed complement of less than 100. These hospitals provided a total of 1,577,961 beds for the population of the U.S., an average of 226 beds per hospital. This meant that for every 1,000 persons there were 9.8 hospital beds. The majority of the beds were in nonfederal short-term general and special hospitals (35%) and hospitals for mental and nervous disorders (43.8%).

In the nonprofit general hospitals, which provide most of the nation's hospital service, the cost of caring for the patient exceeded what he paid for it by \$1.71 a day. Operating expenses for all such hospitals for the year were \$2,276,457,000, but the patients paid for their care only \$2,106,194,000. The difference was made up by voluntary contributions to these charitable institutions from individuals, foundations and industry and by allotments from city, county and state governments for the care of indigent patients.

Broken down to a daily basis, the cost of caring for the patient in the short-term nonprofit general hospitals averaged \$22.78 according to the annual survey of the American Hospital association. This was an increase of \$1.69 a day over the \$21.09 daily cost of the previous year. Medical advances, however, continued to make it possible to shorten the patient's average

stay in these hospitals from 7.6 to 7.5 days. Thus, while rise in average cost per patient day was 8%, the average cost per hospital stay rose only 6.6%.

One of the major reasons behind the higher cost of hospital care was personnel. Nonprofit general hospitals reported that in 1954 they employed an average of 207 persons for every 100 patients, as compared with 193 the previous year. This resulted in better patient care but also in higher payrolls. Payroll expenses alone took 60% of these hospitals' operating dollars, an increase of 1.4% over the 58.6% in 1953. Higher salaries were also a factor in this.

In spite of the greater number of employees per 100 patients, a shortage of personnel continued to be a major problem of hospitals. Although slightly more students entered schools of nursing, the number was not sufficient to meet the deficit; the estimated 46,000 professional graduate nurses needed to staff the nation's hospitals adequately. (See NURSING.)

Because advancements in medical science are resulting in an older population, attention of the hospital field turned toward care for this group of persons. In 1955 the congress authorized appropriations totalling \$111,000,000 for the hospital construction (Hill-Burton) program. This included \$90,000,000 for basic construction program and \$21,000,000 for hospitals for the chronically ill and impaired, rehabilitation facilities, diagnostic centres or diagnostic and treatment centres and nursing homes.

The sum of \$1,200,000 was allocated for research projects on the effective development and utilization of hospital service facilities and resources.

During 1954 the number of persons in the United States with some type of hospital expense protection increased by 4.3% to a new high of 101,493,000. The hospital-sponsored nonprofit Blue Cross plans, celebrating the 25th anniversary of the payment idea, made payments to hospitals of more than \$76,676,000 in 1954.

The program for accrediting hospitals undertaken jointly in 1952 by hospitals, physicians and surgeons was continued. One objective of this program was to provide the public with information about hospitals that meet minimum standards of good



MOUNT SINAI HOSPITAL, opened at Los Angeles, Calif., in 1955

hospital care. During 1954 the Joint Commission on Accreditation of Hospitals surveyed, on request of the hospitals themselves, 1,376 hospitals. This brought the total of hospitals accredited in the U.S. and Canada to 3,513.

In Sept. 1954 the country's hospitals voted to expand, through their national association, their program of research into more progressive hospital management and operations that would improve the care of the patient. During 1955 the first part of the American Hospital association's expanded program of service to hospitals got underway.

One of the most significant developments in Canada during 1954 was the marked increase of activity in the rehabilitation of disabled persons. The federal government in 1953 added a new grant to the already extensive health grants program. Known as the medical rehabilitation grant, it headed a list of four new ventures in the national health field. The others were laboratory and radiological services grant, a child and maternal health grant and the extension of the hospital construction grant to apply to nursing school facilities located in hospitals or in nurses' residences.

Activity in the mental health field continued in 1954, with the establishment of many new clinics and other facilities for the treatment of mental and nervous disorders. Initial steps were taken to develop uniform standards for psychiatric nursing. During 1953 a Canadian group was organized to assist in and augment the work of the Joint Commission on Accreditation of Hospitals. Two hospital surveyors were engaged early in 1954, as representatives of the doctors and hospitals of Canada, to visit Canadian hospitals. During the year, 155 Canadian hospitals were surveyed.

A total of 1,398 Canadian hospitals were listed by the Canadian Hospital association for 1954. These hospitals had a total of 186,562 beds, of which 47% were in the short-term general and special hospitals, 34% in the mental and allied hospitals and the balance among other specialized categories. The average daily operating cost per patient in the 434 short-term nonprofit general hospitals in Canada was \$14.19. The average stay for patients in these hospitals was ten days. (E. L. Cy.)

International.—The ninth congress organized by the International Hospital federation was held at Lucerne, Switz., in May 1955. The theme chosen for discussion was "Mental Well-being of Patients in the General Hospital." It was decided to arrange a study tour to be held in Ireland in 1956, and for the next congress to be held in Lisbon, Port., in 1957.

Great Britain.—The cost of hospital service in Great Britain for 1954-55 was originally estimated at £321,000,000. A supplementary estimate for England and Wales was submitted in Feb. 1955 providing for a further sum of £2,600,000. The cost for 1955-56 was estimated at £345,000,000.

A *Report on Hospital Costing* was issued by the working party set up by the ministry of health in 1953 to devise a system of costing, with regard to the need to limit to the minimum the cost in money and manpower of introducing such a system. It recommended the gradual introduction of a comprehensive system, starting with the largest general hospitals with an annual expenditure of £150,000 or more.

The minister of health announced proposals for expanding the hospital building program in 1956-57 and 1957-58. New building projects would be started to cost £7,500,000 and £10,000,000, respectively, and £2,000,000 and £4,000,000, respectively, would be provided for replacement of plant. (A. G. L. I.)

Hotels, U.S. Approximately 54 new hotels, valued at \$146,000,000, and representing 10,098 new guest rooms, were built or started in the U.S. during 1954, according to the American Hotel association. This compares with 104 new



FONTAINEBLEAU HOTEL, Miami Beach, Fla., opened in 1955

hotels built in 1953, valued at \$267,700,000, and 97 hotels built in 1952, valued at \$160,000,000.

In addition, approximately 2,450 more rooms were added to existing buildings by U.S. hotels, during 1954.

Hotels completed or under construction in 1954-55 included: the Fontainebleau, Miami Beach, Fla., 554 rooms (\$15,000,000); Hotel Statler, Hartford, Conn. (\$5,500,000); Bal Harbour, Miami Beach, Fla., 260 rooms (\$3,000,000); Hotel DeLido, Miami Beach, Fla. (\$3,500,000); Golden Gate hotel, Miami Beach, Fla. (\$6,500,000); Hotel Riviera, Las Vegas, Nev., 315 rooms (\$3,500,000); Royal Nevada hotel, Las Vegas, Nev. (\$5,000,000); Jackson Hole lodge, Wyo., 330 rooms (\$6,000,000); Casa Blanca, Las Vegas, Nev. (\$3,500,000); the Plainsman, Albuquerque, N.M., 225 rooms (\$2,000,000); Treadway inn, Rochester, N.Y., 140 rooms (\$1,600,000).

In addition, several other major projects were planned or were under construction during 1955, including a \$35,000,000 combined hotel and department store for Denver, Colo., to be built by Webb & Knapp, New York realtors; a \$10,000,000 resort centre for Rangeley, Me., to include 500 cottages and to be built by S. C. Noyes Co., and the Queen Elizabeth hotel, at Montreal, Can., to be built by the Hilton corporation at a cost of \$20,000,000 and scheduled to open in 1957.

Average hotel occupancy during 1954 was 73.7% compared with 75.8% in 1953.

A survey by the American Hotel association indicated that U.S. hotels had spent nearly \$3,000,000,000 in the last five years on modernization and rehabilitation. New hotel facilities for motorists included adjoining parking lots, lighted, paved and fenced-in; adjoining or underground garages, including many with direct entrances to the hotel; and special motor entrances, provided in some cases with separate registration desks and direct elevator service to guest-room floors. Among the special arrangements for family groups were "family units" designed to accommodate as many as four members of a family in beds, cots or cribs; baby-sitting services; special dining facilities for family groups with children; and nurseries equipped with toys and cribs.

According to the 1955-56 edition of the *Hotel Red Book* there were more than 15,582 hotels in the U.S., with a value in excess of \$8,200,000,000 (buildings, furniture, fixtures) exclusive of land. Their 1,640,000 rooms could accommodate more than 2,000,000 guests each night. During the calendar year 1954, the nation's hotels were host to more than 260,000,000 room guests.

Gross sales of the nation's hotels in 1954 were \$2,575,802,000

and were divided as follows: room sales, 44.1%; meals, 34.0%; alcoholic beverages, 13.6%; packaged liquor sales, .8%; other merchandise, 1.6%; space rental to concessionaires, 1.4%; and other, 4.5%.

A "universal type" credit card which enables travellers to charge all normal hotel bills and to cash checks at hotels throughout North America, sponsored by the American Hotel association, is issued by the American Hotel Credit corporation, Greenwich, Conn. Called the Travelcard, it is sold for \$5 to corporations and individuals. More than 53,000 Travelcards were in use by the travelling public during 1955.

Founded in 1910, and official spokesman for the hotel industry, the American Hotel association is a federation of 80 state and regional associations in the United States, Canada, Mexico, Bermuda, Hawaii, Alaska, Puerto Rico and the Virgin Islands. Its membership was in 1955 comprised of approximately 6,000 hotels representing about 75% of the nation's hotel rooms.

(C. A. HH.)

Housing. The U.S. housing market of 1955 was a mixture of boom activity and intimation of decline. The volume of new construction gave every evidence of reaching levels second only to the peak of 1950. Real-estate turnover continued at a brisk rate. Rents and vacancies moved up fractionally and the market generally was characterized by increased competition.

During the first seven months of the year, 922,300 nonfarm dwelling units were started, a number equivalent to an annual seasonally adjusted rate in excess of 1,300,000. Roughly three out of four starts were in major cities and their surrounding suburban areas, while the remainder were located in nonmetropolitan places. About 90% of all new dwelling units were in one-family houses, with 6% in apartment structures of five or more units. Virtually all of the new dwellings were privately financed, with less than 2% in public ownership.

In the early months of the year, inflationary pressures resulting from the record levels of construction began to appear in various sectors of the market. Land prices rose, and construction costs moved upward. Temporary shortages were felt in a number of building materials, notably sheetwork, wallboard, portland cement and certain steel items. Home prices, however, did not rise in any significant degree. Thus, there was a narrowing of the margins between costs and prices and resultant lower profits. Used-home prices were firmer than in the previous year, in part because of the 1954 changes in Federal Housing administration regulations which brought credit terms on existing homes close to those for new. In general, the market became more competitive than it had been in some time.

Government officials were particularly concerned about these developments, especially in view of the fact that the annual rate of construction was about double the rate of new household formation. It was felt that inflationary pressures could be generated by higher prices on scarce building materials put into what might turn out to be surplus houses. In the early spring a cautious step was taken to tighten mortgage credit by requiring that closing costs of home purchases, such as fees for title search and for attorneys, be paid in cash. Previously, a buyer in some instances could include these settlement charges in the mortgage.

Further steps were taken in midsummer, when the credit terms under the government's mortgage guarantee programs were tightened. Veterans administration loans, which previously had required no down payment and could run as long as 30 years, were limited to a 25-year repayment period and required a down payment of at least 2%. Similarly, FHA loans required a 7% down payment on the first \$9,000 of value plus 27% on any amounts above this sum. This compares with 5% and 25% under the previous regulation.

Some observers maintained that this action was to a large extent unnecessary because private lending institutions had imposed restrictions of their own which were more stringent than those established by the government. Moreover, developments in the financial markets seemed to contract the general supply of mortgage funds. In the New York federal reserve district, banks stopped the practice of "warehousing" mortgage loans. Since a good many large builders and even some insurance companies had made use of the temporary warehouse credit until such time as more permanent investors or investment funds were available, the abandonment of this practice influenced the flow of VA and FHA mortgages.

Further contraction in funds available for mortgage purposes resulted from the decline in price and the consequent increase in yield on long-term government bonds. For example, the old series of long-term bonds, the 2.5s of 1967-72, increased in yield from 2.78% in June to 2.98% by midsummer, and the new series, the 3.25s of 1983 and the 3% bonds of 1995, increased in yield from 2.93% to somewhat in excess of 3%. Yields on government bonds approached the levels at which they became competitive with the net return available from home loans—particularly the FHA and VA mortgages.

Aside from any question of comparative yields, declining prices for government bonds always reduce the funds available for mortgage loan purposes. A larger proportion of mortgage funds comes from the liquidation of government bonds held by the major types of financial institutions. In a period of declining bond prices, many of these investors can liquidate only at prices below their acquisition costs. Despite the fact that funds can be reinvested in higher-yield obligations at this time, many lenders are unwilling to show a capital loss on their books. As a result, mortgage money tends to be limited to new savings and to amortization payments.

Vacancy and Withdrawal Rates.—The fear of overbuilding was allayed somewhat by a nation-wide survey of vacant houses conducted by the U.S. department of commerce. The survey revealed that only 2.2% of all dwelling units in the United States were unoccupied and available for sale or rent. In 1950 the comparable figure was 1.6%. Secretary of Commerce Sinclair Weeks, in releasing these figures, maintained the data showed that the demand for housing continued to be strong and that the market was absorbing the near record number of new dwelling units that were being constructed. The national vacancy rate, however, did not necessarily reflect the situation for any given locality. The national figures were averages in which housing shortages in some areas were offset by surpluses in others. The problem thus was to secure an adequate distribution of homes geographically and by price range.

In all, 8% of the total dwelling stock was vacant in April 1955. These included seasonally occupied units (2.6%), units rented or sold awaiting occupancy (0.5%), units held off the market (1.5%) and dilapidated units (1.2%). The remaining 2.2% were for sale or rent. From a market point of view, no significant change in the vacancy picture had occurred between 1950 and 1955.

One of the major reasons that vacancy rates had not risen to any marked degree, despite the decline in net household formation, was to be found in a survey of the bureau of labour statistics which revealed a higher rate of withdrawal of dwelling units from the housing supply. For years analysts had assumed that the replacement market for housing (unlike that for automobiles or other consumer durables) was of little or no importance, and that the principle demand for new construction therefore had to come through additions to households. The findings of the bureau of labour statistics were thus of major significance.

In the cities for which information had been released, 1% or more of the rental units were demolished, condemned or otherwise withdrawn from housekeeping use in recent years. In some cities the rate was as high as 2%. On the basis of these data, rough estimates were made which indicated that 250,000 to 300,000 nonfarm dwelling units may have been withdrawn from the housing supply during each of the last few years. The U.S. Census studies also indicated that the addition of dwelling units to the housing inventory through structural conversions was outweighed by conversion from dwellings to stores or other nonresidential uses, or from small apartments to larger units. Thus it appeared that housing retirements may have accounted for most of the difference between the annual number of new nonfarm households formed and the substantially larger number of some dwelling units built. Unfortunately, withdrawals included many sound houses that were demolished to make way for public improvements or private nonresidential areas such as office and commercial buildings.

Housing Amendments of 1955.—For the fifth consecutive year bitter controversy centred around the annual housing act, and as usual the differences focused on the public housing program. Early in January the president recommended a two-year public housing program of 35,000 units per year. In the course of the year a number of bills were introduced into the houses of congress, some of which provided for no public housing at all, while others authorized as many as 135,000 units per year plus an additional 50,000 for special accommodations for elderly persons. The act, finally passed long after the scheduled adjournment date, provided for a maximum of 45,000 units between the date of enactment and July 31, 1956. Restrictions were removed, limiting new public units to cities with official redevelopment programs (under title i), and units need no longer be programmed only for persons displaced by slum clearance or other governmental activities.

The 1955 act further advanced the slum clearance and urban renewal program by authorizing an increase of \$400,000,000 in capital grant funds to local governments in 1956 and 1957, plus an additional \$100,000,000 to be used at the direction of the president. Loans and advances were now permitted to aid the development of predominantly open land for industrial or other nonresidential use, but capital grants were still not available for such purposes. The local authority was required to determine the necessity for such projects, and loans and grants for such purposes were limited to 2.5% of the gross costs of all other renewal projects in the area.

The Federal Housing Administration's general mortgage insurance authorization was increased by \$4,000,000,000 and a number of specific provisions of the various sections of the act changed. Mortgage insurance ceilings were raised from \$5,000,000 to \$12,500,000 on multifamily rental, co-operative or renewal projects. For the latter two types of projects, the method of valuation for mortgage insurance was changed from "estimated value" to "estimated replacement cost." This substitute could make larger loans possible and thus provide incentive for sponsors to engage in this type of building activity. Other provisions affecting the FHA included the insurance of mortgages on land and utilities in trailer parks, the military housing program and the elimination of the title ix defense housing program established at the inception of the Korean war.

The Home Loan Bank board, formerly one of the major constituents of the Housing and Home Finance agency, was established as an independent body, reporting directly to the president. Its new name was the Federal Home Loan Bank board, a title it bore in previous years.

Improving American Housing Standards.—Despite the fact that new building had continued at extremely high levels during



MODERN APARTMENT HOUSE constructed in 1955 by a Munich, Ger., manufacturing firm for its employees

the postwar period, neighbourhood deterioration and obsolescence of structures had spread in virtually every urban area. It was estimated by the American Council to Improve Our Neighborhoods (ACTION) that of the 1955 nonfarm housing inventory of 42,500,000 dwelling units, 5,000,000 were slums and 20,000,000 required some sort of rehabilitation. This organization calculated that an investment of \$100,000,000,000 was required during the coming decade, over and above the regular current expenditures, to restore American housing to acceptable standards of occupancy and environment. According to ACTION, these funds would be used in a three-pronged attack: "\$40 billion for minimum rehabilitation and upgrading of non-farm, non-slum housing which is below standards of safe, sanitary, and convenient family living; \$50 billion for clearing and replacing the slums which cannot be salvaged; and \$10 billion for local neighborhood improvement of recreation, traffic, and other public services in rehabilitation areas." At the rate of \$10,000,000,000 a year, rehabilitation would constitute less than 3% of the present annual gross national product. Since the proportion of income that the American consumer devotes to housing had declined in recent years, an additional 3% would merely mean a return to a previous level of housing expenditures. The significance of such expenditures was seen in the fact that \$100,000,000,000 represented 40% of the current value of the entire non-farm housing stock.

On the whole, the construction of 1,550,000 new houses a year was required to accommodate the anticipated number of new families and to replace the existing substandard and obsolete houses, according to calculations made by the Twentieth Century fund. It was expected that 1,200,000 would be provided, on

the average, through regular market channels to families with sufficient income to pay the going price, but that 350,000, representing the excess of need over demand, would only be constructed if some form of public subsidy was forthcoming. A public housing program of this dimension was eight to ten times the size that congress had authorized in recent years.

Housing Accommodations in 1955.—A profile of the housing accommodations of the American people in 1955 was revealed in a study sponsored by the federal reserve board. According to the *Federal Reserve Bulletin* for Aug. 1954, the survey indicated that "changes in a family's housing arrangements are associated with changes in the size and composition of the family, in its financial position, in the job location of the breadwinner, and in housing costs. Individual preferences for owning or renting, apart from the type of housing obtained, also appear to enter into consumer thinking about housing." Among the more significant findings of the survey were:

1. The number of families (excluding those on farms) that owned their own homes increased by one-third between 1948 and 1955. In the latter year, 55% of all families were homeowners, compared with 49% seven years earlier. The largest increase in home ownership occurred in the younger families—those headed by persons 25 to 44 years of age.

2. The trend to home ownership had pervaded all sectors of the population. While only 9% of single persons 18 to 44 years of age were homeowners, the survey revealed that 40% of single persons 45 to 64 years old and almost half of the single persons over 65 years of age were in this category.

3. In younger families the incidence of children seemed to be a more important incentive to home ownership than in older families. Among families with heads 18 to 44 years old, 35% of those with no children under 18 were homeowners, while 52%-65% of families with young children owned their own homes. Among the older families (heads 45-65) home ownership was 69%-70% regardless of the incidence of children under 18.

4. Four out of five families found their dwellings fully or "fairly" satisfactory. A larger proportion of homeowners than renters tended to be satisfied with their present accommodations. Surprisingly enough, of the group who lived with relatives (and these constituted 10% of all "spending units"), only 1 in 12 found this arrangement unsatisfactory. This indicated that a negligible amount of housing demand could be expected to come from doubled-up families.

5. Older families tended to occupy larger quarters than younger families. Households whose heads were under 45 years of age averaged one and one-quarter room per person, while families the heads of which were 55 or over occupied more than two rooms per person. It was suggested that there is a tendency to enlarge quarters as the family grows, but that parents tend to retain the additional space after the children leave home.

6. A sharp rise in mortgage debt was associated with the increase in home ownership. Between 1949 and 1955 the number of mortgaged owner-occupied homes rose from 8,700,000 to 13,200,000, the proportion mortgaged jumped from 45% to 54% and the median size of mortgage increased from \$3,000 to \$4,700. The availability of liberal financing terms during the entire postwar period not only seemed to foster the boom in residential construction, but also acted as an inflationary influence on home prices. In view of the volume of new construction, the high rate of turnover, increased loan-to-value ratios and mounting home prices, it was inevitable that aggregate mortgage debt would reach astronomical dimensions. The liberalization of credit was in large measure the result of the expanded insurance and guarantee operations of the Federal Housing administration and the Veterans administration. The survey indicated that approxi-

mately 35% of all home mortgages were under the FHA or programs. (CH. RA.)

Canada.—The volume of housebuilding activity in the first half of 1955 was greater than in the corresponding period of a previous year. Economists agreed that housebuilding was a major factor in the increase in over-all national business activity. The demand for new dwellings, particularly those for home ownership, was at high levels in most areas. Mortgage funds continued in good supply, and there was some reduction in interest rate charged under the National Housing act. Some local and temporary shortages of building materials were reported but, in general, building materials and labour were readily available. However, building costs were, on the average, slightly higher than year before.

In fact, the building cost increases were anxious signs for more farseeing private building contractors, to say nothing of the government's Central Mortgage and Housing corporation. For instance, setting an index of 100 in 1949, all residential building materials had the following price indexes: 1948, 95.5; 1950, 106.4; 1954, 121.7; June 1955, 124.3. Setting an index of 100 in 1949, all construction workers had the following hourly wage-rate indexes: 1948, 95.5; 1950, 105.3; 1954, 139.4; June 1955, 143.1. Composite indexes of costs of building materials and wage rates of construction workers in residential building thus were: 1948, 95.4; 1949, 100.0; 1950, 106.0; 1954, 128.5; June 1955, 131.4.

Total expenditures on new housebuilding, in the period January to June, amounted to \$518,700,000, which was 27% more than in the first six months of 1954. This increase resulted from a 2% increase in over-all building costs and a 25% increase in the volume of activity. Part of the increase in housebuilding activity represented work done on the dwellings started in the latter part of 1954. This showed up in a rise in the number of dwellings completed, from 41,571 in the first six months of 1954 to 52,228 in the first six months of 1955. Toward the middle of the year, however, work done on dwellings started after the beginning of the year was largely responsible for the high volume of activity.

Starts of new dwellings totalled 57,997 in the first half of 1955. This was 25% more than in the corresponding period of 1954, when starts were delayed by a wet spring and by the revision of the National Housing act. Taking account of seasonal factors, the rate of dwelling starts in the first six months of 1955 therefore was 128,000 per year, or 12.8% more than in 1954. Most of the increase was in single-family dwellings, which reflected the new higher home ownership trend. (C. CY.)

Other Countries.—The total number of new permanent dwellings in England and Wales built during the 12 months ended June 30, 1955, was 300,211, a figure which fell just short of the postwar record production of 308,952 new permanent dwellings for the calendar year 1954. In spite of a decrease in the numbers of completions toward the end of the 12 months ended June 30, a slight increase in the numbers under construction at that date might have meant that the government's target figure of 300,000 houses a year would be maintained in 1955. Altogether, 2,078,505 new permanent dwellings were provided in England, Wales and Scotland under the postwar program. June 30, 1955, and 2,541,507 family units of accommodation were provided, including conversions and adaptations of existing buildings, repair of unoccupied war-damaged buildings and temporary houses.

During 1954 the minister of housing and local government had introduced a guarantee scheme to assist those with limited capital to purchase inexpensive houses on mortgage. Under the scheme, the ministry of housing, the local authority and

Dwellings Completed in Western European Countries and the United States in 1954

Country	Population*	Dwellings
Austria	6,919,000	45,000†
Belgium	8,798,000	43,000†
Denmark	4,372,000	23,300
Finland	4,144,000	31,000
France	42,774,000	162,000
German Federal Republic	49,148,000	541,000
Greece‡	7,865,000	48,300†
Ireland	2,961,000	15,000

Country	Population*	Dwellings
Italy	46,738,000	175,000
Netherlands	10,488,000	68,500
Norway	3,375,000	34,700
Portugal§	8,621,000	16,900
Spain|| . . . . .	28,693,000	26,900
Sweden¶	7,172,000	52,600
Switzerland	4,884,000	36,000†
United Kingdom	50,370,000	350,900
United States‡	162,414,000	1,106,000

*Populations latest estimate or census. †Estimated. ‡1953. §Estimate for urban areas. ¶Figures for the first three quarters of 1954 were higher than for the same period of 1953 in the major areas. ||In the main municipalities and large villages. ¶Figures for 53 towns for 1954 were higher than the same figures in 1953. ¶New permanent nonfarm dwelling units started (U.S. Statistical Abstract). The American Builder gave an estimate of 1,200,000 for 1954.

Source: U.N. Quarterly Bulletin of Housing and Building Statistics for Europe.

building society jointly took the extra risk involved in making advances of a higher proportion of the valuation of the property than the building society alone would normally be prepared to make. During the last quarter of 1954, 3,000 advances were made, and during the first half of 1955 advances increased to more than 5,000 a quarter.

The restrictions on credit imposed as an economic measure led to an increase in interest rates charged by building societies in the summer of 1955. The rate at which local authorities could borrow for housing purposes was also raised.

The main housing work of the year had been in the continuation of local authorities' postwar programs for the provision of more houses to reduce the shortage of separate dwellings, to combat overcrowding and to replace slums and redevelop obsolete areas. Local authorities were engaged in drawing up slum-clearance programs for submission to the minister of housing, and they were encouraged to take clearance action without waiting for the approval of the comprehensive proposals. The resumption of the full exercise of slum-clearance powers under the Housing acts led to greater emphasis on redevelopment of congested areas, and in the technical field this was reflected in the organization of a Symposium on High Flats by the Royal Institute of British Architects. The larger cities and conurbations were finding that they had fewer sites available for housing within their boundaries, and that they could not redevelop at a reasonable standard without creating a problem of overspill population. As a result, greater attention was paid to the Town Development act, 1952, which enabled two local authorities to make an arrangement whereby overspill from a congested city was rehoused in a small town wishing to expand. Early in 1955 the minister of housing clarified the position regarding financial assistance available from the government and from the rates of the large authority toward services and housing provided in an expanded town. He also recommended the establishment of green belts to check the unrestricted sprawl of built-up areas. Greater emphasis on slum clearance led to special interest in the human problems of rehousing. A subcommittee of the Central Housing Advisory committee reviewed the residential qualifications required by many local authorities before allocating dwellings to applicants and the problems of unsatisfactory applicants and tenants.

Slum clearance and redevelopment were also the concern of many European countries, and the study groups on this subject were crowded at the International Housing and Town Planning Congress held in the autumn of 1954 at Edinburgh, Scot. Figures for house production in west European countries during 1954 (see Table) showed that in most cases rates had been maintained or improved on previous years. No comparison should be made between different countries since needs, standards, methods of presenting annual statistics and even the definition of a new separate unit differ widely.

The U.S.S.R. was said to have completed 32,000,000 sq.m. in urban areas and 470,000 dwellings in rural areas. In an article

in the *Times* (London) on June 1, 1955, it was stated that in theory a family of five was entitled to 155 sq.ft. of dwelling space, which compared with about 950 sq.ft. for a five-person council house in England. Although it was difficult to obtain figures for east European countries, it appeared that housing output had increased.

In other parts of the world, particularly where industrial de-

velopment and the exploitation of natural resources were creating the need for new townships, housing had been an important concern of government agencies, and in many British colonial territories new housing departments had been set up.

(See also ARCHITECTURE; BANKING; BUILDING AND CONSTRUCTION INDUSTRY; BUSINESS REVIEW; FARMERS HOME ADMINISTRATION; MUNICIPAL GOVERNMENT; TOWN AND REGIONAL PLANNING.)

(M. C. SN.)

Human Rights, Covenant of: see INTERNATIONAL LAW; UNITED NATIONS.

Humour of 1955. Television has created a climate for intimate, relaxed, low-key humour reminiscent of Stephen Leacock's definition of humour as "A kindly contemplation of the incongruities of life." Below are printed some of the best examples of television humour of 1955, selected by artists from their own work.

SID CAESAR ("The Professor," from *Caesar's Hour*, NBC-TV, written by Sid Caesar and Mel Tolkin, Aaron Rubin, Phil Sharp, Charles Andrews and Sheldon Keller; © 1955, Shelllic Corp.)

THE PROFESSOR: (Open on glass door . . . it reads . . . Mammoth Pictures—Board of Directors . . . conference room . . . dissolve to interior board of directors' meeting of movie company. It is luxuriously furnished board room with Carl, Howie and a few others . . . they are seated around table smoking cigars . . . pads, pencils in front of them. Howie is on feet addressing group.)

HOWIE: Gentlemen, Mammoth Pictures is in a serious situation. The New York banks who are our stockholders only know that we are operating at a loss. For that reason they have sent us a man, an expert in the field of motion pictures, who will make a complete analysis of our problems and offer some valuable suggestions.

CARL: I don't care who the New York banks are sending . . . I'm not letting any outsider tell me how to make pictures.

HOWIE: Just a minute, J.B., you may be the producer, but the New York bankers own this studio lock, stock and barrel and they are behind this man 100 per cent. Our jobs and our futures are in his hands . . . we have to listen to him. Besides he happens to be a very successful and brilliant movie maker from Vienna. (Buzz on phone table. . . Howie picks it up.) Yes? Send him right in. He's here gentlemen . . . Prof. Ludwig von Kleinmacher. (Sid comes in very businesslike carrying brief case, walks right to Howie, who greets him with handshake.)

SID: Your name?

HOWIE: John Baxter.

SID: You're fired . . . (to Carl) and you, out . . . All of you . . . you're all fired! Pack your kodaks. We start clean. . . .

CARL: This is preposterous! You can't do a thing like that! I protest! SID: I like your spunk. You're a spunky boy. You're hired . . . and that goes for the rest of you too. Okay, now we got a staff, let's get to work.

HOWIE: Professor, on behalf of our movie company I would like to welcome you to the organization. Here, have a cigar. (Offers him open box of cigars, Sid takes handful, stuffs them in pocket.)

SID: (As he takes cigars) My wife is a chain smoker. (Takes box.) My children like to play with boxes.

HOWIE: Professor, you spent all of yesterday in our projection room looking at all the pictures we made last year. What would you suggest might help us?

SID: A miracle . . . a big miracle, because what I saw there I tell you, you could get arrested for putting out stuff like that. Whatta matter with you . . . people might go to see that stuff.

CARL: Well, Professor, what do you suggest we do?

SID: We have to keep growing, we have



to find new ideas . . . we have to be ingenious. We need realism . . . we gotta look for new places to make pictures . . . everybody has gone to Italy and France and Africa to make pictures. They've done pictures under water, on the water, between the water . . .

CARL: That's impossible!

SID: Impossible! Never say a thing like that. That's two words I never want to hear again. It's men like you who've stopped progress in its tracks. That's what they told Louis Pasteur when he invented the airplane . . . that he couldn't fly . . . and we're all flying today . . . all because of Louis Pasteur.

CARL: Professor . . . Louis Pasteur discovered a cure for rabies and he also discovered how to remove the germ properties from milk, and we call it pasteurization.

SID: Spunky, you just blew the Christmas bonus. Do you like the big house in Beverly Hills, with the swimming pool? You like to ride around in the Jaguar . . . you like walking around in a big office . . . ?

CARL: Oh you mean Louis Pasteur, the one who invented the airplane!

SID: That's right . . . Merry Christmas. Now it's all settled. Louis Pasteur invented the airplane. . . . Right?

ALL: Right!

SID: Now for this musical . . . we get only the best to write the music. We get Beethoven.

CARL: But Beethoven is dead.

SID: (Shocked . . . takes off hat.) Beethoven . . . gone! Ludwig . . . this is a shock . . . You don't read the paper a few days and you don't know what's going on. Well . . . tell you who'll we get . . . Mozart!

CARL: Mozart is dead.

SID: (Shocked.) Wolfgang . . . gone! I gotta send a note to the wife. And he was such a healthy looking man with those long curls . . . Beethoven and Mozart . . . were they both in the same bus crash?

CARL: No, Professor.

SID: Beethoven and Mozart kerfunkt! Well, let's not waste any more time on them. . . . If we can't get them . . . we can't get them. How about Tchaikovsky?

CARL: Tchaikovsky is dead too.

SID: Ah ha, I got you. . . . I made that name up. There is no such name as Tchaikovsky. Right?

ALL: Right!

SID: I came in here with a brief case . . . ah, here it is. Gentlemen, I have a picture for you that will bring us millions of dollars. (Takes heavy script from brief case.) Here it is, I wrote it in German. But we translate it and we got a GREAT picture . . . *Vergangen mit der Wind*.

CARL: (Who has been looking at him suspiciously.) Professor, how would you translate that title, *Vergangen mit der Wind*?

SID: *Vergangen mit der Wind*? Oh, I don't know . . . *Away With the Wind* . . . *Goodbye to the Wind* . . . *So Long With the Wind*!

CARL: (Leans across table . . . pointedly.) *Gone With the Wind*?

SID: Spunky, you did it again. That's a great title! Yah, that's good . . . *Gone With the Wind*. Now, here's what we do. We get Clark Gable to play Rhett Butler, and for Scarlett O'Hara we get . . .

HOWIE: Professor! Professor! That movie has already been made! It's been done!

CARL: David O. Selznick made the picture.

SID: An Irishman made this picture . . . a German picture? (Crushed.) The story about the Civil War? . . . It was done? . . . With Rhett Butler and Scarlett O'Hara? . . . Done? (They nod.) . . . and the whole picture is four hours long? (They nod.) . . . Tell me just one thing—in this picture that was already done, who wins the North or the South?

HOWIE: The North.

SID: Well, that's too much. They got the same switch too. He robbed it from me? Right?

ALL: Right!

SID: I've come to a conclusion! We can't compete with CinemaScope, Bias-scope, Flourescope, etc. etc. They have vista-vusion . . . and stereophonic sound . . . and we can't compete with this. . . . We have to find a new market. And I've found it. LATE TELEVISION! They're buying rotten pictures like there was no tomorrow. We'll make the best rotten pictures that can be made. If anyone can make rotten pictures, we're the ones that can do it. Right?

ALL: That's right!

SID: Anybody got any rotten ideas? (*Fadcut*)



AUDREY MEADOWS (*The Honeymooners*, CBS-TV, written by Marvin Marx and Walter Stone)

"I do not consider myself in any way an authority on comedy, but I believe a great deal of the success of all of us on *The Honeymooners* is due entirely to the believability of the characters. There is the kind of a joke that we call 'nudgers' because the people watching the show so often nudge each other, remembering when a similar incident happened in their own lives. For instance:

"Ralph and Alice (the Honeymooners) are arguing about spending money, and Ralph accuses Alice of spending all his money on clothes. He opens Alice's drawer

and shows all the clothes she has there. To this Alice replies, 'Go ahead, Ralph; you think I've got so many clothes. Take a look at them! They're all very modern. I'm the first girl in town to wear a shortie nightgown . . . that's 'cause I'm still wearin' the one I had when I was a kid!'"

EVE ARDEN (*Our Miss Brooks*, CBS-TV)

"Oddly enough my favorite humorous—and possibly philosophical—quote of the year was not uttered by any comedian. It is credited to Earl

Thacker, a Honolulu realtor. Said Mr. Thacker: 'Everyone is of some if only to serve as a horrible example.' For some reason, and it may be my perverse sense of humor, this seems to me to have a sort of Twain immortality."

GARRY MOORE (CBS-TV)

Ode to a tooth

All hail the tooth, the little tooth.
All hail the tooth, so white and smooth,
All hail the tooth, the little tooth—
Whether it's tight or whether it's looth!

Oh, the tooth is more than a thing
of beauty,
It's also a tool for heavy duty.
At least one lower and one on top
We need in order to chew things op.

For you and me and Marlene Dietrich,
Eating without 'em would be a neat trick.
For you and me and Hopalong Cassidy,
The chewing of food is a grim necessity.
Yes, mostly all of our people do it—
Even in Boston, Massachewit!

Oh, the tooth indeed is a vital item—
When you get mad at people, how else can you bite 'em?
Without 'em every poppy and mummy
Would find that life is very gummy.

Store teeth, too, are very grand—
When you get mad you can gnash 'em by hand!
So keep your teeth as strong as swords—
Whether they're yours or Montgomery Ward's.

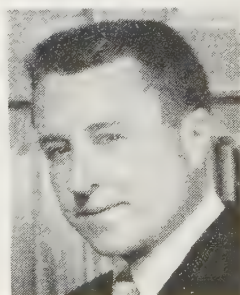
Why, our national life would be a mockery
Without this piece of oral crockery.
In fact, the tooth—bicuspid or wisdom—
Is the base of our economic sizz-dom!

For without a tooth we cannot eat
A steak—or any other meat.
Thus Armour's, Swift's and all their branches
Would have to close down all their ranches;
And cowboys, broke, out in Nevada,
Would ask each other: "What's de madda?"

In short, my friends, this mighty nation
Needs the tooth for its foundation.
Each breakfast, luncheon, dinner and supper plate
Owes its being to our upper-plate.

So brush your teeth at least twice daily,
Whether you're Harvard or you're Yale.
In fact, my friends, you even might
Buy your teeth a brush tonight.

So go to a drugstore—be it north or south—
And get yourself a good paste in the mouth.



GEORGE GOBEL (NBC-TV)

"It's all my mother's fault, my b
George Gobel I mean. Mom is the one
decided I should have a name. An
wasn't that she already didn't know w
was, because she's known me ever sin
was—she just thought it would be nice
me to have a name. And I went along
her. The George is for my uncle, Ge
Hermansky, and the Gobel, of course, i
my father—Gobel Hermansky. And
kinda glad Mom named me George G
too, because that's what everybody
me.

"I think brothers are nice, but I r
had any. See, I was an only child. It's
that my parents didn't care for chil

. . . it's just that they didn't care much for me. I mean, they figured
was the best they could come up with, they just wouldn't fool with it
more. . . . I had to eat all the cake myself . . . and all the ice c
myself . . . and all the cookies myself. Oh, I tell you true: I w
chubby little rascal.

"Alice is my wife . . . you know those election bets. She used to b
fiancée . . . but I didn't know enough to leave a good thing alone.
she treats me real good—just like I was one of the family. Particu
on birthdays. See, Alice regards each of my birthdays as a stepping
to that annuity.

"I have three children. That is, Alice and I have three children. TH
community property. And I like children as well as the next fellow
though there are times when I must admit I do prefer the next fello
children. But see, when you have three children you have some so
problems. Like, for instance, at breakfast: you go crazy trying to
out how to cut a grapefruit so it comes out even!

"My hobby is gardening. Well, not really gardening. I just say ga
ing, but my hobby is not gardening. That's my hobby: *not garden*
And it's not that I don't like to grow things, because I do like to

things. For example, I like to grow flowers and trees—but nothing seems to—see, some guys can grow anything. They have a green thumb. But me—I got a brown thumb. Take the fellow who lives next door to me. You should see his place. He just throws seeds right out the kitchen window. When he finishes eating . . . grapefruit seeds, peach stones, cherry pits . . . just tosses 'em out . . . doesn't even bother to cover 'em with dirt. And you oughta see his backyard. As far as the eye can reach—nothing but garbage."

JIMMY DURANTE (NBC-TV)

Typical quotations from Durante's 1955 shows:

"He should hang by da rope."

"Five minutes wit Durante and everyone's a bum!"

"Whadya mean, work too hard, I'm a teen-ager."

"Too much work for a man of 35."

"Good-lookin' guys are a dime a dozen—I'm a novelty."

"It's the man dat makes da clothes."

"José [Iturbi], make way for Nosey."



EDDIE CANTOR (NBC-TV)

"I'm frankly concerned about some of the school kids today. It looks as if the 'three R's' have been changed to readin', riotin' and 'rhythmic. And did you ever watch those kids driving hot rods? It's murder! They trip off the fenders, the hood and all the extra stuff, to make it go faster. You won't believe this—but last week I saw three kids driving a 936 carburetor!"

STEVE ALLEN (Tonight, NBC-TV)

STEVE: Welcome to *On and On*.

(Music: Sprightly, lilting theme. Peppy. Fade out.)

(Camera: Close up of sign that reads: *On and On*.)

STEVE: Yes, friends, here we are again with that wonderful old panel show *On and On*, the game that goes on and on, week after week, bringing you an endless parade of people, faces, names and—fun! And now, it's meet the panel of *On and On*!

(Camera: Panel has 15 people on it. It extends for some 30 feet. A small name tag is hung before each panelist. Shoot a close-up of each person as Steve does intro.)



STEVE: First of all, that charming actress, currently playing the lead in *Our American Cousin* at Ford's theatre. Washington, D. C. . . . Miss Elberta Freestone. Next, the well-known drama critic for the *Carson City, Nev., Times-Gazette* . . . Mr. Bennett Croveny. And now . . . that irrepressible young comedy star, whose laughable antics you enjoy every Thursday night on his own show *Nutty as a Fruitcake*: Danny Birdbath.

Next . . . the well-known author, whose latest book *I Wed Three Wives* is still way up there . . . Mr. Porfirio Candelabra.

Here now is that popular columnist for the *New York Drover's Journal* . . . winner of the Eberhard Faber Eraser award for the year's greatest number of inaccuracies . . . Barton Billingsley.

Next . . . the very charming television personality. . . You see her every Friday evening in her own popular show *Wrestling From Ridgeood Grove*. . . Morphine Blunt.

And I'm sure you'll recognize this next face . . . (It is a dog.) One of V's most popular figures . . . author . . . columnist . . . *bon vivant* . . . and star of the new movie *Seven Hounds for Seven Spaniels* . . . (Now show dog.) Rin Tin Von Redheart.

Next . . . the prominent leading man whose latest picture, *Birth of a Nation*, may be seen at the Smithsonian Institute . . . Roderick Brodick.

And next to Mr. Broderick . . . another one of our popular panelists . . . co-author of such best-sellers as the New York telephone directory . . . and the Diner's Club Restaurant list . . . Mr. Roy Fangschleister.

And then . . . the prominent international figure . . . former governor of Ellis Island . . . and the president's personal representative to the Brooklyn Dodgers . . . Jim Blyrclean.

Next, one of Broadway and Hollywood's best-known personalities . . . you've heard of the list of the ten best-dressed men in the world? Well, here is Mr. Jules Green.

And now . . . our next panelist . . . a prominent society figure, who has just returned from a nation-wide lecture tour, and who leaves immediately for tonight's show for a two-week stay at the Luxor Baths . . . Mr. Wright Passanante.

And I'm sure you'll all be glad to see that we have with us once again this week . . . the very wonderful music critic for *Popular Mechanics* magazine . . . whose latest article, "Beethoven and the Downdraft Carburetor," appears in the latest issue . . . Rodney Camshaft.

Next to Mr. Camshaft is that lovely lady of radio and television, currently appearing on Broadway . . . in the picket line in front of Lindy's . . . Janet Sage.

And next to Miss Sage . . . is that popular actor and man-about-town presently playing the title role in the picture *Phfft*. . . And that's our panel!

And now for our game. As you know we always . . . (Looks at watch) . . . but I see that once again we don't have much time for the game. We're a little late folks, so good night and be sure to join us next week ten once again it'll be time for *On and On*!

LUCILLE BALL AND DESI ARNAZ (I Love Lucy, written by Jess Oppenheimer, Madelyn Pugh and Bob Carroll, Jr., © Desilu Productions, Inc.)

The preface to the situation is:

Lucy, discovering a misspelling on their marriage licence, is afraid that they are not legally married, so she wants Ricky to go through the ceremony again.

Sentimentally, she insists on being married by the same justice of the peace, in the same little upstate town, after Ricky has proposed in the same spot with the same words he used the first time.

They are just arriving at the original proposal site . . .

(The scene is an outdoor wooded area. There are two fairly large trees and a board seat between them. There are bushes around, grass on the ground, and we will probably hear a bird or two. Lucy walks into the scene.)

LUCY: I told you this was the place. You see—there's that seat between those two trees.

(Ricky is loaded down. He is carrying a blanket, a picnic basket, a thermos, a jacket, a cushion, etc.)

RICKY: Oh yeah. Lucy, the least you could do is carry half of this stuff. What's the big idea of making me carry everything?

LUCY: That's the way you used to do things before we were married. Remember?

RICKY: Oh.

(He puts the stuff down.)

(Lucy sits on the seat. Ricky sits beside her. It's a very tight fit.)

LUCY: I don't remember this seat being so small. The trees must've grown in a little from each side.

(Ricky looks down at her hips.)

RICKY: Let's face it. We've grown out a little from each side.

(They scrunch around and manage to get fairly comfortable.)

LUCY: Dear, doesn't being here again make you feel romantic?

RICKY: Yeah. Let's eat.

(Lucy gives him a look.)

(He reaches in and takes a sandwich out of the basket and starts to munch on it.)

LUCY: The last time I offered you a sandwich and you said, (Dreamily.) "Who needs food, I want to feast on your beauty."

(Ricky puts the uneaten piece of sandwich down.)

RICKY: (With his mouth full.) Who needs food, I want to feast on your beauty.

LUCY: Somehow it sounds different than it did then.

RICKY: (Rummaging through the basket.) What do you want to start with—chicken salad or peanut butter?

LUCY: I want to start with a proposal.

RICKY: But I've already started this sandwich and it's—

LUCY: (Warning.) Ricky—

RICKY: All right. Now, let's see.

LUCY: Down on your knee.

RICKY: Oh, no. Now wait a minute. The ground's wet.

LUCY: Down on your knee. I want it to be just like it was before.

(Ricky gets down on one knee, grumbling in Spanish.)

LUCY: (With a giggle.) I even took your wallet out of your pocket and left it home.

RICKY: What??? (He grabs at his pocket.) What did you do that for?

LUCY: Don't you remember? You forgot your wallet the day you proposed and when we got married I had to pay for the licence.

RICKY: I didn't marry a woman—I married an elephant.

LUCY: Well—thanks!

RICKY: I meant your memory.

LUCY: Oh. Well, go ahead.

RICKY: (Trying to remember.) Uh—

LUCY: You said, "Lucy, I can't live without you. . ."

RICKY: Lucy, I can't live without you.

LUCY: "I love you madly . . ."

RICKY: I love you madly. What did you leave my wallet home for? I don't have my driver's licence or anything.

LUCY: (Pointedly to get him back on the track.) "I know I don't deserve a wonderful girl like you."

RICKY: I know I don't deserve a wonderful girl like you.

LUCY: (Starry-eyed.) "Lucy, will you marry me?" (Pause.) Lucy—will you marry me? (Pause.) Well, what's the matter?

RICKY: (He can't resist the joke.) Well, this is a pretty important step in my life. I don't want to rush into anything.

LUCY: WHAT?!! (She gives him a big whack on the shoulder and he falls over backward laughing.) Well, it's nice to know where I stand.

RICKY: I was only kidding. Sit down, honey. (He gets back up on his knee. She bursts into tears.) Lucy, I'm going to propose. (He takes her hand.) Lucy, will you— (She jerks her hand away.)

LUCY: (Tearfully.) Never mind. It's a big step for me too and I'm not going to rush into anything.

RICKY: Aw, honey, can't you take a joke?

LUCY: A joke? What's funny about the fact that you don't want to marry me?

RICKY: I do too want to marry you.

LUCY: You do not! The real truth slipped out.

(He tries to put his arms around her.)

RICKY: Lucy, baby . . .

(She pulls away.)

LUCY: Don't Lucy baby me. I'm Miss MacGillicuddy to you and, for your information, I wouldn't marry you if you were—Xavier Cugat!

(She stalks out of the scene.)

RICKY: Lucy—wait—hold on—wait for me.

(He tries to pick up all the equipment and hurries after her.)



Humphrey, George Magoffin (1890—), U.S. government official, was born on March 8 at Cheboygan, Mich., and received his law degree from the University of Michigan, Ann Arbor, in 1912. Until 1918 he practised law in Saginaw, Mich., and in that year he was appointed general counsel of the M. A. Hanna company, steel and coal manufacturers, at Cleveland, O. In 1925 he was named vice-president and in 1929 president of the company, which he expanded into a large and profitable industrial enterprise. He became chairman of the board in May 1952. During the administration of Pres. Harry S. Truman, Humphrey accepted two quasi-federal posts—chairman of the U.S. department of commerce's business advisory council in 1946, and head of a survey of German industrial plants conducted by the Economic Cooperation administration in 1948–49.

Humphrey was selected by Dwight D. Eisenhower to be U.S. secretary of the treasury in the administration that took office in Jan. 1953. He shortly thereafter let it be known that the administration's fiscal policy would be to balance the national budget before cutting taxes; he blamed the mounting federal debt on the preceding Democratic administrations. On Aug. 27, 1953, however, he declared that the "turning point" had been reached on the road toward balanced budgets.

In 1955 Humphrey successfully opposed a Democratic move to grant flat tax reductions of \$20 to each U.S. income taxpayer and dependent. He predicted on Aug. 25 that the federal budget for the fiscal year 1955–56 would be balanced, "barring some unforeseen development."

Hungary. A people's republic of southeastern Europe, Hungary is bounded west by Austria, north by Czechoslovakia, east by Rumania and south by Yugoslavia. Area: 35,905 sq.mi. Pop.: (1949 census) 9,204,799; (1954 est.) 9,750,000. Language (1949 census): Hungarian 98.7%; German 0.2%; Slovak 0.3%; others 0.8%. Religion (1949 est.): Roman Catholic 70.6%; Calvinist 22.8%; Lutheran 3.3%; Orthodox 0.4%; Jewish 1.9%. Chief towns (pop. 1954 est.): Budapest (cap.) 1,781,085; Miskolc 135,780; Debrecen 113,248; Szeged 88,590; Pecs 87,140; Győr 65,630; Kecskemet 64,170. First secretary of the Hungarian Workers' (Communist) party, Matyas Rakosi; chairman of the presidium of the national assembly, Istvan Dobi; chairman of the council of ministers in 1955, Imre Nagy and (from April 18) Andras Hegedus.

History.—A major crisis in the leadership of the Hungarian communist regime was resolved in April 1955 with the removal of Imre Nagy from the premiership, his replacement by Andras Hegedus and a convincing reassertion of power by Matyas Rakosi, the first secretary of the Communist party. This was accompanied by a thorough condemnation of the new course in economic policy with which Nagy has been associated and a reversion to the orthodox communist policy of maximum concentration on the development of heavy industry and on the speedy collectivization of agriculture.

Nagy was dismissed from all his positions in the party and government. Among the charges laid against him were that he "put the brakes on Socialist construction, industrialization and especially the expansion of heavy industry, . . . obstructed the development of the collective farm movement, . . . tried to push the party into the background, . . . to subordinate the party to organs of the State and the Patriotic People's front." His disgrace was complete.

The reversal of policy was first signalled by the passing of a resolution in the party central committee at the beginning of March. This admitted that industrial and agricultural output had actually fallen during 1954 and that the total national income had been appreciably below that of 1953. After the change



SPRING SESSION of the Hungarian national assembly which in 1955 adopted a resolution to relieve Imre Nagy of his duties as chairman of the council of ministers. Andras Hegedus was elected to succeed Nagy

of leadership the greatest attention was first directed to agriculture. A party resolution in June declared that collectivization must proceed at such a rate as to ensure that more than half the country's arable land was collectivized before the end of 1960. Though the authorities declared that entry into the collectives should be "voluntary," much pressure was exerted on the peasants for the rest of the year. It was claimed that more than 30,000 new members had joined the collectives at the beginning of August. Tax exemptions, higher prices and other privileges were used to induce peasants to enter the "Socialist sector."

The 1955 budget, announced in April, revealed that 35% of the total investments went into heavy industry, 26% to agriculture (almost twice the 1953 figure) and only 8% to the consumer goods industries.

The Patriotic People's front, which was set up in 1954 and which had appeared at one point to be likely to replace the Communist party as the main political organization, was brought back under communist control. Despite assurances that the front had lost none of its importance, little attention was paid to it in the latter half of the year. Two amnesties were announced during the year, one applying to persons serving sentences for political offenses in Hungary, and the other applying to Hungarians living abroad.

In May the Hungarian government took part in the meeting of communist countries in Warsaw at which the eastern European defense organization was set up. Under this agreement Hungary's forces were put at the disposal of a joint military command in Moscow. In September it was announced that the armed forces would be reduced by 20,000 men. (See also EASTERN EUROPEAN ECONOMIC PLANNING.) (D. F.)

Education.—Schools (1954): primary 6,185, pupils 1,208,000, teachers 5,000; secondary 405, pupils (including those enrolled for evening courses) 162,500; vocational, pupils 57,000; institutions of higher education 21 (including 5 universities), students 47,500, teaching staff 7,200. National minorities schools (1953): Slovak 147, Serbo-Croat 88, German 66, Rumanian 28.

Finance.—Monetary unit: forint with official exchange rate, high and fluctuating, of 11.74 forints to the U.S. dollar. Budget (forints, 1954 actual; 1955 estimates in parentheses): revenue 45,300,000,000 (46,961,000,000); expenditure 44,000,000,000 (45,458,000,000), including 28,000,000,000 (25,200,000,000) invested in the national economy.

Foreign Trade.—(1950) Imports U.S. \$265,000,000; exports U.S. \$257,000,000. Main sources of imports (1950): Poland, Czechoslovakia, Rumania and Bulgaria 35.4%; U.S.S.R. 22.7%. Main destinations of exports: four eastern European countries 36.6%; U.S.S.R. 25.7%. Hungarian trade with 17 western European countries (1953): exports U.S. \$17,800,000; imports U.S. \$67,500,000.

Transport and Communications.—Roads (1951): 15,976 mi. Licensed motor vehicles (Dec. 1950): cars 16,000; commercial 15,500. Railways (1951): 7,100 mi. Air transport (1948): flights 4,447; mileage flown 25,800; passengers carried 36,111. Danube shipping (Dec. 1947): merchant vessels 514; gross tonnage 118,700. Telephones (1954 est.): 122,000. Radio receiving sets (1953): 887,000.

Agriculture.—No reliable data published since 1950. Main crops (metric tons, 1948–50 average): wheat 1,817,000; rye 775,000; barley 674,000; oats 265,000; maize 2,862,000; potatoes 2,018,000; sugar beets 1,765,000; rice (1951) 50,000. Livestock (1955 est.): cattle 1,983,000; pigs 800,000; sheep 1,032,000; horses 550,000.

Industry.—Employment in industry (1954): 885,000. Production (metric tons, 1954 est.): coal 1,900,000; lignite 20,100,000; crude oil 1,190,000; electricity 4,830,000,000 kw. hr.; pig iron 820,000; steel 1,490,000; alumina 1,260,000; aluminum 32,800; cement 950,000. Textiles (sq. metres, 1954 est.): cotton fabrics 226,000,000; woollen fabrics 12,100,000. Leather shoes (1954 est.): 10,000,000 pairs.

Hunting: see WILDLIFE CONSERVATION.

Hurdling: see TRACK AND FIELD SPORTS.

Hutchins, Robert Maynard (1899–), U.S. educator. was born on Jan. 17 in Brooklyn, N.Y. He left Oberlin college, Oberlin, O., in 1917 to serve in the U.S. ambulance corps during World War I. Entering Yale university, New Haven, Conn., in 1919, he received his B.B. in 1921 and his LL.B. (*magna cum laude*) in 1925. In 1923 he was appointed secretary of Yale university and in 1927 dean of its law school. In 1929, at the age of 30, he became the fifth president (and, in 1945, the first chancellor) of The University of Chicago.

Hutchins resigned in 1950 (effective June 30, 1951) as chancellor of the university and as a member of its board of trustees to join the Ford foundation as an associate director. He continued as chairman of the board of editors of Encyclopædia Britannica, Inc.

On May 24, 1954, the Fund for the Republic, an independent organization established in 1953 with a grant of \$15,000,000 outright from the Ford foundation, announced the election of Hutchins as its president. The purpose of the fund was to help remove restrictions on freedom of expression and thought in the United States. On Jan. 13, 1955, the fund announced a \$50,000 survey of the influence of communism on all phases of U.S. life. Seaborn P. Collins, national commander of the American Legion, attacked this survey on Sept. 11 as an attempt to show that communism was no particular menace to democracy. Other members of the Legion, however, defended the fund's objectives.

In his first report as president of the fund issued Aug. 21, 1955, Hutchins declared that "in some particulars the atmosphere [of civil liberties] is better than it was five years ago [but] still such as to give cause for alarm."

Hydroelectric Power: see FEDERAL POWER COMMISSION.

Hydrogen Bomb: see ATOMIC ENERGY.

ICC: see INTERSTATE COMMERCE COMMISSION.

Ice Hockey: see HOCKEY, ICE.

Iceland. An island republic of the North Atlantic, Iceland has an area of 39,768 sq.mi. and a population of (1950 census) 144,263; (1955 estimate) 155,000. The capital,

Reykjavik, is the only large town (pop. 1953 estimate 60,024). Religion: Lutheran Christian. President in 1955: Asgeir Asgeirsson. Prime minister: Olafur Thors.

History.—The progressive boom in Iceland's economy produced its most prosperous year in 1954. Fisheries failures early in the year were partly compensated by a good fall herring catch, but construction was the greatest boost to the economy. Much of this building was financed by the United States (Keflavik airport), and the domestic economy was still unsure and unstable. Early in 1955 a wave of strikes hit key industries and disrupted communications. Eventually 10% wage increases were granted and the government promised the establishment of a long-demanded unemployment insurance fund.

The dangers of fishing were dramatized by several trawler disasters, both English and Icelandic, and by the "arrest" of the British trawler "Churchill" for illegal fishing in Icelandic waters. Large numbers of small whales wreaked destruction on the herring nets until a contingent of United States soldiers, armed with machine guns, went out with the fishermen and killed scores of the whales.

Foreign trade fairs were opened in Reykjavik in July with impressive exhibits of Russian, Czech and Chinese wares. The U.S.S.R. and Czechoslovakia had recently been among Iceland's best customers for fish.

Reforestation was being pushed vigorously, with a goal of 3,000,000 plantings per year. The state supported the program, and permitted a special additional tax on cigarettes for this purpose. Plans were under discussion also for further development of the tremendous power potential in the rivers, only 1.3% of which was harnessed.

Iceland continued to play an active role in the Scandinavian group of states. President and Mrs. Asgeirsson made an official visit to Norway aboard the Icelandic ship, the "Gullfoss," and were royally received. Reykjavik received a number of conferences and conventions including a congress of Scandinavian cooperative society leaders, where the proposal for a common Scandinavian currency was mooted.

(F. D. S.)

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Education.—In 1954 there were 224 elementary schools with 15,566 pupils and 708 teachers, 56 secondary schools with 4,586 pupils and 367 teachers, 3 grammar schools with 841 pupils and 55 teachers and 49 other schools with 3,507 pupils and 339 teachers. The University of Iceland had 692 students and 61 professors and lecturers.

Finance.—The monetary unit is the króna, valued at 6.14 cents, U.S. currency, official rate, in 1953. The 1955 budget estimated revenue, current and capital, at 516,302,000 kr.; expenditure, 515,301,000 kr. Revenue in 1954 was 542,531,000 kr.; expenditure, 526,196,000 kr. The national debt (Dec. 31, 1954) was 473,108,000 kr., including external debt of 214,006,000 kr.; net state assets (Dec. 31, 1953), 521,013,000 kr. Currency in circulation (July 31, 1955) was 303,165,000 kr. The cost-of-living index (Reykjavik) stood at 181 in Aug. 1955 (1948=100).

Trade and Communications.—Exports in 1954 totalled 845,912,000 kr.; imports, 1,130,397,000 kr. Leading exports were fish and fish products (96%), wool (1%) and hides and skins (1%); leading imports, petroleum products (12%), wood (5%), iron and steel (4%) and ships (4%). Leading customers were the U.S. (17%), the U.S.S.R. (15%), the U.K. (9%) and Italy (7%); leading suppliers, the U.S. (20%), the U.S.S.R. (12%), the U.K. (11%) and western Germany (8%).

Highway mileage (1955) was 5,123; registered motor vehicles (Jan. 1, 1955) included 7,508 automobiles and buses and 4,685 trucks. In Oct. 1954 the merchant marine had 665 vessels aggregating 99,006 gross tons, including the fishing fleet of 51 trawlers and 571 other vessels aggregating 56,527 gross tons.

Fisheries and Livestock.—In 1954 the sea fisheries yielded 387,528 metric tons, including 179,450 tons of frozen fish and 104,536 tons of salted fish. Livestock (Jan. 1, 1954) included 390,400 sheep, 45,400 cattle and 38,100 horses. Wool production (1954) was 860 metric tons. (J. W. Mw.)

Ice Shows: see SHOWS.

Ice Skating. Tenley Albright of Newton Center, Mass., and Hayes Alan Jenkins of Akron, O., dominated the figure skating picture in 1955 as they swept senior laurels in world, North American and United States competition. In the international meet at Vienna in mid-February, Miss Albright



SPEED CHAMPION Sigge Ericsson of Sweden defeated two Soviet skaters to win the world championship at Moscow Feb. 20, 1955. The championship was based on performance in four races from 500 to 10,000 m. in length

gave a brilliant exhibition in both the school figures and free skating to regain the title she held in 1953. Carol Heiss, New York city, with 180.31 points, was second to Miss Albright, who was credited with 190.96 points. Jenkins scored 203.7 points to take world honours for the third consecutive time. Ronald Robertson, Los Angeles, Calif., with 201.12 points, was second. Britain's team of Jean Westwood and Larry Demmy captured the dance title for the fourth time. Another British pair, Pamela Wright and Paul Thomas, were runners-up. Frances Dafoe and Norris Bowden, Canadian couple, retained the pairs championship.

Miss Albright again defeated Miss Heiss in the senior women's division of the North American meet at Regina, Sask., in March. The closest rival to Jenkins for the men's award was his younger brother, David. Other victors included Miss Dafoe and Bowden, pairs; Mr. and Mrs. Edward Bodel of Orinda, Calif., dance.

In the national championships at Colorado Springs, Colo. (March 30-April 2), Miss Albright took the women's prize for the fourth straight time and Jenkins won the men's honours for the third year in a row. Other winners were Nancy Heiss, New York city, junior women; Tom Moore, Seattle, Wash., junior men; Robin Greiner and Carol Ann Ormaca, Berkeley, Calif., senior pairs; Ray Sato and Barbara Stein, Los Angeles, silver dance; Mr. and Mrs. Edward Bodel, gold dance; Los Angeles Figure Skating club, team point trophy.

Alain Giletti, 15-year-old Frenchman, won the men's crown in the European championships, a closed meet. Hanna Eigl, also 15, of Austria triumphed in the women's division.

Speed Skating.—Ken Bartholomew, Minneapolis, Minn., won his sixth straight senior men's title and the tenth of his career in the national title tests at St. Paul, Minn., Jan. 29-30. He was first in the 880-yd. and 5-mi. events and second in the 220 yd. Pat Gibson, University of Wisconsin, Madison, coed, swept the five senior women's races to retain her crown. In

keeping the junior girls' laurels, Mary Novak, Chicago, Ill., the 220 yd. in 20.4 sec. to break the 13-year-old national record of 20.6 sec.

A field of 300 from Canada and the U.S. competed in the North American meet at Saranac Lake, N.Y., Feb. 12-13. Winners included Jay Hasbrouck, Newburgh, N.Y., senior men; Pat Gibson, senior women; Kenneth Lebel, Lake Placid, N.Y., intermediate boys; Jeanne Ashworth, Wilmington, Mass., intermediate girls; David Arends, Cedar Rapids, Ia., junior boys; Mary Novak, junior girls. Indoors, Mrs. Barbara De Schell of Detroit, Mich., won the women's North American for the fourth time and Bill Disney of Pasadena, Calif., led the men. World championships were held in Moscow, U.S.S.R., for men and at Kuopio, Fin., for women, with the following gaining titles:

Men	Women
All-around—Sigge Ericsson, Sweden	All-around—Rimma Zhukowa, U.S.S.R.
500 m.—Toivo Salonen, Finland	500 m.—Tamara Rykova, U.S.S.R.
1,500 m.—Oleg Goncharenko, U.S.S.R.	1,000 m.—Tamara Rykova
5,000 m.—Knut Johannesen, Norway	3,000 m.—Rimma Zhukowa
10,000 m.—Sigge Ericsson	5,000 m.—Rimma Zhukowa

Idaho. Six states and the Canadian province of British Columbia form the borders of Idaho and combine to form in its 83,557 sq.mi. of land and water within the oddly shaped boundaries of the state. Within the confines of Idaho the elevation varies from about 750 ft. above sea level at the mouth of the Clearwater and Snake rivers, to nearly 13,000 ft. where Mt. Borah rears its jagged peaks.

The estimated population for July 1, 1955 was 606,000, versus the 1950 official census recorded the presence of 588,637 persons in Idaho, of whom 57.1% were rural and 42.9% urban. There were 561,988 native white; 19,407 foreign-born white; 1,050 Negro and 6,192 other races. The largest cities with their populations (1950 census) are: Boise (capital) 34,393; Pocatello 26,100; Idaho Falls 19,218; Twin Falls 17,600; Nampa 16,185; Lewiston 12,985; Coeur d'Alene 12,198; Moscow 10,593; and Caldwell 10,487.

History.—The sesquicentennial anniversary of the arrival of Lewis and Clark in Idaho in Oct. 1805 was observed in a number of areas of northern Idaho, the region through which the expedition passed en route to the Pacific ocean. Notable among these were the observances at Salmon and Lewiston, with other points along the Clearwater and Snake rivers.

During 1955 Idaho joined the long list of states having environmental agencies created by statute for the purpose of encouraging industrial, commercial and tourist expansion, when the legislature authorized the Idaho State Commerce and development commission.

Under the leadership of Gov. Robert E. Smylie (R.), necessary steps were taken to co-operate with Pres. Dwight D. Eisenhower in developing local participation in conference education, preparatory to the White House conference in November.

Incumbent state officials, whose terms were to expire Jan. 1, 1959, included: governor, Robert E. Smylie (R.); lieutenant governor, J. Berkeley Larsen (R.); attorney general, Gray Smith (R.); secretary of state, Ira Masters (D.); treasurer, Mrs. Ruth Moon (D.); auditor, N. P. Nielson (R.); mines inspector, George McDowell (R.); superintendent of public instruction, Alton P. Jones (R.).

Education.—Enrolment in Idaho schools of approximately 146,000 students in 1955, in 497 elementary and 132 secondary schools, represented an increase of 23.7% over the approximately 118,000 enrolled in 1950. There were approximately 5,000 teachers employed in the state, and the state appropriated in excess of 25% of its general funds for education or an amount equal to approximately \$20,000,000.

The University of Idaho, at Moscow, is the state university and cultural college, while the Idaho State college, also a four-year granting institution, is located at Pocatello. Junior colleges, established under district laws, are located at Boise and Coeur d'Alene, and provide

colleges include Ricks college at Rexburg, College of Idaho at Caldwell, and Northwest Nazarene college at Nampa.

Social Insurance and Assistance, Public Welfare and Related Programs.—The number of recipients of old-age assistance showed a decline from 928 to 8,764 in the year ending June 30, 1955, while the average grant dropped from \$55.22 to \$54.83. Part of this decline was credited to the increase in the number of persons receiving old-age and survivors insurance benefits.

Unemployment compensation benefits paid during the fiscal year ending June 30, 1955, averaged \$22.85 per week (prior year: \$23.16) for a total of \$4,549,844, compared with \$5,009,416 in the prior year. The fund balance increased by \$723,453 to reach a total at the end of the fiscal year of \$33,454,222. Approximately 13,200 employers in Idaho were covered by the Employment Security act in 1955.

Communications.—The state highway system, administered by the Idaho highway board, covers approximately 5,000 mi. of roads and has a normal annual program of about \$28,000,000. Four transcontinental railroads, with a combined mileage within Idaho of 2,738 mi., serve the state. Air transportation is furnished by United, Western and West Coast Airlines. Telephones in service exceed 161,000, a gain of more than 85% since 1945.

Banking and Finance.—Eleven national banks, with 56 branches, reported deposits of \$407,391,000 and 27 state banks, with nine branches, reported deposits of \$125,092,000 at the beginning of 1955.

There are nine federal savings and loan associations in the state.

The Idaho state budget for the fiscal biennium ending June 30, 1957, totaled \$134,094,107, including all funds from all sources, with \$49,552,559 from the state general fund and \$84,541,938 from other funds and sources, an increase of \$15,584,756 or 13%, over the \$118,509,351 appropriated for the biennium which ended June 30, 1955. Major expenditures authorized were highways \$51,850,000, education \$33,300,000 and public welfare \$24,425,000.

After having enjoyed freedom from state guaranteed debt since 1951, Idaho legislators in 1955 approved a state bond issue of \$2,000,000 to cover a state building program.

Agriculture.—Preliminary figures for the 1954 Idaho farm income were: livestock and livestock products marketed \$139,617,000; crops \$184,885,-

Table I.—Principal Crops of Idaho

Crop	Indicated 1955	1954	Average, 1944-53
Wheat, bu.	34,773,000	35,343,000	37,657,000
Corn, bu.	3,600,000	3,233,000	1,654,000
Wheat, bu.	7,839,000	10,560,000	7,839,000
Oats, bu.	18,843,000	18,005,000	11,600,000
Barley, bu.	1,482,000	1,569,000	1,201,000
Gar beans, short tons	2,527,000	2,870,000	2,396,000
As, dry, cwt.	2,881,000	2,763,000	2,411,000
Hay, tons.	49,225,000	40,800,000	41,758,000
Potatoes, bu.	1,670,000	1,130,000	1,655,000

Source: U.S. Department of Agriculture.

to; government payments \$5,865,000; home consumption \$11,416,000; total \$341,783,000 compared with \$354,113,000 (revised) 1953 income.

Manufacturing.—Value added by manufacturing in the forest products industry in the amount of \$79,200,000 in 1954 led all types of manufacturing, out of a total of approximately \$188,000,000 added in that year. Lumber production totalled about \$70,000,000 in 1954 and there were 250,000 freight cars loaded in 1954. Out of a total of 23,658 nonagricultural employment in 1954, lumbering accounted for 12,133, food processing 533 and other manufacturing 4,992.

(E. W. M.)

Mineral Production.—Table II shows the preliminary figures of Idaho's mineral output for 1953 compared with 1952. Only those whose value exceeded \$100,000 are listed. Idaho had the only substantial output of

Table II.—Mineral Production of Idaho

(Short tons, except as noted)

Mineral	Quantity 1952	Value	Quantity 1953	Value
Antimony ore	4,000	\$ 1,555,000	2,000	\$ 1,800,000
Copper	3,000	1,155,000	3,000	617,000
Gold (oz.)	33,000	23,738,000	18,000	19,548,000
Lead	88,000	141,000	85,000	160,000
Quartz and pumice	3,926,000	2,745,000	3,776,000	2,841,000
Silver and gravel	14,923,000	13,506,000	14,640,000	13,250,000
Van (oz.)	1,630,000	2,441,000	1,142,000	2,261,000
Zinc	74,000	24,673,000	72,000	16,595,000
Other minerals . . . . .	...	7,894,000	—	9,915,000
Total		\$77,848,000		\$66,987,000

†Value included with other minerals.

Antimony in 1953 and was first among the states in silver, second in lead and zinc, third in mercury, phosphate rock and pumice, fourth in vanadium, and fifth in tungsten; and ranked 29th in the value of its mineral output, with 0.47% of the U.S. total.

Illinois. A north central state of the United States, admitted to the union in 1818 as the 21st state, Illinois is nicknamed the "Sucker state" and is sometimes called the "Prairie state." During its 1955 session the Illinois general assembly adopted "Land of Lincoln" as the state's official slogan. Total area: 56,400 sq.mi., of which 55,935 sq.mi. are land. Population (1950 census): 8,712,176, including 4,319,251 males and 4,392,925 females, 8,046,058 white and 666,118 non-white. Population classed as urban in 1950 was 6,759,271 or 77.6%; as rural, 1,952,905 or 22.4%.

The July 1, 1955, population estimate was 9,297,000. Chicago

(population, 1950, 3,620,962) is the largest Illinois city, followed by Peoria (111,856), Rockford (92,927), East St. Louis (82,295) and Springfield, the capital (81,628).

History.—The principal offices in Illinois government were occupied in 1955 by William G. Stratton, governor; John W. Chapman, lieutenant governor; Charles F. Carpentier, secretary of state; Latham Castle, attorney general; Warren E. Wright, treasurer; and Orville E. Hodge, auditor.

The Illinois legislature, in its 69th biennial session, passed an all-time high of 1,162 pieces of legislation; 973 of these bills became law; 189 were vetoed.

The major accomplishment of the 69th general assembly was reapportioning the state's legislative districts; the question of legislative reapportionment was approved by the voters in the 1954 general election after the 68th general assembly had adopted legislation calling for a vote on the proposition. It was the first legislative reapportionment of the state since 1901. The new amendment to the Illinois constitution provided for 58 senatorial districts and 59 representative districts (formerly 51 of each). Senate districts would elect one senator and house districts three representatives. Thirty-four senate districts were outside Cook county, 18 in Chicago, and six in Cook county. These districts were permanent and assured downstate control of the senate. Representative districts were divided on the basis of near-equal population in the three geographic divisions. Downstate had 29 districts, Chicago 23 and Cook county outside Chicago had 7, giving Cook county a slight control over the house. These districts would be redrawn to account for population changes in 1963 and every 10 years thereafter.

Other major pieces of legislation passed by the 69th general assembly were: an increase in state sales tax from 2 cents to 2½ cents on the dollar for a two-year period ending June 30, 1957; authorization for cities to levy a one-half cent city sales tax without referendum; an amendment to the state constitution revising the revenue article to be submitted to the voters in the 1956 general election; a record-breaking appropriation of \$339,000,000 to modernize Illinois highways; enlargement of the state police force from 500 to 600 men; an increase in unemployment compensation up to \$40 a week for an individual with four or more children; authorization to build a Cook county convention hall; provisions for the establishment of a Waukegan port district; absentee voting privileges for shut-ins; authorization for county seats to establish public building commissions (this would enable Chicago to start its \$400,000,000 Fort Dearborn redevelopment project); establishment of a new personnel department in the state government.

Major vetoes by Gov. William G. Stratton were: Korean War veterans bonus; salary increase for state employees.

Drought conditions were relieved somewhat by fall and spring rains. The 1954 average rainfall for the state was 26.67 in. Rainfall for the first eight months of 1955 averaged 24.56 in. Average rainfall for the entire state is normally about 38 in. a year.

Education.—Estimated enrolment in the state's 2,349 public school districts for the 1955 fall term was 1,502,727 as compared with 1,431,756 in 1954. There were 36,307 teachers for 1,135,544 pupils in the first eight grades, and 15,905 teachers for 367,183 students in the secondary grades. In addition to the public school districts, there were 325,173 pupils enrolled in 920 private elementary schools, and 63,461 students in 178 private secondary schools. There were 69 institutions of higher education in Illinois in 1955. The legislative appropriation for state aid to schools in the 1955-57 biennium was \$224,330,000. This increase of \$56,915,374 over the previous biennium would be used to increase the aid per pupil from \$173 to \$200 per school year. Vernon L. Nickell was the superintendent of public instruction in 1955.

Social Insurance and Assistance, Public Welfare and Related Programs.—Gross expenditures under the state's public assistance programs totalled \$153,965,000 in the fiscal year ended June 30, 1955, an increase of \$12,292,000 over the preceding year. The number of persons dependent upon public aid increased from 254,489 to 282,220 in the same period. In the fiscal year closing June 30, 1955, the Illinois public aid commission reported the following average monthly number of recipients of

public assistance and average payments to each (preceding year's figures in parentheses): old-age pensions, 97,801, \$58.66 (104,021, \$56.93); aid to dependent children, 80,017, \$33.43 (76,878, \$32.49); blind assistance, 3,600, \$63.92 (3,743, \$62.63); disability assistance, 5,872, \$79.04 (5,370, \$75.12); general assistance, 94,952, \$34.40 (64,501, \$34.92). In addition, the state expended \$5,493,000 in the 1954-55 fiscal year for burials of public assistance recipients and medical aid to the indigent.

The average weekly number of unemployment compensation claimants during 1955 through the week ended Aug. 27 was 107,200, as compared with 159,400 during the corresponding period of the previous year.

In the state's five penal institutions the average daily population during Aug. 1955 was 9,068, a decrease of 183 from the same month of 1954. On Sept. 1, 1955, 21 state welfare institutions showed an average daily population of 49,977, an increase of 191 over the Sept. 1, 1954, figure. These institutions and their populations were (Sept. 1, 1954, figures in parentheses): 13 mental hospitals, 47,808 (48,206), 8 educational institutions and homes 2,169 (1,580). The three correctional institutions and two forestry camps under the supervision of the Illinois youth commission had an average daily population of 1,210 during Aug. 1955.

Communications.—Contracts for highway construction work in the first nine months of 1955 totalled \$77,100,000. Illinois, with a 12,000-mi. primary highway system, contained 125,000 mi. of roads, 104,000 mi. rural. The Illinois toll road commission, created by act of the state legis-

Table I.—Principal Crops of Illinois

Crop	Indicated 1955	1954	Average, 1944-53
Corn, bu.	537,022,000	449,312,000	462,296,000
Soybeans, bu.	115,515,000	92,214,000	81,614,000
Oats, bu.	175,725,000	139,776,000	138,432,000
Wheat, bu. (all)	46,840,000	44,921,000	33,897,000
Barley, bu.	5,256,000	2,145,000	899,000
Rye, bu.	2,738,000	2,052,000	631,000
Hay, tons (all)	5,247,000	4,736,000	4,111,000
Apples, bu.	1,600,000	2,260,000	3,082,000
Peaches, bu.	83,000	1,210,000	1,684,000
Pears, bu.	183,000	216,000	245,000
Grapes, tons	2,000	2,000	2,400

Source: U.S. Department of Agriculture.

lature in 1953, planned to sell \$400,000,000 worth of bonds to finance 193 mi. of turnpike construction, beginning in the spring of 1956.

There were 78 railroads (71 steam and 7 electric) operating in Illinois. These trains ran on 12,555 mi. of main track to serve 80% of the state's communities. In 1955 there were 15 scheduled airlines and 116 bus companies serving the various communities in the state. On Sept. 1, 1955,

Table II.—Principal Livestock in Illinois

Livestock	1955	1954	Average, 1944-53
Cattle (all)	\$374,870,000	\$410,384,000	\$429,244,000
Sheep	10,262,000	11,221,000	11,797,000
Hogs	221,641,000	227,665,000	204,462,000
Horses	4,370,000	4,515,000	14,333,000
Mules	486,000	473,000	2,145,000
Chickens	19,258,000	29,179,000	30,220,000
Turkeys	464,000	601,000	640,000

Source: U.S. Department of Agriculture.

there were 3,200,476 motor vehicles (all types) registered in Illinois. Navigable waterways, internal and bordering, totalled 1,147 mi.

Banking and Finance.—There were 914 banks operating in the state on June 30, 1955, six more than on the same date of the preceding year. Of this number, 525 were state banks and 389 national banks. State banks on June 30, 1955, showed total deposits of \$4,189,946,746 and total resources of \$4,488,219,727. National banks on the same date had

Table III.—Principal Industries of Illinois

Industry	Value added by manufacturing 1953	1952
Machinery (except electrical)	\$1,726,156,000	\$1,757,465,000
Food and kindred products	1,276,711,000	1,168,718,000
Electrical machinery	1,146,879,000	1,007,118,000
Fabricated metal products	964,487,000	914,147,000
Primary metal industries	945,776,000	820,831,000
Printing and publishing industries	713,386,000	683,060,000
Chemicals and allied products	654,975,000	595,030,000
Transportation equipment	528,637,000	386,058,000
Miscellaneous manufactures	389,248,000	313,621,000
Stone, clay and glass products	289,988,000	234,986,000
Instruments and related products	256,794,000	235,739,000
Paper and allied products	251,034,000	193,225,000
Apparel and related products	249,247,000	273,582,000
Petroleum and coal products	225,605,000	234,791,000
Furniture and fixtures	184,621,000	189,295,000
Leather and leather products	122,464,000	108,225,000

Source: U.S. Department of Commerce, Annual Survey of Manufactures, 1953.

total deposits of \$10,417,311,000 and total resources of \$11,287,762,000. For the 1955-57 biennium Governor Stratton approved legislation appropriating \$1,736,250,557 to operate the state government.

In the first eight months of 1955, major sources of state income produced the following amounts (1954 comparative figures in parentheses): sales tax, \$146,737,909 (\$134,946,838); motor fuel tax, \$94,372,292 (\$89,762,329); motor vehicle registrations, \$69,160,994 (\$63,550,201); cigarette tax, \$20,679,154 (\$20,199,554); public utility tax, \$20,923,407 (\$19,281,821); liquor gallonage tax, \$16,075,254 (\$15,006,851).

It was estimated that the increase in the state sales tax from 2 cents to 2½ cents on the dollar for the period July 1, 1955, to June 30, 1957, would result in an estimated increase in state revenue of \$101,500,000 for the two-year period.

Agriculture.—Almost 86% of the total land area of Illinois is in farms; its 181,860 farms were valued in 1954 at more than \$6,965,000,000. The average farm size was 170 acres.

Illinois grows 43 different field crops on 30,920,908 acres. Corn is

Table IV.—Mineral Production of Illinois

(Short tons, except as noted)

	1953		1952	
	Quantity	Value	Quantity	Value
Cement (bbl.)	8,651,000	\$21,962,000	8,711,000	\$ 20,600,000
Clays	2,305,000	3,925,000	2,337,000	3,871,000
Coal	46,010,000	181,598,000	45,790,000	187,828,000
Coke*	3,513,000	59,550,000	3,391,000	57,960,000
Fluorspar	163,000	8,567,000	188,000	9,481,000
Iron, pig*	6,532,000	325,583,000	5,462,000	263,874,000
Lead (tons)	3,000	888,000	4,000	1,372,000
Lime	520,000	6,987,000	461,000	5,917,000
Natural gas (000 cu.ft.)	9,282,000	1,559,000	10,183,000	1,650,000
Petroleum (bbl.)	59,026,000	170,590,000	60,089,000	165,850,000
Petroleum gases (bbl.)	—	—	—	—
Sand and gravel	21,522,000	20,541,000	19,584,000	19,214,000
Sandstone (ground)	276,000	2,462,000	267,000	2,343,000
Stone	22,939,000	29,737,000	22,335,000	28,326,000
Sulphuric acid*	120,000	2,148,000	138,000	2,291,000
Zinc	15,000	3,348,000	19,000	6,247,000
Other minerals	—	9,631,000	—	7,306,000
Total	—	\$461,795,000	—	\$460,005,000

*Values for processed materials are not included in the totals.

†Value included in other minerals.

the largest crop; hog production provides the greatest income to the farmer.

Manufacturing.—The value added by manufacturing to Illinois production in 1953 was \$10,111,624,000, as compared with \$9,319,779,000 in 1952. Manufacturing industries employed an average 1,316,089 workers during 1953, as compared with 1,255,635 during 1952. Salaries and wages of manufacturing workers totalled \$5,668,441,000 in 1953, as compared with \$5,156,159,000 in 1952.

Total nonagricultural employment in Illinois stood at 3,314,200 in Aug. 1955, as compared with 3,271,300 in Aug. 1954. (D. F. H.)

Mineral Production.—Table IV shows the tonnage and value of the mineral commodities in Illinois in 1952 and 1953 (preliminary) whose value exceeded \$100,000. In 1953, Illinois was first among the states in the production of fluorspar, second in tripoli, third in stone and fourth in coal; and stood eighth in value of its mineral output, with 3.21% of the U.S. total.

Illiteracy. During 1955 it became more widely recognized that the increase of the world's population was exceeding the increase of educational opportunity, with the result that the number of illiterates in the world was growing.

Such illiteracy statistics as were available were largely estimates. Country-wide figures for Libya reported only 20% of the population literate, and literacy education was intensified with Palestinian refugees often serving as teachers. Peru reported 42% of its people literate, Thailand 50%, the Republic of China (Formosa) 65% and the Philippines 65%. By comparison, literacy in the United States was reported at nearly 98%.

Through the International Cooperation administration (formerly Foreign Operations administration or Point Four program) the United States continued to make its resources available in many other countries in the fight against illiteracy.

In Vietnam and adjacent countries the national languages were more widely used in literacy teaching, and the great availability of books helped to reduce illiteracy.

In Indonesia widespread literacy classes lowered the illiteracy rate to less than 60%. To surmount the handicap of illiteracy in the last election, illiterate adults were taught the emblem of the various parties, registered by fingerprints and taught techniques of ballot-box voting.

Growing opportunities to use the newly acquired reading skills increased the literacy rate in Burma. It was reported that India was at a point where it could use experience gained in reducing illiteracy to give technical assistance to its Asian neighbors. In the Republic of Korea rapid strides were made in lowering the illiteracy rate.

In Turkey new roads and other improved communication facilities heightened the effectiveness of the literacy campaign.

In Egypt various means of eradicating illiteracy were used. There were special classes for policemen and civil servants. A special arrangement, businessmen and landowners paid for instruction of illiterate employees who attended classes. Classes were established in barracks for soldiers, in prisons for prisoners whose terms exceeded nine months and in social welfare centers. In Liberia thousands of adults were taught to read and write not only in their own dialects but in English as well.

Venezuela used reading and writing centres, mobile units

libraries, literacy teacher-leaders and groups. In some areas the literacy education teachers (*maestros alfabetizadores*) worked with other specialists comprising the rural advancement service through co-ordinated activities.

The rural normal schools of Bolivia added a requirement that teacher trainees, before they leave the normal school, must teach at least ten illiterates to read and write. Literacy education opportunities were increased in Nicaragua. Curriculums were revised and the textbook for the literacy course was improved. Through cultural missions, the most distant parts of the country were reached.

The Dominican Republic and Mexico reported continued emphasis on literacy education. In Ecuador the national union of journalists was legally authorized to participate in the literacy campaign.

In the development of school facilities for persons in certain territories of the French union, it was deemed necessary to teach illiterates in simple French to enable them to communicate with each other despite a diversity of vernacular languages.

Italy continued its struggle against illiteracy. About 100,000 persons annually completed the course for illiterates. Poland also continued to make intensive efforts to eradicate illiteracy.

The recently established literacy campaign in Portugal began to show encouraging results. The work was so comprehensive that illiterate persons received help in becoming integrated fully and actively into the national community.

Rumania emphasized the abolishment of the causes of illiteracy and the prevention of its recurrence. Illiterate adults, until recently constituting a problem, had been taught to read and write, so that there was little or no recognized illiteracy in that country.

Greece reported that, although there had been universal compulsory education up to the sixth grade since 1911, the peasants (particularly women) were still largely illiterate. During the year, evening schools continued to be operated in the rural areas.

The United Nations Educational, Scientific and Cultural Organization (UNESCO) continued with increasing effectiveness to stimulate more positive results in the varied efforts to banish illiteracy. Such persistent questions as the following were examined: Should illiterates be taught in their own vernaculars or in the pertinent world language? Is a little literacy better than none, or should a certain standard of functional literacy be the goal? What kind of literature should be used to teach people whose tradition has been entirely oral? What are the best means of ensuring that persons who have just learned to read will not relapse into a state of illiteracy? (See also ISLAM.)

(E. W. GN.)

I.L.O.: see INTERNATIONAL LABOUR ORGANIZATION.

Immigration, Emigration and Naturalization.

Total arrivals in the United States, which had levelled off at 18,000,000 during the year ended June 30, 1954, resumed the previous upward trend in 1955 and rose to 123,859,654. This rise was chiefly in border traffic, particularly along the Mexican border.

As in past years, 97% of the total arrivals consisted of alien and citizen border crossers. The remainder included immigrants, crewmen and other nonimmigrants admitted for temporary visits, as well as citizens arriving from countries other than Mexico and Canada.

United States Immigrants.—More than 237,000 immigrants were admitted to the United States for permanent residence during the year ended June 30, 1955, an increase of 14% over the 208,177 admitted during the preceding year. The 237,790 immi-

grants admitted in 1955 included 29,002 refugees admitted under the provisions of the Refugee Relief act of 1953. Table I shows the major countries of birth of the immigrants admitted.

Table I.—Immigrant Aliens Admitted to the United States by Classes and Principal Countries of Birth, Year Ended June 30, 1955

Country or region of birth	Total admitted	Quota immigrants	Spouses and children of U.S. citizens	Natives of western hemisphere countries, their spouses and children	Ministers, their spouses and children	Other non-quota immigrants
All countries	237,790	82,232	30,882	94,274	307	30,095
Europe	127,492	76,437	21,087	1,299	177	28,492
France	3,411	2,516	818	39	4	34
Germany	29,603	22,610	6,290	71	13	619
Ireland	5,975	5,912	35	17	—	11
Italy	31,925	5,461	7,553	459	35	18,417
Netherlands	3,732	2,912	298	14	17	491
United Kingdom	17,849	17,323	224	261	1	40
Other Europe	34,997	19,703	5,869	438	107	8,880
North America	90,732	1,072	1,479	87,538	20	623
Canada	23,091	7	108	22,592	10	374
Mexico	50,772	2	35	50,682	—	53
West Indies	12,499	773	1,214	10,470	7	35
Central America	3,683	100	74	3,508	1	—
Other North America	687	190	48	286	2	161
South America	5,599	146	113	5,330	6	4
Asia	12,131	3,426	7,635	60	85	925
Africa	1,186	797	346	8	6	29
Australia and New Zealand	474	257	186	13	13	5
Other countries	176	97	36	26	—	17

Source: Immigration and Naturalization Service, United States Department of Justice.

The upward trend in quota immigration noted in 1954 was broken in 1955, when 82,232 quota immigrants were admitted. This 13% reduction in quota immigration may be explained in part by the fact that a number of immigrants admitted as non-quota immigrants came under the provisions of the Refugee Relief act of 1953.

With the exception of Great Britain, Ireland and Sweden, countries of northern and western Europe almost filled their quotas in the year. Quota immigration from a number of southern and eastern European countries, however, was low because the quotas of these countries had been mortgaged under the provisions of the Displaced Persons act; for example, quota immigration from Lithuania, Yugoslavia, Poland and the U.S.S.R. equalled about one-half of their annual quotas.

Of the 82,232 quota immigrants admitted in the year ended June 30, 1955, 17% were admitted under preferences established by the Immigration and Nationality act, 80% were non-preference quota and 3% were admitted under section 3(c) of the Displaced Persons act of 1948, as amended, which provides for the issuance of visas to out-of-zone refugees.

The number of selected immigrants of special skill or ability rose from 2,456 in 1954 to 3,012 in the year ended June 30, 1955.

Not since 1927 had so many nonquota immigrants been admitted to the United States—155,558 in the year ended June 30, 1955. The principal groups in this category were spouses and children of United States citizens, of whom 30,882 were admitted; natives of independent countries of the western hemisphere and their spouses and children, with 94,274 admitted; and persons admitted under the provisions of the Refugee Relief act of 1953, 29,002 admitted.

A 17% increase in nonquota immigration from the western hemisphere was primarily the result of a rise in immigration from Mexico and the West Indies. Immigration from Mexico during the past five years had increased from 6,372 in 1951 to 50,772 in 1955.

The admission of refugees under the provisions of the Refugee Relief act of 1953 was slow in starting, but speeded up during the year ended June 30, 1955, with the admission of 29,002 refugees. As of June 30, 1955, a total of 29,823 immigrants had been admitted under the act. The largest single group admitted consisted of 18,796 Italian relatives of United States citizens

or alien residents, residing in Italy or Trieste.

Nonimmigrants.—Nonimmigrants are aliens who enter the United States for temporary periods or alien residents returning from temporary visits abroad. The figures in Table II do not include such special groups as agricultural labourers, border crossers and crewmen.

Table II.—Nonimmigrant Aliens Admitted to the United States, Years Ended June 30, 1954–55

Class	1955	1954
Total nonimmigrants admitted	620,946	566,613
Foreign government officials	26,288	23,095
Representatives to international organizations	6,003	5,601
Temporary visitors for business	68,696	61,029
Temporary visitors for pleasure	332,394	292,725
Transit aliens	71,301	78,526
Treaty traders and investors	1,203	1,023
Students	27,192	25,425
Temporary workers and industrial trainees*	9,750	7,479
Representatives of foreign information media*	575	504
Exchange aliens*	16,077	15,260
Returning resident aliens	61,442	55,887
Other nonimmigrants	25	59

*New classes under the provisions of the Immigration and Nationality act.
Source: Immigration and Naturalization Service, United States Department of Justice.

Nonimmigrant admissions had tripled since the end of World War II, and in the year ended June 30, 1955, reached a new high of 620,946, a 10% rise over the preceding year. More than half of the nonimmigrants admitted were temporary visitors for pleasure, of whom approximately 40,000 more visited the United States in 1955 than during 1954.

The principal countries or regions of birth of the nonimmigrants admitted during 1955 were the West Indies (103,339); Mexico (76,155); England, Scotland and Wales (67,266); South America (51,750); Asia (40,718); and Germany (33,226).

Emigrants and Nonemigrants.—Emigrants are, by definition, aliens who depart from the United States after a residence exceeding one year in the United States, with the intention of remaining abroad. In the year ended June 30, 1955, 31,245 emigrants departed, including 15,617 to Europe; 4,924 to Asia; 2,918 to Canada; 2,062 to the West Indies; 2,922 to South America; and 2,802 to other countries.

Nonemigrants are either resident aliens who depart for a temporary visit abroad or visitors in the United States who return home. Of the 634,555 nonemigrants who left the United States during the year ended June 30, 1955, 50,012 were resident aliens leaving for temporary periods and 584,543 were aliens who entered as tourists, transits, government officials and others who had been in the United States for less than one year.

Apprehensions and Expulsions of Aliens.—In June 1954 a concentrated drive was begun to apprehend and expel Mexicans illegally in the United States. As a result, for the first time in more than a decade illegal crossing over the Mexican border was brought under control. The control of the border was maintained throughout 1955 and was a major factor in the reduction

Table III.—Aliens Deported From the United States by Cause Years Ended June 30, 1950–55

Cause	1955	1954	1953	1952	1951	1950
All causes	15,028	26,951	19,845	20,181	13,544	6,628
Subversive or anarchistic	47	61	37	31	18	6
Criminals	666	783	689	778	1,036	790
Immoral classes	162	239	100	50	67	53
Violators of narcotic laws	96	105	53	40	62	55
Mental or physical defectives	69	43	48	56	45	53
Previously excluded or deported	366	336	276	539	940	553
Remained longer than authorized	225	401	1,561	4,469	3,289	1,661
Entered without proper documents	1,964	5,344	9,724	9,636	5,322	1,352
Failed to maintain status	346	644	387	475	298	224
Failed to comply with conditions of status	895	1,491	404	—	—	—
Entered without inspection or by false statements	10,061	17,337	6,387	3,706	2,293	1,734
Likely to become public charges	37	31	35	24	14	38
Miscellaneous	94	136	144	377	160	109

Source: Immigration and Naturalization Service, United States Department of Justice.

these, 232,769 were voluntary departures, of which 221,381 took place at the Mexican border, and 15,028 were deportations under orders of deportation.

Included among the aliens deported were 47 of the subversive class and 666 racketeers and other criminals.

Aliens in the United States.—Section 265 of the Immigration and Nationality act requires that in January of each year all aliens must notify the immigration and naturalization service of their current addresses.

The resident alien population had remained at approximately 2,300,000 for the past five years. Three-fourths of the alien population were concentrated in the northeastern states of New York, Massachusetts, New Jersey and Pennsylvania; in the north central states of Illinois and Ohio; and in the southwestern states of California and Texas.

The alien population was declining in the heavily populated eastern states and was growing in the north central and southwestern states.

Naturalizations.—Naturalizations granted during the year ended June 30, 1955, numbered 209,526, an increase of 78% over 1954.

Table IV.—Principal Countries of Former Allegiance of Persons Naturalized in the United States, Years Ended June 30, 1951–55

Country of former allegiance	1955	1954	1953	1952	1951
All countries	209,526	117,831	91,075	88,655	54,711
British	22,974	16,565	13,215	14,993	10,841
Canadian	18,151	13,062	10,073	10,004	5,871
German	17,842	11,679	12,923	13,538	5,441
Italian	16,128	10,926	9,675	9,720	5,911
Polish	27,777	8,542	6,912	5,858	3,101
Japanese	7,593	6,750	674	40	—
Irish	9,116	5,324	2,817	2,180	1,301
U.S.S.R.	8,627	3,832	2,644	2,851	1,831
Mexican	10,166	3,710	2,713	2,496	1,941
Other	71,152	37,441	29,429	26,975	18,311

Source: Immigration and Naturalization Service, United States Department of Justice.

Statutory authority exists for the reacquisition of citizenship by persons who lost citizenship under certain conditions. During 1955, 930 persons thus repatriated themselves, including 67 women who lost citizenship through marriage. In addition, 15,323 certificates of derivative citizenship were granted to persons who derived citizenship, and 7,379 certificates were issued by reason of birth abroad to citizen parents.

The United States citizenship of 197 persons was revoked usually because of the establishment of permanent residence abroad within five years after naturalization. In addition, 4,202 persons expatriated themselves by voluntary action. (See also LAW.) (J. M. Sg.)

Imports: see INTERNATIONAL TRADE; TARIFFS. See also under various countries.

Income, Distribution of: see WEALTH AND INCOME, DISTRIBUTION OF.

Income and Product, U.S. For the first three quarters of 1955, the U.S. national income was at an annual rate (seasonally adjusted) of \$31,500,000,000 and the gross national product amounted to an annual rate of \$384,000,000,000. Both of these comprehensive measures of the value of the nation's output were at record highs. They were about 7% above the totals for calendar year 1954. From 1953 to 1954, national income and gross national product had registered small declines.

(The annual rate data represent the average of estimates for the first three quarters which have been adjusted for seasonal influences and multiplied by four to facilitate comparisons with previous annual totals.)

Since prices in the first three quarters of 1955 were only slightly higher than the average for 1954, the bulk of the

in the number of expulsions. In the year ended June 30, 1954, more than 1,000,000 aliens were expelled from the United States, but during 1955 the number was down to 247,797. Of

crease in the dollar value of national output represented higher physical volume. The quantity of goods and services produced in the United States in the first nine months of 1955 was at a rate larger than in any other year. It was one-third higher than in 1946, the first full post-World War II year, and more than twice as high as in 1929. On a per capita basis (that is, after allowance for population increase over the period), real national output in 1955 was three-fifths greater than in 1929.

The flow of personal income, which had increased slightly from 1953 to 1954 despite the dip in national output, showed further expansion. In the January–September 1955 period, personal income aggregated \$300,000,000,000 on an annual rate basis, 4% above the 1954 calendar-year total of \$287,000,000,000.

Meaning of Income and Product Measures.—National income, as defined by the U.S. department of commerce, measures the nation's output of goods and services in terms of its factor cost—the aggregate earnings of labour and property which arise from current production. Earnings are measured in the forms in which they accrue to residents of the nation, before deduction of taxes on those earnings. As such, they consist of the compensation of employees, the profits of corporate and unincorporated business enterprises, net interest and rental income of persons.

Personal income is the current income received by persons from all sources, including transfers from government and business but excluding transfers among persons. It differs from national income by the inclusion of transfers (such as relief, veterans' pensions and government interest disbursements) which are not in return for current productive services, and by the exclusion of earnings (social insurance contributions and undistributed corporate income) which are not actually received by persons in the current period.

Gross national product or expenditure measures the nation's output of goods and services in terms of market value. It is "gross" in the sense that no deduction is made for depreciation charges and other allowances for durable capital goods used up in the productive process. Other business products used up by business in the accounting period are excluded. Gross national product comprises the purchases of goods and services by consumers and government, gross private domestic investment (including the change in business inventories) and net foreign investment.

Broad Patterns of Change.—Expansion of income and product in 1955 may be viewed briefly against the background of developments in the 1953–54 business readjustment.

Continuing the 1950–52 uptrend, national income and product showed further increases in the first half of 1953. Declines occurred in the ensuing three quarters, followed by a firming over-all economic activity in the second and third quarters of 1954. Despite the downturn in national output, the flow of income to individuals was well maintained. Personal income preceded only slightly from the 1953 mid-summer high point, and disposable income—personal income less personal taxes—showed an actual rise. This strength of the individual income flow was a key factor in the general demand situation as it supported a high level, gradually rising flow of consumer expenditures.

The upswing of economic activity that started in the fall of 1954 was one of the most vigorous and pervasive on record. Its dimensions may be seen from the gross national product figures. After declining from an annual rate of \$369,300,000,000 in the second quarter of 1953 to a level of about \$358,000,000,000 in the second and third quarters of 1954, gross national product advanced strongly over the course of the next year—attaining the unprecedented magnitude of \$392,000,000,000 by the third quarter of 1955. From analysis of personal income, retail sales

and other monthly indicators, it was evident early in the fourth quarter of 1955 that the momentum of economic forces was still upward, and that the United States was on the threshold of a \$400,000,000,000 economy.

The production downturn from the summer of 1953 to the spring of 1954 mainly reflected (1) a declining curve of purchases by the federal government for national security purposes; and (2) a shift by business from inventory accumulation to liquidation. The forces that shaped the subsequent recovery, however, were mostly different. Reversal of the shift in inventory investment, it is true, was a factor of some significance in the upsurge of gross national product from the fall of 1954 through the third quarter of 1955. But national security purchases were maintained at their reduced level in this period and accounted for none of the advance in "final purchases" (gross national product less change in business inventories). This advance was wholly civilian in character. It reflected, in the main, a diversified array of increases cutting across the broad categories of personal consumption expenditures and private construction and equipment outlays.

Gross National Product.—Personal consumption expenditures in the first three quarters of 1955 were at an all-time high of \$250,900,000,000—\$14,400,000,000, or 6%, more than in 1954. Consumer outlays for durable goods, nondurable goods and services—as well as for the great bulk of individual items comprising these broad categories—were all larger in the 1955 period.

While the buoyancy of consumer markets in 1955 reflected the trend of income, it is significant that the rise in consumer expenditures outstripped that in disposable personal income. Extensive use was made of consumer credit, which increased about one-fifth from the third quarter of 1954 to the same period of 1955.

After declining from \$51,400,000,000 in 1953 to \$47,200,000,000 in 1954, gross private domestic investment registered an upsurge to the record annual rate of \$58,300,000,000 in the first nine months of 1955. In the latter period, the business system resumed the accumulation of inventories, and private outlays for producers' durable equipment and industrial, commercial and residential construction showed expansion over 1954.

Swings in business inventories were a feature of the 1953–54 economic adjustment and of the ensuing recovery. Inventory accumulation by business rose in the second quarter of 1953 and then showed a slackening in the next three months. This was followed by four successive quarters of sizable liquidation, during which business adjusted stocks more closely to current sales levels. With the upturn and broad expansion of economic activity, the reduction of inventory stocks tapered in the last quarter of 1954 and was replaced by inventory build-up in 1955.

In contrast to the volatile course of business inventory change, "fixed" investment in new construction and equipment fluctuated within a narrow range throughout 1953 and 1954 and

Table 1.—Gross National Product or Expenditure

(In 000,000,000s of dollars)*

Item	1955†	1954	1953	1952
Gross national product	384.0	360.5	364.5	345.2
Personal consumption expenditures	250.9	236.5	230.6	218.3
Durable goods	35.7	29.3	29.8	26.6
Nondurable goods	125.1	120.9	118.9	116.0
Services	90.2	86.4	81.8	75.7
Gross private domestic investment	58.3	47.2	51.4	49.6
New construction	31.9	27.8	25.8	23.7
Producers' durable equipment	23.5	22.3	24.4	23.1
Change in business inventories	2.9	—2.9	1.2	2.8
Net foreign investment	—6	—3	—2.0	—2
Government purchases of goods and services	75.4	77.0	84.5	77.5
Federal	45.7	49.2	59.5	54.3
State and local	29.7	27.8	25.0	23.2

*Detail will not necessarily add to totals because of rounding.

†Data cover first three quarters and represent averages of seasonally adjusted quarterly totals expressed at annual rates.

Source: U.S. Department of Commerce (except 1955).

moved upward in 1955. Nonfarm residential building levelled off in the spring quarter, whereas outlays for industrial and commercial construction and for producers' equipment showed continued gains.

Purchases of goods and services by federal, state and local governments in the first three quarters of 1955 were at an annual rate of \$75,400,000,000, about \$1,500,000,000 below the total for 1954. The decline was wholly in the federal segment, as state and local government expenditures—continuing a steady postwar uptrend—rose \$2,000,000,000 over the period.

Expenditures for purposes of national security, comprising nine-tenths of total federal government purchases, reached a postwar peak rate of \$53,200,000,000 in the second quarter of 1953, dropped by one-fourth over the next year and a half, and were relatively stable in the first three quarters of 1955. At an annual rate of \$40,700,000,000, national security outlays in the third quarter of 1955 absorbed 10% of the total gross national product, as compared with 14% in the second quarter of 1953 and 6% in the second quarter of 1950, just prior to the attack on South Korea.

National Income.—Nearly all industrial divisions of the economy contributed to the expansion of national income from 1954 to the first three quarters of 1955. (See Table II.)

Table II.—National Income by Industrial Origin

(In 000,000,000s of dollars)*				
Industry	1955†	1954	1953	1952
All industries, total	319.5	299.7	303.6	289.5
Agriculture, forestry and fisheries	15.7	16.6	16.8	18.7
Mining	5.8	5.2	5.6	5.4
Contract construction	16.3	15.7	15.3	14.6
Manufacturing	101.0	89.9	96.7	89.3
Wholesale and retail trade	54.7	52.0	51.8	50.1
Finance, insurance and real estate	29.3	27.9	26.3	24.4
Transportation	15.5	14.6	15.8	15.4
Communications and public utilities	11.3	10.8	10.1	9.1
Services	31.3	29.8	28.7	26.6
Government and government enterprises	36.8	35.3	35.1	34.4
Rest of the world	1.9	1.8	1.4	1.5

*Detail will not necessarily add to totals because of rounding.

†Data cover first three quarters and represent averages of seasonally adjusted quarterly totals expressed at annual rates.

Source: U.S. Department of Commerce (except 1955).

The only exception was agriculture, where a further downdrift in farm prices combined with general stability in costs led to a contraction of income originating.

The largest gain, both absolute and relative, occurred in manufacturing. It was this industry—especially its durable goods sector—that had been most affected by the 1953–54 economic readjustment. As shown in the table, income originating declined from 1953 to 1954 in manufacturing and the related mining and transportation industries but held stable or increased moderately in the other broad divisions.

Substantial recovery in manufacturing income began in the fall of 1954 and was accelerated during the following winter and spring. By mid-1955 the recovery had carried beyond the 1953 peak and income in most types of manufactures was expanding vigorously in response to the broadened demand for industrial products.

Changes in the distributive share pattern of national income in the period 1953–55 reflected primarily shifts among industries. Major developments related to corporate profits, compensation of employees, and income of unincorporated enterprises.

In the three industry divisions chiefly affected by the business readjustment—manufacturing, mining and transportation—practically all income originates in corporations. Within the corporate system, the principal effect was on profits. As shown in Table III, corporate earnings dropped sharply from 1953 to 1954—although profits after tax were stable—and then rebounded strongly in 1955, whereas the changes in employee compensation were much less volatile.

The income of unincorporated enterprises in the aggregate changed little from 1954 to 1955. This over-all stability reflected an appreciable drop in farm income that was approximately offset in the total by an upturn in the income of business and professional proprietors.

Table III.—National Income by Distributive Shares

(In 000,000,000s of dollars)*				
Item	1955†	1954	1953	1952
National income	319.5	299.7	303.6	289.5
Compensation of employees	219.0	207.9	209.2	192.5
Wages and salaries	206.4	196.2	198.5	185.8
Private	171.3	162.4	164.7	152.1
Government	35.1	33.8	33.7	32.7
Supplements to wages and salaries	12.5	11.7	10.8	10.7
Income of unincorporated enterprises and inventory valuation adjustment	38.1	37.9	38.2	40.1
Business and professional	27.1	25.9	25.9	25.3
Farm	11.0	12.0	12.3	14.1
Rental income of persons	10.7	10.5	10.3	9.6
Corporate profits and inventory valuation adjustment	41.5	33.8	37.2	36.6
Corporate profits before tax	43.2	34.0	38.3	35.9
Corporate profits tax liability	21.7	17.1	21.3	19.3
Corporate profits after tax	21.5	17.0	17.0	16.6
Inventory valuation adjustment	-1.6	-2.2	-1.1	1.1
Net interest	10.3	9.5	8.8	7.1

*Detail will not necessarily add to totals because of rounding.

†Data cover first three quarters and represent averages of seasonally adjusted quarterly totals expressed at annual rates.

Source: U.S. Department of Commerce (except 1955).

Disposition of Personal Income.—During the strong upturn in 1955, personal income in the United States first exceeded the \$300,000,000,000 mark in May and climbed to \$306,000,000,000 (annual rate) by the third quarter of the year.

For the first nine months as a whole, the annual rate of personal income, as already noted, was \$300,000,000,000. Disposable income was at an annual rate of \$266,700,000,000 as compared with \$254,800,000,000 in 1954. (See Table IV.)

Table IV.—Personal Income and Disposition of Income

(In 000,000,000s of dollars)*				
Item	1955†	1954	1953	1952
Personal Income	300.0	287.6	286.2	271.5
Wage and salary disbursements	206.5	196.2	198.6	185.8
Other labour income	6.9	6.6	6.0	4.7
Proprietors' and rental income	48.7	48.4	48.4	47.8
Dividends	10.6	10.0	9.3	8.1
Personal interest income	15.3	14.7	13.8	12.3
Transfer payments	17.1	16.2	14.0	12.3
Less: Personal contributions for social insurance	5.1	4.5	3.9	3.4
Less: Personal tax and nontax payments	33.3	32.8	35.8	34.3
Federal	29.5	29.1	32.4	31.3
State and local	3.9	3.7	3.4	3.0
Equals: Disposable personal income	266.7	254.8	250.4	238.1
Less: Personal consumption expenditures	250.9	236.5	230.6	218.1
Equals: Personal saving	15.8	18.3	19.8	20.0

*Detail will not necessarily add to totals because of rounding.

†Data cover first three quarters and represent averages of seasonally adjusted quarterly totals expressed at annual rates.

Source: U.S. Department of Commerce (except 1955).

Personal saving amounted to an annual rate of about \$16,000,000,000 in the first nine months of 1955. This was somewhat lower than in the three previous years. (See also BUDGET; NATIONAL; BUSINESS REVIEW; CONSUMER CREDIT; DEBT, NATIONAL; PRICES; WEALTH AND INCOME, DISTRIBUTION OF.)

(C. F. Sz.)

Income Tax: see TAXATION.

India. This republican member of the Commonwealth of Nations in southern Asia consists of a union of states. Area and populations of the states are shown in the table.

Language falls into two main groups: (1) *Indo-Aryan* northern, including western Hindi (spoken by 47% of the population), Bengali (8%), Marathi (7%), Gujarati (5%); western Hindi's most important derivative is vernacular Hindustani which occurs as (a) literary Hindi, with Sanskritized vocabulary and the Devanagari script, used by educated Hindus; Urdu, with Persianized vocabulary and the Perso-Arabic script.

sed by educated Moslems; and (c) the widely understood colloquial Hindustani, much used in commerce, the military services, etc., written in Perso-Arabic Devanagari or Roman characters and with many technical words of English origin. (2) *Dravidian* or southern, including Telugu (9%), Tamil (7.5%), Kannada (4.4%) and Malayalam. English is used for all official purposes, but is to be replaced by Hindi in the Devanagari script by 1965. Religion: Hindu (about 85%), Moslem (9.9%), Christian (2.3%), Sikh (1.7%), Jain, Buddhist, Parsee, Jewish, etc. Chief towns other than the union capital and provincial capitals (pop., 1951 census): Ahmedabad 788,333; Cawnpore 255,383; Poona 480,982; Howrah 433,630; Amritsar 325,747; Coimbatore 373,665; Madura 361,781; Benares 355,777; Allahabad 322,295; Indore 310,859.

President in 1955, Rajendra Prasad; prime minister, Jawaharlal Nehru.

History.—Foreign Affairs.—There was no change in the foreign policy of seeking friendship with all, and Delhi was one of the great junctions of co-existence. Among the visitors were the prime ministers of the U.S.S.R., Burma, Egypt and the Sudan, the king of Saudi Arabia, the foreign ministers of the United Kingdom, Australia and Canada and the United Nations secretary-general. Relations with Canada were particularly



"I SAY, YOU CHAPS, just stop pumping for a moment and let's talk this over, huh?" a cartoon of 1955 by the Indian artist Ahmed of the *Hindustan Times* (New Delhi)

India was one of the sponsors, held at Bandung, Indonesia, in April. In June he undertook a tour of Czechoslovakia, the U.S.S.R., Poland, Yugoslavia, Austria, Italy and the United Kingdom.

The two immediate problems were the Portuguese settlements and Pakistan. As the Indian government had ruled out the use of force and Portugal had declared that transfer of sovereignty could not be effected by peaceful means, the impasse was complete. In July railway traffic between India and Goa was suspended, and the Portuguese legation in New Delhi was asked to close down from Aug. 8. *Satyagrahis* (nonviolent resisters) from India tried to enter Goa; at first the Portuguese authorities merely deported them but later resorted to drastic action. Early in August two were killed; the climax came on Aug. 15 when hundreds of *satyagrahis* entered Goa, and the Portuguese shot 22 dead, injured 225 and imprisoned many more. Four days later the Indian government severed diplomatic relations. On Sept. 1, the Indian consulate-general at Goa was closed down, and Portugal was asked to close its consulates in Bombay. To prevent further casualties *satyagrahis* were prevented from crossing the border.

Relations with Pakistan were better than for many years. After border clashes in March and May the prime minister and foreign minister of Pakistan visited New Delhi to co-ordinate steps to prevent further incidents; and the occasion was used to have "full and cordial" talks on Kashmir. An *ad hoc* territorial agreement on the use of the Indus waters during the six months from April to September was reached. After taking into account Pakistan's ability to transfer water in replacement from the western rivers, amounts for additional canal withdrawals by India from the three eastern rivers were settled. In August a train service between Calcutta and Lahore was inaugurated, thus establishing direct land communications between East and West Pakistan.

Home Affairs.—In the elections held in Andhra in February the congress won 146 of 196 seats, and formed a stable ministry. In Travancore-Cochin during the same month the Praja-Socialist ministry was defeated and the congress took over. The commission, appointed the previous year to examine the question of reorganization of states, submitted its report in October. It recommended that the number of Indian states be reduced from 27 to 16, with 3 territories directly administered from the centre. This scheme was based on the need for linguistic and cultural homogeneity, balanced by financial, economic and administrative considerations.

The Institut Français de Pondichéry was opened on March 20. In the July elections to the municipal councils and the representative council of Pondicherry state, congress won a majority

States of the Republic of India*

State	Area (sq. mi.)	Population (1951 census)	Capital (pop. 1951 census)
Governors' states			
Andhra	67,000	21,282,000	Kurnool (60,222)
Assam	85,012	9,043,707†	Shillong (53,756)
Bihar	70,330	40,225,947	Patna (282,057)
Bombay	111,434	35,956,150	Bombay (2,839,270)‡
Madhya Pradesh	130,272	21,247,533	Nagpur (449,099)
Madras	60,790	35,734,002	Madras (1,416,056)
Orissa	60,136	14,645,946	Cuttack (102,505)
Punjab	37,378	12,641,205	Chandigarh
Uttar Pradesh	113,409	63,215,742	Lucknow (496,861)
West Bengal§	30,775	24,810,308	Calcutta (2,548,677)¶
Total, governors' states	766,536	278,802,540	
Rajpramukhs' states*			
Hyderabad	82,168	18,655,108	Hyderabad (1,085,722)
Madhya Bharat	46,478	7,954,154	Gwalior (241,577)
Mysore	29,489	9,074,972	Bangalore (778,977)
Patiala and East Punjab States			
Union (Pepsu)	10,078	3,493,685	Patiala (97,869)
Rajasthan	130,207	15,290,797	Jaipur (291,130)
Saurashtra	21,451	4,137,359	Rajkot (132,069)
Travancore-Cochin	9,144	9,280,425	Trivandrum (186,931)
Total, rajpramukhs' states	329,015	67,886,500	
Chief commissioners' states**			
Ajmer	2,417	693,372	Ajmer (196,633)
Bhopal	6,878	836,474	Bhopal (102,333)
Coorg	1,586	229,405	Mercara (10,117)
Delhi	578	1,744,072	New Delhi (276,314)††
Himachal Pradesh	10,904	1,112,466	Simla (46,150)
Kutch	16,724	567,606	Bhuj (30,985)
Manipur	8,628	577,635	Imphal (133,606)
Pondicherry‡‡	193	317,300§§	Pondicherry (58,600)¶¶
Tripura	4,032	639,029	Agartala (42,595)
Vindhya Pradesh	23,603	3,574,690	Rewa (29,623)
Total, chief commissioners' states	75,543	10,292,049	
Chief commissioner's territory			
Andaman and Nicobar Islands	3,215	30,971	Port Blair (17,671)
Grand total	1,174,309	357,012,060	

*Excluding Kashmir—under dispute between India and Pakistan—in which no census was taken. †Excluding some tribal districts in northeastern frontier tract and Naga tribal area, but yet included in any census (est. pop., 560,000). ‡Greater Bombay. §Excluding Channarayana (area 4 sq.mi.; pop. [1948 est.] 44,800), a former French settlement. ¶Greater Calcutta includes Howrah and other suburbs; total pop. (1951), 3,490,281. ¶¶Rajpramukh = ruler of former princely state now elected state-governor for life. **Himachal Pradesh and Vindhya Pradesh have lieutenant-governors. ††Union capital. Total pop. of New Delhi and Old Delhi (1951) 1,191,104. ‡‡Former French settlements of Pondicherry, Yanam, Mahe, Karikal; area and population excluded from total. §§1948 est. ¶¶1952 est.

friendly and Lester Pearson, Canada's external affairs minister, who came to inaugurate a dam named after his country, offered India technical assistance in the form of an atomic reactor, aircraft and a magnetometer aerial survey of mineral resources in Rajasthan. A trade pact was signed with the German Federal Republic, and a loan of Rs.200,000,000 was granted to Burma. Jawaharlal Nehru, besides attending the conference of Commonwealth prime ministers in London in January, led the Indian delegation to the Asian-African conference, of which



PRIME MINISTER NEHRU escorting Helen Keller, deaf and blind authoress, to a reception given in her honour at New Delhi, India, during her world tour of 1955

with the Communists a close second; the latter had a majority in Pondicherry itself.

A marriage act was passed prescribing monogamy and permitting divorce for Hindus and another law enforced the abolition of untouchability by the constitution by making the treatment of anyone as an untouchable a criminal offense.

The government decided to introduce decimal coinage and a metric system of weights and measures. A commission was appointed to consider the question of the replacement of English by Hindi as the official language of the union government by 1965; and another commission was assigned the task of consolidating and revising statute law and reviewing judicial administration.

Production and Planning.—The last year of the first five-year plan was one of fulfilment. The Ganguwal powerhouse, the first unit of the Bhakra-Nangal hydroelectric project in the Punjab, was switched on in January and in November work was begun on the construction of the main dam of the project. The Ahraura dam on the Gurie river near Benares was completed in January; the Durgapur barrage, part of the Damodar valley project, was opened in August; and at Messanjore in West Bengal the main dam of the Mayurakshi project, built largely with aid received from Canada under the Colombo plan, was named the Canada dam and inaugurated in November by the external affairs minister of Canada.

The Machkund hydroelectric power scheme, serving Andhra and Orissa, was switched on in August. The first national newsprint factory at Nepanagar in Madhya Pradesh, and an oil refinery with an annual crude oil production of 2,000,000 tons, set up by the Burmah Shell company at Trombay on the west coast, both started production in March; the Hindustan machine tool factory was established near Bangalore; and the railway coach factory in Perambur near Madras city went into production in October. An agreement was signed with the U.S.S.R. in February for the establishment at Bhilai in Madhya Pradesh of

a steel plant with an initial capacity of 1,000,000 tons of ingots and an eventual production of 1,000,000 tons of rolled products. To co-ordinate iron and steel production a separate ministry of iron and steel was created.

The second five-year plan, which was to come into operation in March 1956, was being formulated. The government (Congress party) defined its objective at its annual session at Avadi near Madras, in January as the creation of "a socialistic pattern of society"; and to enable its easy achievement the country's constitution was amended during the year to vest the state with powers of compulsory acquisition and requisition of private property.

The state had the discretion to determine the amount of compensation to be paid and the courts were only empowered to decide if the compensation was illusory or amounted to fraud under the constitution. The Imperial Bank of India was nationalized and converted on July 1 into the State Bank of India. This state-sponsored commercial bank was to open branches in the rural areas. The second plan would lay great emphasis on heavy industry and minerals. It envisaged capital expenditure, mostly in the public sector, of between £3,000,000, £4,000,000, and would aim at increasing the national income at an annual rate of 5% and at providing employment for 12,000,000 people. (See also PAKISTAN; TIBET.) (S. GL.)

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Education.—Schools (1951-52): primary 215,036, pupils 19,298,614 teachers (including kindergarten) 554,730; secondary 22,639, pupils 5,343,836, teachers 230,419; colleges to intermediate standard 149, pupils 251,855; vocational (including 131 schools of fine arts and 3,358 schools of oriental studies) 5,149, pupils 235,806, teachers (1950-51) 20,719. Adult education centres 43,453, pupils 1,066,437. Teachers' training schools and colleges 857, students 72,931. Universities (1955) 32; other institutions of higher education (1951-52, including fine arts, oriental studies and physical training) 662. Total number of students (1954-55) 505,400.

Finance and Banking.—Monetary unit: rupee, with an exchange rate of 4.762 to the U.S. dollar. Budget (1955-56 est.): revenue Rs. 4,690,000,000, expenditure Rs. 4,990,000,000. Total public debt (March 1955) Rs. 30,398,600,000, of which Rs. 1,169,800,000 were foreign debt. Currency circulation (Dec. 1954) Rs. 12,190,000,000, (Mar. 1955) Rs. 10,300,000,000. Bank deposits (Dec. 1954) Rs. 6,250,000,000, (Mar. 1955) Rs. 6,700,000,000. Gold and foreign exchange (May 1955) U.S. \$1.72 billion, (Dec. 1954) U.S. \$1,782,000,000.

Foreign Trade.—(1954) Imports Rs. 5,978,000,000; exports Rs. 5,620,000,000. Main sources of imports: U.K. 25%; other sterling area 27%; continental European Payments Union countries 19%; U.S. and Canada 13%. Main destinations of exports: U.K. 32%; other sterling area 25%; U.S. and Canada 18%; continental E.P.U. countries 9%. Main export commodities: jute and bagging 22%; tea 23%.

Transport and Communications.—Roads (1953): 432,800 km. Motor vehicles (1953): cars 167,500, commercial vehicles 133,700. Railways (1953) 55,200 km.; traffic (1952-53): 57,994,000,000 passenger-km. freight, (1953-54) 48,024,000,000 ton-km. Shipping (July, 1954): merchant vessels of 100 gross tons and over 216; total tonnage 516,000. Air transport (1953): 385,773,000 passenger-km.; cargo, 26,428,000 ton-km. flown 30,902,000, (1954) 37,600,000. Telephones (March 1955) 210,868. Radio receiving sets (1953): 680,000.

Agriculture.—Main crops (metric tons, 1954; 1955 in parentheses): wheat 7,917,000 (8,676,000); rice 36,894,000; maize 2,991,000; tea 2,700; peanuts 3,884,000; linseed 395,900; cottonseed 1,454,000; cotton lint 727,000; jute 572,000; tobacco 254,700; (1953-54) millet 8,510,000; sorghum 8,040,000; barley 2,831,000; (1953) chick-peas 4,624,000; potatoes 1,997,000; coffee 30,100; rapeseed and mustard seed 839,000; sesame 539,000; sweet potatoes and yams (1952) 1,186,000; cassia (1951) 1,254,000. Sugar, raw value (1954) 1,533,000. Rubber, natural (1954) 21,800. Livestock (1951): cattle 155,099; sheep 38,829; pigs 4,420,000; chickens 67,135; ducks 6,624,000; buffaloes 42,854; goats 47,121,000.

Industry.—Electricity 7,497,000,000 kw.hr. Production (metric tons, 1954): coal 37,361,000; pig iron 1,972,000; crude steel 1,704,000; copper, refined 7,300; lead, refined 1,810; aluminum 4,970; cement 467,000; cotton yarn 706,800; woven cotton fabrics 4,590,000 metres; (metric tons, 1953): salt 3,050,000; manganese ore, metal 897,000; sulphuric acid 110,800; caustic soda 23,300; gold 6 kg. Bicycles (1954) 372,000. Index of machinery production (1948=100) 190.

India, Portuguese: see PORTUGUESE OVERSEAS TERRITORIES

Indiana. An east north central state of the United States, popular name "Hoosier state." Indiana was admitted to the union Dec. 11, 1816, as the 19th state. Total area of the state is 36,291 sq.mi., including 86 sq.mi. of inland lakes and rivers. Pop.: (1950 census) 3,934,244, (July 1, 1955, est.) 4,325,000; 59.9% of the population was defined as urban (1950). Capital and largest city: Indianapolis (pop. 1950) 427,173. Other large cities: Gary 133,911; Ft. Wayne 133,607; Evansville 128,636; South Bend 115,911; Hammond 87,594; Terre Haute 64,214; Muncie 58,479; East Chicago 54,263; Anderson 46,820.

History.—Legislation enacted by the 1955 Indiana legislature included provision for state bonus payments of up to \$555 for Indiana veterans who served in the Korean war theatre and \$600 or next of kin of veterans who died from service-connected causes. State aid to local schools was increased by \$23,500,000 for the 1955-57 biennium as compared with the previous biennium. Workmen's compensation maximum benefits were increased from \$30 to \$33 weekly, and unemployment compensation benefits from \$27 to \$30 weekly. Employers of four or more persons (previously eight or more) were made subject to the state unemployment compensation law. Legislation also permitted teachers and other public employees to vote on coming under the federal old age and survivors insurance program as well as their own state retirement plans. Approximately \$14,000,000 was made available for school construction loans to local school units with insufficient local financial resources.

State officials in 1955 were: George N. Craig, governor; Harold W. Handley, lieutenant governor; Crawford F. Parker, secretary of state; John Peters, treasurer; Curtis E. Rardin, auditor; Edwin K. Steers, attorney general; and Wilbur Young, superintendent of public instruction.

Education.—The estimated number of public schools in the state in 1955 was 2,350. Enrolment in the elementary schools was 479,398 with 10,100 teachers. Enrolment in the junior high schools was 128,693 with 2,280 teachers. Enrolment in the high schools (grades 9-12) was 192,989 with 6,650 teachers. Parochial schools had an enrolment of about 78,750. For the year 1954-55, the state appropriated about \$68,390,000 for the support of schools, in addition to the sums provided by local units of government. There were about 70,377 enrolled in 35 Indiana colleges and universities in Sept. 1955.

Social Insurance and Assistance, Public Welfare and Related Programs.—In 1954-55 the state's welfare program cost \$40,706,640, of which \$20,562,475 was furnished by federal funds, \$9,638,877 by state funds and \$10,706,288 by county funds. Old-age assistance cost \$21,434,632, blind assistance \$1,216,015 and aid to dependent children \$9,028,924. In addition, child welfare cost \$2,697,217 from state and county funds. Receipts of the state for unemployment insurance for the year ending June 30, 1955, were \$27,784,816. Benefits paid out were \$40,125,395.

In 1955 the state maintained ten institutions for mental patients, including an epileptic village; eight homes, hospitals and schools, and six penal and correctional institutions. As of June 30, 1955, inmates of mental institutions totalled 17,466 and of penal and correctional institutions 6,645.

Communications.—The total mileage of state highways in 1955 was 17,657, with county roads totalling an additional 76,204 mi. The state highway expenditure for roads amounted to \$59,348,691 during the fiscal

year 1954-55. Steam railroad first-line trackage measured approximately 508 mi. There were 90 mi. of electric railways. The estimated number of telephones in the state on Jan. 1, 1955, was 1,362,700. There were 75 commercial airports, 35 municipal airports, 4 military airports, 72 personal landing fields, 3 seaplane bases and 2 helicopter landing areas in the state as of July 1, 1955.

Banking and Finance.—On June 30, 1955, there were 354 state banks and trust companies with 77 branches. On the same date the total resources of these banks were \$1,755,470,308. Deposits totalled \$1,625,766,67. There were 123 national banks and 61 branches on Dec. 31, 1954. Their resources amounted to \$2,513,822,000 and deposits totalled \$2,333,398,000 as of April 11, 1955. State savings and loan companies

numbered 157 and their assets were \$375,366,302 as of Dec. 31, 1954. The state's 73 federal savings and loan associations listed assets amounting to \$563,733,313 as of December 31, 1954.

State expenditures for the fiscal year 1954-55 were \$150,011,315 general fund, \$165,006,424 dedicated funds, total \$315,017,739. Receipts

Table II.—Principal Industries of Indiana

	All employees 1953	Salaries and wages 1953 (in 000)	Value added by manufacture 1953 (in 000)	Value added by manufacture 1952 (in 000)
Food and kindred products	40,649	\$160,446	\$361,483	\$356,155
Textile mill products	3,173	9,235	14,064	16,225
Apparel and related products	*	*	*	54,209
Furniture and fixtures	*	*	*	101,880
Paper and allied products	9,953	38,158	70,907	62,745
Printing and publishing industries	*	*	*	108,968
Chemicals and allied products	28,679	128,019	335,662	278,511
Petroleum and coal products	17,597	89,702	208,400	176,864
Rubber products	15,520	63,443	104,218	88,972
Leather and leather products	2,488	6,711	11,878	11,251
Stone, clay and glass products	23,292	83,751	165,252	162,204
Primary metal industries	94,935	467,727	881,924	612,115
Fabricated metal products	47,202	200,264	338,127	275,375
Machinery (except electrical)	69,732	323,865	522,726	541,809
Electrical machinery	83,120	319,667	612,480	514,228
Transportation equipment	126,041	578,728	960,930	890,619
Instruments and related products	*	*	*	16,183
Miscellaneous manufactures	34,481	133,626	191,318	123,799

*Withheld because the estimate did not meet publication standards, either on the basis of the associated standard error of estimate or on the basis of a consistency review.

Source: U.S. Department of Commerce, Annual Survey of Manufactures, 1953.

were \$143,433,182 general fund, \$156,176,319 dedicated funds, \$299,609,501 total. At July 1, 1955, there was a balance in the state treasury of \$76,000,000. The state constitution prohibits any long-term borrowing and Indiana therefore has no state debt.

Agriculture.—Cash receipts from farm marketing in 1954 totalled \$1,158,432,000, or about 3¾% of the national total. (G. N. Co.)

Manufacturing.—Data on manufacturing and industry for 1953 (latest available in 1955) are shown in Table II.

Table III.—Mineral Production of Indiana

(Short tons, except as noted)

Mineral	Quantity 1952	Value 1952	Quantity 1953	Value 1953
Clays	1,331,000	\$ 1,700,000	1,654,000	\$ 2,514,000
Coal	16,350,000	64,977,000	15,812,000	62,354,000
Coke	7,611,000	139,053,000	8,887,000	159,967,000
Iron, pig	6,604,000	318,030,000	8,372,000	412,683,000
Petroleum (bbl.)	12,037,000	33,100,000	12,823,000	37,570,000
Sand and gravel	11,546,000	9,280,000	11,203,000	9,501,000
Stone	9,127,000	21,965,000	8,714,000	21,696,000
Other minerals . . . . .	...	31,009,000	...	35,544,000
Total . . . . .	...	\$162,031,000	...	\$169,179,000

*Values for processed materials are not included in the totals.

Mineral Production.—Table III shows the tonnage and value of those mineral commodities produced in Indiana in 1952 and 1953 (preliminary) whose value exceeded \$100,000. In 1953, Indiana ranked 20th among the states in value of its mineral output, with 1.18% of the U.S. total.

Indians, American. During 1955 the federal government continued its efforts to place elsewhere its historic responsibility to American Indians. The full session of the 83rd congress had witnessed an almost unparalleled drive to lodge federal supervisory and service activities with whatever jurisdiction would accept them—state, county, local school district, private foundation or another federal agency.

On Oct. 7, 1955, first-hand reports of the progressive withdrawal of federal supervision over the nation's approximately 400,000 Indians were presented to the eighth annual meeting of the Governors' Interstate Indian council in Santa Fe, N.M. Congress in 1954 had passed termination laws affecting six Indian groups of about 25,000 persons in the states of Oregon, Wisconsin, Utah and Texas. Two of the most difficult situations developed in Wisconsin and Utah, it was reported at the council session.

The legislation for Wisconsin involved mainly the Menominee tribe, with 3,000 members, about 234,000 ac. of reservation lands, and assets, mainly in timber, estimated at somewhere between \$33,000,000 and \$66,000,000. George M. Keith, deputy director of the Wisconsin department of welfare, reported that the legislation had caught the state without any program for the integration of this long-segregated people and property. He said that the state was faced with a tremendous task to work out a transfer program before the law's deadline of Dec. 1958.

Two of the 1954 acts concerned tribes in Utah. One, the so-

Table I.—Principal Crops of Indiana

	Indicated 1955	1954	Average, 1944-53
Wheat, bu.	275,595,000	256,104,000	225,897,541
Barley, bu.	33,988,000	39,711,000	33,988,000
Oats, bu.	73,193,000	58,960,000	47,221,936
Yrbeans, bu.	51,793,000	46,128,000	32,574,843
Peas, bu.	3,025,000	3,438,000	3,560,000
Trifolium, bu.	2,904,000	1,925,000	670,900
Alfalfa, tons	2,425,000	2,322,000	2,475,510
Tobacco, lb.	12,160,000	15,040,000	13,363,737
Apples, bu.	1,025,000	1,204,000	1,350,000
Peaches, bu.	131,000	546,000	488,889

Source: U.S. Department of Agriculture.

for 1954-55. Steam railroad first-line trackage measured approximately 508 mi. There were 90 mi. of electric railways. The estimated number of telephones in the state on Jan. 1, 1955, was 1,362,700. There were 75 commercial airports, 35 municipal airports, 4 military airports, 72 personal landing fields, 3 seaplane bases and 2 helicopter landing areas in the state as of July 1, 1955.

Banking and Finance.—On June 30, 1955, there were 354 state banks and trust companies with 77 branches. On the same date the total resources of these banks were \$1,755,470,308. Deposits totalled \$1,625,766,67. There were 123 national banks and 61 branches on Dec. 31, 1954. Their resources amounted to \$2,513,822,000 and deposits totalled \$2,333,398,000 as of April 11, 1955. State savings and loan companies

called Paiute act, involved five small tribes whose members were scattered outside the reservation. Francis McKinley, a Ute Indian and a council delegate, said that these Indians had been receiving a minimum of federal services, so that federal withdrawal would mean little change. The second Ute bill, however, posed a mass of still unsolved problems, since it necessitated splitting of the 1,000,000-ac. Uintah-Ouray reservation, together with its assets, including \$15,000,000 in cash. There were about 1,800 Indians in the group. The termination act applied only to a dissident mixed-blood group of 450. The others did not want to sever their ties with federal trusteeship. Complex corporate plans to separate their respective equities would be necessary to meet the tight time schedule demanded in the legislation.

Two Indian groups in Oregon were affected by termination bills. One, involving 55 coastal bands numbering 10,000 to 15,000 Indians, presented few problems because they were already relatively well integrated. In connection with the second group, the 2,100-member Klamath tribe, however, many problems remained to be worked out within the specified four-year termination period. These included division of 1,000,000 ac. of land and \$50,000,000 to \$100,000,000 in tribal assets.

Meanwhile, in Washington two major legislative acts were passed by congress that were concerned with improving the present status of Indians. One of these, public law 47, corrected an anomalous situation that had existed in the big Papago reservation in southern Arizona for many years. The other, public law 255, authorized longer-term leasing of restricted Indian lands for public, religious, educational, recreational, residential, business and other purposes. While this bill contained certain threats of complete alienation of Indian property, neutral observers believed that, with properly drawn regulations under the act, Indian interests would be protected. The bill itself had certain safeguards, such as reappraisal provisions at five- to ten-year intervals.

As for the Papago legislation, under the executive order of 1917 which created the 2,000,000-ac. reservation, title to minerals under the tribal lands were not vested in the tribe (as it is on all other Indian reservations) but was left open for entry by any citizen under the mining laws of the United States. When a mining claim is patented, the patent conveys title not only to the minerals but also to the surface of the land, which is thus alienated from tribal ownership. As of Dec. 1953 about 12,000 ac. of grazing land on this reservation were included in mining claims. The Papago Indians contended that under the old conditions mineral claimants could use their land indefinitely without getting a patent. Recent uranium strikes in the west increased their concern that the land might be lost to the tribe for stock-grazing purposes. Public law 47 closed the reservation to entry, gave the tribe title to minerals and permitted mining to be carried on under a 1938 law.

There were other measures introduced in congress which received various degrees of investigation and consideration. These bills were still pending for possible action in Jan. 1956.

The following are the most important measures in the senate which had general interest or applicability.

S. 401, introduced by Sen. George W. Malone of Nevada, would abolish the functions of the bureau of Indian affairs, remove guardianship of Indians and repeal the Indian Reorganization act. Under terms of the bill the bureau would be abolished in three years after enactment.

S. 704, introduced by Sen. Edward J. Thye of Minnesota, would provide for the termination of federal supervision over Indians of southern Minnesota.

S. 1373, introduced by Sen. James E. Murray of Montana and others, was to promote the economic use of Indian lands and alleviate and adjust the heirship problem involved in Indian trust or restricted allotments. Companion measures to this were house resolutions 4226 and 4512. They were introduced by Congressmen Lee Metcalf of Montana and E. Y. Berry of South Dakota.

S. 1746, introduced by Sen. Mike Mansfield and Sen. James E. Murray, both of Montana, would continue the Indian Claims commission, which expires under existing law on Aug. 13, 1956, until April 10, 1962. Com-

panion house bills were H.R. 220, 238, 1563, 3238 and 5313. They were introduced by Representatives Victor Wickersham of Oklahoma, C. Albert of Oklahoma, Ed Edmondson of Oklahoma and Lee Metcalf of Montana. Representative Wickersham introduced two resolutions for the same intent with slightly different wording, numbered 220 and 3238.

S. 2222, introduced by Sen. Harley Kilgore of West Virginia, would amend title 18, entitled "Crimes and Criminal Procedure," of the United States code to provide a criminal sanction for the embezzlement or theft of the property of Indian tribal organizations. This measure was introduced in the house as H.R. 6403 by Rep. Emanuel Celler of New York.

S. 2252, introduced by Sen. Arthur Watkins of Utah, would close membership rolls of tribes, bands or communities and other groups of Indians in the United States for the purpose of ownership rights in the property of such groups.

There were other measures introduced in the house that were not passed. The major ones were:

H.R. 1562, introduced by Representative Edmondson of Oklahoma, to promote the education and rehabilitation of Indians of the United States and its territories. Rep. Stewart Udall of Arizona introduced a similar measure, H.R. 3141.

H.R. 1591, introduced by Representative Metcalf of Montana, to assist the several states in providing scholarships to enable Indian high school graduates to pursue education at colleges and universities.

H.R. 3239, introduced by Rep. Clifton Young of Nevada, to terminate federal supervision over Indians in Nevada.

H.R. 4669, introduced by Rep. Edith Green of Oregon, to provide assistance for the control of juvenile delinquency.

H.R. 5957, introduced by Representative Berry of South Dakota, amend public law 280. This was the act of Aug. 15, 1953, which granted certain states jurisdiction over crimes committed by or against Indians within that state's boundaries, and also gave the other states the right to assume that jurisdiction. Senate bills 27, 1606 and 51 (the latter containing the provision that this must be done only with the consent of the Indians involved, in accordance with historic Anglo-American theory of government) and house resolutions 2624, 2654, 2833, 4219, 6036, 6402 and 6439 all dealt with the same matter.

H.R. 7384, introduced by Rep. Fred Marshall of Minnesota, to promote the welfare and to facilitate the orderly termination of federal supervision and control over Indians and Indian property of Minnesota. Sen. Hubert Humphrey of Minnesota introduced a similar measure, S. 2685.

On the executive front, the drive to divest the federal government of its supervisory role over Indians was marked by two major developments during the year: (1) completion of the transfer of the Indian bureau's health program to the United States public health service, a division of the department of health, education and welfare, as of July 1, 1955; and (2) progress toward the bureau's transfer of its Indian extension work to the states.

The transfer of the bureau's health activities represented the largest reduction of program responsibilities in the history of the 165-year-old agency. It included transfer of approximately 3,600 employees and real property valued at around \$40,000,000. Among the 970 buildings located throughout the United States and Alaska were 56 hospitals in 13 states and the territory of Alaska, 21 health centres and 13 boarding school infirmaries.

While moving toward termination of federal trusteeship, the bureau during the year took steps to improve current conditions of Indian schoolchildren, principally Navajos. Under the Navajo Emergency Education program, the total enrolment of Navajo children in federal, public and mission schools, both off and on the reservation, was increased from 16,215 at the beginning of the fiscal year to 23,679 at the end, leaving a balance of 5,000 unenrolled children. Plans were made, however, to make schooling available for all Navajo children who could attend during the fall of 1955.

During the fifth year of operation, the Navajo-Hopi long-range rehabilitation program authorized by the act of April 1950, produced numerous basic improvements for the benefit of the two tribal groups in such fields as education, conservation and resource survey, irrigation and road improvement. (See *INDOCHINA*; *ROMAN CATHOLIC CHURCH*.) (C. J. S. D.)

Indochina: see CAMBODIA; LAOS; VIETNAM.

Indonesia. This is an Asian republic consisting of two groups of islands: (1) Major Sunda Islands (Java, Sumatra, Borneo, Celebes); (2) Lesser Sunda Islands.

sa Tenggara (Bali, Lombok, Sumba, Sumbawa, Flores, part Timor); (3) Molucca (Maluku) archipelago (Halmaheira, Am. Ambon, etc.). Area 575,893 sq.mi. Pop. (mid-1955 est.): 154,500; two-thirds live on Java. Large indigenous groups on Java: Javanese 42,000,000, Sundanese 13,500,000, Madurese including the inhabitants of the island of Madura) 6,700,000; Sumatra: Menangkabaus 3,100,000, Bataks 1,800,000; on the Sunda Islands: Balinese 1,700,000; on Celebes: Buginese 1,000,000. Nonindigenous groups: Chinese 3,000,000, Europeans mainly Dutch) 75,000. Language: as well as the Indonesian official language (Bahasa Indonesia), an adaption of Malay, 25 other languages and about 250 dialects are spoken. Religion: Islam (Shafi'i) about 90%; Christian 4.3%; Buddhist 3%; Hindu 2.2%. Chief towns (pop., 1951 est.): Djakarta (cap.) 1,000,000, Djokjakarta 1,800,000, Surabaya 1,100,000, Bandung 1,000,000, Semarang 311,000, Surakarta 266,000, Medan 260,000. President, Achmed Sukarno. Premiers in 1955: Ali Sastroamidjojo and (from Aug. 11) Burhanuddin Harahap.

History.—The year 1955, like the previous one, was marked by impending political, economic and financial crises. Backed by nationalists and Communists, the Ali cabinet continued its policy of closer political and economic relations with the Soviet Union and Communist China. In April Indonesia was host to representatives of 29 countries, including China, at the Asian-African conference (*q.v.*) in Bandung that unanimously adopted a resolution in which every kind of colonialism was condemned and the "liberation" of Dutch New Guinea was demanded.

The Communist fast-increasing influence and the deterioration of the financial and economic position brought the Socialists, the Masjumi (Moslems) and the Christians together in a common front. Accusing the government of widespread corruption, of squeezing large sums of money out of import licences thereby unduly increasing the already high cost of living) in order to bolster up party funds for the planned general election of 1955, of incompetence in combating the insurgents' movements on Java, Sumatra, Achin, Celebes and in the Moluccas, they put forward in Dec. 1954 a no-confidence motion in parliament, which, however, was defeated by a narrow margin.

In his annual report, published in Aug. 1955, Sjafruddin Prawiranegara, director of the Bank of Indonesia, laid stress on Indonesia's ominous financial position. From March 31, 1954, to March 31, 1955, currency circulation increased from 7,000,000 rupiah to 7,480,000,000 rupiah; gold backing, however, decreased from 1,358,000,000 rupiah to 952,000,000 rupiah, although the total backing (including foreign exchange holdings) increased from 1,549,000,000 rupiah to 2,731,000,000 rupiah because of increased export revenues (rubber), limitation of imports and foreign loans. The budget deficit amounted to 10,000,000 rupiah. He warned that financial disaster could be averted unless monetary equilibrium was restored by improving production through the increase of trained workers and vital goods and attracting foreign investments.

Meanwhile, high army officers refused to acknowledge the government appointment of Major General Utojo as the new chief of staff and sided with the political opposition. The government was finally forced to resign on July 22. Three weeks later Burhanuddin Harahap (Masjumi) formed a new government, mainly composed of Moslem, Socialist and Christian ministers. The new government started by appointing a new chief of staff acceptable to the army (Colonel Nasution, leader of the government demonstration of Oct. 17, 1952), fighting corruption, diminishing or abolishing export duties and soliciting financial help from the United States and under the Colombo Plan.

With the whole army mobilized to assure peace and order, the general election duly started on Sept. 29, to be completed in

December.

In October Indonesia's new request to put the dispute about the status of Dutch New Guinea on the agenda of the UN general assembly got the required two-thirds majority vote.

(G. W. O.)

Education.—(1954) Schools: primary 32,223, pupils 6,285,432, teachers 109,864; secondary 2,737, pupils 404,981, teachers 21,986; vocational 925, pupils 101,205. Teachers' training colleges 540, students about 45,000. Universities 3, faculties 138, students 17,387.

Finance and Banking.—Monetary unit: rupiah, with a basic selling exchange rate of 11.48 rupiah to the U.S. dollar. Budget (1954 est.): revenue 8,163,000,000 rupiah; expenditure 10,754,000,000 rupiah. Internal debt (Dec. 1954) 5,027,000,000 rupiah, external debt 5,237,000,000 rupiah. Currency circulation (Dec. 1954) 7,542,000,000 rupiah; (Aug. 1954) 6,417,000,000 rupiah. Deposit money: (Dec. 1954) 3,541,000,000 rupiah; (Aug. 1954) 3,114,000,000 rupiah. Gold and foreign exchange (March 1955, central bank only) U.S. \$273,000,000; (total including other banks, Dec. 1954) U.S. \$299,000,000.

Foreign Trade.—(1954) Imports 7,172,000,000 rupiah; exports 9,759,000,000 rupiah. Main sources of imports: Japan 22%, Netherlands 11%, other continental European Payments union countries 17%; U.K. 5%; other sterling area 22%; U.S. and Canada 15%. Main destinations of exports: Malaya and Singapore 26%; Netherlands 19%; U.K. and sterling area 14%; other continental European Payments union countries 9%; U.S. and Canada 17%. Chief exports: rubber 31%; petroleum products 26%; tin 7%; copra 6%.

Transport and Communications.—Roads (1953) 70,300 km. Motor vehicles in use (1954): cars 57,000, commercial vehicles 44,700. Railways (1954): 6,681 km.; freight carried 6,375,000 metric tons. Shipping: merchant vessels of 100 gross tons and over (July 1954) 125; total tonnage 91,085. Air transport (1954): 180,097,000 passenger-km.; freight 7,452,000 ton-km. Telephones (Jan. 1954): 63,977. Radio receiving sets (1953): 326,000.

Agriculture.—Main crops (metric tons, 1954): rice (Java and Madura) 7,140,000; tea 35,300; copra (exports) 297,000; sugar, raw value 720,000; soy beans 305,000. (1953): maize 2,416,000; sweet potatoes 1,319,000, (Java and Madura, 1954) 1,053,000; cassava 8,528,000, (Java and Madura, 1954) 6,400,000; peanuts 196,000; palm kernels 42,400; palm oil 160,600 (exports, 1954, 140,200); coffee 61,700 (exports, 1954, 36,000). Livestock (Sept. 1952): cattle 4,569,000; sheep 2,230,000; pigs 1,099,000; horses 549,000; buffaloes 2,851,000; goats 5,615,000. Fisheries (metric tons, 1953): sea 375,000; inland 242,000.

Industry.—Fuel and raw materials (metric tons, 1954): crude petroleum (11 months) 9,794,000; coal (11 months) 813,600; tin concentrates, metal content, 36,400; natural rubber 757,100; bauxite, dried equivalent (1953) 150,000.

Industrial Health. Certain activities of recent years took definite form in 1955, of which the most symbolic was the affiliation of occupational medicine with aviation medicine and public health within the American Board of Preventive Medicine, which was approved at the meeting of the American Medical association in Atlantic City in June.

Behind the recognition of the specialty by the Council on Medical Education and Hospitals of the American Medical association, and by the Advisory Board for the Medical Specialties, lay the development of a sound core of professional training in a number of schools in the United States and abroad, by means of which, more than by any other criteria, the nature and scope of occupational medicine (commonly spoken of as industrial medicine in its limited application to industry, as differentiated from its general concern with the impact of man's occupation upon his health) came to be defined. Back of this training, too, lay the still growing awareness of industrial physicians and medical educators that the hygienic needs of our industrial society demand, for their satisfaction, the application of a new brand of preventive medicine; that, without abandoning the disciplines and techniques of preventive medicine which had served the community well in the era characterized largely by microbiotic threats to human health, there was urgent need to cultivate the new methods of a preventive medicine that would bring under control the hazards to health created by man's applications of the physical sciences to his daily life.

The palliative character of industrial medicine, in its earlier preoccupation with the treatment of the end results of human exposure to dangerous environmental conditions, and with its emphasis on disability and workmen's compensation, was giving way rapidly to the viewpoints and techniques of industrial hygiene, environmental appraisal and control, and rehabilitation.

The ultimate social and economic consequences of this change in viewpoint and strategy could only be imagined, but they began to be apparent.

The effects of the new orientation of industrial medicine, now potentiated by formal professional sanction, could be expected to find their way into general medical practice, by virtue of the growing demands made upon physicians generally to spend some part of their time in industrial practice, especially in small industries. Approximately half of the U.S. work force was employed in such industries, and the almost utter lack of preventive medicine within these thousands of establishments was an outstanding problem of industrial and community health. Medicine in the U.S. had shown great capacity for responding to clear calls to duty, and it was to be expected that the new knowledge of preventive medicine in industry would find expression and application through appropriate emphasis on this aspect of the training and practice of physicians. A hopeful sign of progress in this direction was manifest in the consideration given to this subject in recent months in conferences of practising physicians and medical educators.

The recognition and the definition of occupational medicine as a specialized field of medical research, training and practice had even wider potential consequences, however, than those suggested above. It had been apparent, recently, that modern industrial production and distribution had altered not only the environment in which the work of the world was done but also the physical basis of modern life. The hazards of industry show themselves on streets and highways, and find their way into man's food and water supplies and into the air he breathes, in the form of chemical contaminants; they invade the household as the machinery of comfort and convenience, and as chemicals that find a wide range of usage. The evidence for the reality of these hazards is seen in the high incidence of fatal and disabling accidents, especially on the highways and in the home. In the latter connection, a new mechanism for the distribution of pertinent information in emergency had come into existence, as a sign of the times and also as a significant note of progress, in that "poison centres" had been and were being set up in a number of cities. These were in readiness to convey to physicians the available information for the prompt handling of cases of accidental poisoning which had become so common, especially among small children.

(R. A. K.)

Canada.—The federal department of national health and welfare through its occupational health division continued during 1955 the promotion of sound health practices in all industries and occupations throughout Canada. This was accomplished by close liaison with the provincial authorities in an advisory and consultant capacity. Specific projects included investigation of the problem of back injuries, study of health services for small plants, air pollution surveys, dust control, promotional and educational work in furthering occupational nursing, research on the hazard of new insecticides, establishment of safe standards, and greatly increased activity in the field of radiation control, including surveys of uranium mines.

In the Atlantic region, activity in iron ore in Labrador, in copper in Gaspé, Que., and in established fishing and lumbering industries led to an increased awareness for health services which was reflected in institutes for industrial nurses. Ontario and Quebec are the most industrialized provinces of Canada. During the year the Quebec government engaged an industrial nursing consultant; in Kitchener, Ontario, a pilot study project started providing small plants with health services. The Ontario division of industrial hygiene continued its close control of silicosis, and studied industrial absenteeism and the standardization of records.

Essentially the prairie provinces are agricultural, yet a

foundry survey was completed in Manitoba, and with the continuing oil development in Alberta, many subsidiary industries brought with them the need for control of new hazards. A study of arsenical air pollution was continued in Yellowknife, N.W.

British Columbia is in a unique position in that it contains several "company" towns which are almost completely isolated. Examples are the smelting town of Trail, and the aluminium establishment of Kitimat. This illustrates one of the fundamentals of occupational health practice in Canada, that the vast distances make essential good understanding between all levels of health authorities in handling the problems.

(M. I. W.; M. P. G. R.)

Great Britain.—The practice of industrial health has hitherto been largely regarded as supplementary to management and concerned mainly with accidents, occupational diseases, environmental hygiene and welfare. It was now realized that the outlook is too narrow and that industrial health must increasingly participate, within its limitations, in management. At the International Labour conference (Geneva, Switz., 1955) the main theme was labour management relations in the developing industrial society. Human relations emerged as vital to health, physical, mental and social. Strikes and restrictive practices reflected by absenteeism might represent disease in industry and were no less important to the health department than accidents and diseases. In Great Britain, 1955 was marked by paralyzing strikes in docks, transport and coal mines. The department of social science, University of Liverpool, published a significant investigation on *The Dock Worker, An Analysis of Conditions of Employment in the Port of Manchester*. Similar in the copper mining industry of Northern Rhodesia this same problem presented itself in the controversy on African advancement.

The International Labour conference unanimously recommended that vocational rehabilitation services should be made available to all disabled persons. In Great Britain the provision of sheltered employment in Remploy factories was restricted on account of excessive costs. The re-employment of infective cases of tuberculosis proved highly controversial and intractable. The United Kingdom government promised to implement the recommendations of the Gower's committee (1951) by extending factory legislation to nonfactory employments. The minister of labour set up an expert committee to advise him on the necessary measures and priorities. At the Atoms for Peace conference (Geneva, Aug. 1955) considerable attention was directed to the risks of injury from exposure to radiation from radioactive fission material and waste products. It was emphasized that absolute protection was not practicable and that the public must take a "calculated risk." The departmental committee appointed to review the Diseases provisions of the National Insurance (Industrial Injuries) act issued their report. The committee accepted the validity of the distinction between injury by accident and injury by gradual process and recommended that research into occupational health hazards was essential to the effective working of the act. (See also ACCIDENTS; PUBLIC HEALTH ENGINEERING.)

(A. MN.)

Industrial Production: see BUSINESS REVIEW.
Infantile Paralysis: see POLIOMYELITIS.

Infant Mortality. Mortality in the first year of life reached a record low point in the United States during the first eight months of 1955, with a rate of 26.4 per 1,000 live births, a reduction of 1.9% from the corresponding rate for the like period of the year before. During the whole of 1954 there were 107,100 deaths in the first year of life; the infant mortality rate was 26.6 per 1,000 live births. Alm

three-quarters of these infant deaths occurred during the first days of life. Compared with 1915, the earliest year for which data are available, when the infant mortality rate was 99.9 per 1,000 live births, the figure for 1954 represented a decline of 73%.

Among the white population in the United States, infant mortality is appreciably lower than among the nonwhite population. The latest available data relate to the year 1952, when the rates per 1,000 live births were: white males, 28.7; nonwhite males, 43; white females, 21.1; and nonwhite females, 41.7.

As in the United States, England and Wales also recorded a reduction in infant mortality in 1955, the decrease during the first six months amounting to 4% compared with the like period of the year before. Throughout all of England and Wales, 17,160 deaths under one year of age were recorded for the whole of 1954, corresponding to a rate of 25.4 per 1,000 live births; this is 5% lower than in 1953. The latest available data for Canada, covering 1954, showed 13,841 deaths under one year of age at a rate of 31.8 per 1,000 live births; the decrease from the year before amounted to 10%. In New Zealand the population of European origin recorded an infant mortality rate of 20 per 1,000 live births in 1954, the same as in 1953. Australia had an infant mortality rate of 22.5 per 1,000 live births in 1954 (excluding the experience of full-blood aborigines). Recent infant mortality rates for a number of countries are shown in the following table.

Infant Mortality per 1,000 Live Births
in Selected Countries

Country	1954	1953	1952	Country	1954	1953	1952
North America				Switzerland	27	30	29
United States	27	28	29	United Kingdom	26	28	28
Canada	32	35	38	Yugoslavia	102	117	105
Costa Rica	101	83	80	Asia			
Dominican Republic	—	74	79	Aden Colony	—	197	140
Guatemala	88	103	112	Brunei	—	113	104
Honduras	—	60	64	Ceylon	72	71	78
Jamaica	—	63	75	Cyprus	52	47	59
Mexico	—	95	90	Hong Kong	72	74	77
Panama	50	53	51	India	—	—	116
Puerto Rico	57	63	66	Israel (Jewish pop.)	35	36	39
Salvador, El	82	82	85	Japan	—	49	48
Trinidad and Tobago	—	70	89	Malaya, Federation of	—	83	90
South America				Singapore	—	67	70
Argentina	62	65	65	Taiwan	30	34	35
British Guiana	—	79	82	Africa			
Chile	124	114	134	Algeria	—	—	84
Colombia	—	111	111	Egypt	—	—	127
Peru	—	114	100	Madagascar	—	—	91
Venezuela	68	68	79	Mauritius	81	94	81
Europe				Nyasaland	—	—	141
Austria	48	50	51	Reunion	—	87	138
Belgium	49	42	45	Southern Rhodesia (Europeans)	29	25	21
Denmark	—	27	29	Union of So. Africa (Europeans)	34	34	35
Finland	31	34	33	Zanzibar and Pemba	—	—	79
France	37	42	45	Oceania			
Germany (West)	43	46	48	Australia	22	23	24
Hungary	61	71	70	New Zealand	—	25	28
Ireland	38	39	41	Europeans	20	20	22
Italy	53	59	63	Maoris	59	73	84
Netherlands	21	22	22	Hawaii	23	21	21
Norway	—	92	94	Guam	41	40	38
Portugal	86	59	61				
Spain	52	59	61				
Sweden	18	19	20				

Source: United Nations, *Monthly Bulletin of Statistics* (April 1955) and *Statistical Papers, Series A*, vol. vii, no. 4 (Oct. 1955), and earlier issues; Office of Population Research, Princeton University, and Population Association of America, *Population Index* (July 1955); World Health Organization, *Epidemiological and Vital Statistics Reports*, vol. viii (1955).

A detailed survey of infant mortality throughout the world and the biological, social and economic factors bearing upon the problem were contained in volumes i and ii of a report by the department of social affairs of the United Nations, *Foetal, Infant and Early Childhood Mortality*, published in 1954. According to the report, almost all mortality in the first month of life and almost all foetal deaths are related to developmental and genetic factors. However, there are exceptions in deaths that may be attributed to accidents of pregnancy and childbirth. On the other hand, mortality in infancy after the very early period of life is largely the result of environmental factors. However, some environmental factors, such as nutrition and prenatal care,

may also affect foetal and neonatal mortality.

The leading causes of death in the first year of life among infants in the United States during 1954 were: immaturity (unqualified), 5.4 per 1,000 live births; postnatal asphyxia and atelectasis, 4.4; congenital malformations, 3.9; birth injuries, 2.8; influenza and pneumonia, except pneumonia of the newborn, 2.0; and certain gastrointestinal diseases, 1.1. (See also DEATH STATISTICS.)

BIBLIOGRAPHY.—National Office of Vital Statistics, *Monthly Vital Statistics Bulletin* and various issues of *Vital Statistics—Special Reports* (issued irregularly); Office of Population Research, Princeton University, and the Population Association of America, *Population Index* (quarterly); United Nations, *Monthly Bulletin of Statistics*; Metropolitan Life Insurance Company, *Statistical Bulletin* (monthly). (M. Sp.)

Inflation: see PRICES. See also under various countries.

Influenza: see RESPIRATORY DISEASES.

Inland Waterways: see CANALS AND INLAND WATERWAYS.

Insects and Insecticides: see AGRICULTURAL RESEARCH SERVICE; PUBLIC HEALTH ENGINEERING.

Installment Buying and Selling: see BUSINESS REVIEW; CONSUMER CREDIT.

Insurance. *Life Insurance.*—At the beginning of 1955 approximately 93,000,000 persons in the United States owned \$334,000,000,000 of life insurance in legal reserve companies, an increase of almost 10% in one year and about 130% in ten years. This insurance was composed of \$201,000,000,000 ordinary, \$94,000,000,000 group and \$39,000,000,000 industrial. By the end of 1955 the total amount of life insurance had expanded to around \$370,000,000,000. In Canada at the beginning of 1955 around 6,000,000 policyholders owned about \$24,100,000,000 of life insurance, made up of \$16,800,000,000 ordinary, \$5,500,000,000 group and \$1,800,000,000 industrial. By the end of 1955 the total amount of life insurance in Canada had increased to about \$26,000,000,000.

Although the amount of legal reserve life insurance owned by policyholders in the United States and Canada was very large, the total was equal to only a little more than one year's personal income of the residents of those countries. Nevertheless, the United States and Canada continued to rank high above other countries in the ratio of life insurance in force to personal income. Premiums paid for life insurance in the United States in 1954 amounted to 2.9% of people's income, while in Canada it was 2.7%.

During 1954 legal reserve life insurance companies made benefit payments to United States families of more than \$4,947,000,000, which was double the total of 1944. Beneficiaries received \$2,072,000,000 of this in the form of death benefits, while living policyholders received \$2,875,000,000 as matured endowments, annuity payments, surrender values, policy dividends and the like. Benefit payments to Canadian families in 1954 amounted to \$312,000,000, of which \$119,000,000 represented payments to beneficiaries and \$193,000,000 payments to living policyholders.

United States veterans and servicemen held about \$43,000,000,000 of national service and United States government life insurance and, in addition, under the Servicemen's Indemnity act of 1951, each man in service had available a gratuitous indemnity of \$10,000 (decreased by any national service and United States government life insurance he might have) in event of death during active military service. (See also VETERANS ADMINISTRATION, U.S.)

There was also \$13,000,000,000 of life insurance in force in fraternal societies, assessment associations and savings banks. The survivor benefits provided by the Social Security act afforded death benefits to certain members of the families of persons covered by the law.

Assets of United States and Canadian life insurance companies continued to grow rapidly, reaching \$87,600,000,000 for United States companies and about \$6,000,000,000 for Canadian companies at July 31, 1955. Substantial life insurance investments are made across the border, especially by the companies doing life insurance business in both countries. United States companies had about 3% of their assets invested in Canada, while Canadian companies had about one-quarter of their assets invested in the United States.

Investments by United States life insurance companies in industrial and miscellaneous bonds of United States corporations rose to \$16,730,000,000 on July 31, 1955, and in addition nearly \$770,000,000 was held in foreign industrial bonds, chiefly Canadian. Likewise, investments in public utilities grew to a new high of \$13,310,000,000 in the United States, plus another \$430,000,000 in Canada. United States life companies had only recently begun to expand mortgage holdings in Canada. Their loans outstanding on United States properties amounted to \$27,500,000,000 on July 31, 1955, compared with about \$275,000,000 on Canadian properties. Although ownership of government securities had declined since World War II, the companies still held \$11,075,000,000 in the United States and nearly \$1,030,000,000 in Canada.

The net interest rate earned on total assets of the United States companies in 1954 was 3.24% (after taxes and expenses). Although interest rates on new investments declined through early 1954, they later turned upward. (L. A. L.)

Property Insurance.—The year 1954 started in an auspicious manner for the property insurance business. At first all lines of insurance showed profits, no mean feat when it is considered that there are 25 separate classifications. Then came the hurricanes. Within 45 days Hurricanes "Carol," "Edna" and "Hazel" blew the profits away. Companies which emphasized fire insurance and its collateral lines were hard pressed to complete the year on a break-even basis. The net tally was an over-all loss ratio (incurred losses and loss adjustment expense to earned premiums) which approximated the 1953 loss ratio, hovering about the 57% mark. The expense ratio continued to climb and moved up 0.5% to 1%. For 1954 the expense ratio for the stock companies was in the neighbourhood of 36.5%.

The first half of 1955 showed an upward trend in premium volume. For a representative group of 160 stock property insurance companies the gain in premium volume amounted to about 6%. In many ways this was a real gain, for the motive force no longer derived from inflation and rising rate levels. There was an increase in extended coverage insurance rates because of the hurricane effects, but generally rate levels tended downward. Substantial rate reductions were made in some fire insurance lines and in the highly profitable automobile physical damage field.

The over-all loss ratio for the first half of 1955 was 3.7 points above the ratio for the first half of 1954. The expense ratio remained constant. This produced a net combined loss and expense ratio of 92.3% (loss ratio 55.4%; expense ratio 36.9%). These averages are somewhat misleading. They include specialty companies whose loss ratio is usually lower than that of the general writing companies. Further, some specialty companies have expense ratios considerably lower than those of the general writing companies. If the specialty companies were eliminated from this analysis the over-all loss and expense ratios would probably be somewhat higher.

The fire and casualty field continued during 1954 and 1955 to be sharply competitive among various groups of companies. Conditions were nearly perfect for such spirited competition. Rates were adequate; surpluses were substantial for reserving purposes; the market was no longer subject to tremendous up-

heavals; insurance was being bought in more and more substantial amounts rather than being sold. This latter observation sprang from the economic and legal sanctions calling for insurance; e.g., financial responsibility laws and pressure of mortgagors for fire and extended coverage insurance.

Fire Insurance.—The decline in straight fire insurance premiums, begun in 1951, continued during 1955. Underwriting experience in fire insurance alone was better in 1954 than in 1953, but the prospects were not so bright for 1955. Extended coverage experience was disastrous in 1954. It was estimated that three hurricanes "Carol," "Edna" and "Hazel" resulted in insurance losses of almost \$275,000,000. Substantial rate increases were therefore imposed in the geographical areas where major losses occurred. The New England Fire Insurance Rating Association, for example, effective Dec. 31, 1954, filed extended coverage rate increases of approximately 150% on residence in Maine, Massachusetts and Rhode Island and of 50% in Connecticut.

Marine Insurance.—Ocean marine insurance premiums continued their slow decline in 1954 and the first half of 1955. Underwriting experience was improving. This very competitive field was complicated by dollar shortages and exchange restrictions in many countries.

Inland marine insurance continued to break premium volume records. This expanding area of insurance recorded a volume of \$325,000,000 in premiums written for 1954 compared with \$28,000,000 written in 1933. The loss picture was spotty. Overall, this was a profitable field for the insurance companies.

Casualty Insurance.—Workmen's compensation insurance premiums declined slightly in 1954 and the first half of 1955. Loss ratios were moving upward largely because of strong drives in legislative circles to increase benefits.

Accident and sickness insurance made gains, but at a slow rate: 10% in 1954, compared with 18% in 1953. The premium volume approximated \$2,750,000,000. Loss ratios remained favourable. The life insurance companies had seized the leadership in premium volume. Of the ten leading writers of accident and sickness insurance in 1955, eight were life insurance companies and the other two had affiliations with life insurance companies.

In the general liability lines, premiums were up about 10% but the profit margin remained slim.

Fidelity and surety bonds experienced substantial growth. Most of the upsurge in premiums resulted from the renewal of three-year fidelity bonds. Surety bonds continued to grow in volume primarily because of the building boom.

Miscellaneous small lines such as plate glass, burglary, theft, boiler and machinery were generally satisfactory.

Generally, it might be said that in 1954 and the first half of 1955 the fire and casualty insurance industry continued to offer flexible coverage at reasonable rates, backed by excellent claims adjustment and engineering service. (L. J. A.)

Hospital, Medical and Surgical Insurance.—Growth in the number of persons in the United States covered by some form of health prepayment program continued without let-up during 1955, as major attention to health and welfare benefits again came from organized labour. By the end of the year more than 105,000,000 persons in the United States held some form of coverage against hospital costs, more than 91,000,000 had dental protection and medical expense coverage extended to \$100,000,000. Blue Cross coverage in the United States and Canada exceeded 51,000,000 by the end of 1955, while the combined nonprofit Blue Shield plans had enrolled 37,000,000 for surgical protection and 27,000,000 for medical expense.

Although a revised version of the administration's proposed health reinsurance program was reintroduced in the U.S. Congress, it received comparatively little attention. Support for

appeared to be waning as Marion B. Folsom replaced Oveta Culp Hobby as secretary of health, education and welfare. Various bills proposing health insurance programs were also introduced in the congress but did not receive important support or public attention during the year. However, the recodified tax laws provided important clarifications of taxability to employers and employees of contributions for health programs and benefits received under them. In general, such payments and contributions continued to be deductible and nontaxable, in accordance with past practice under unclear legislation.

Nineteen compulsory cash sickness insurance bills were introduced in ten states during 1955 but all were defeated; no such proposals had been enacted since the New York program was adopted in 1949. Despite the 1955 Ford and General Motors so-called "guaranteed annual wage" settlements, it appeared that organized labour would continue to press for compulsory cash sickness legislation.

Extension of "catastrophic" or "major medical expense" coverages in the United States, largely through insurance company programs, continued cautiously during the year, with some apparent reluctance to expand vigorously in this direction by some carriers. Blue Cross and Blue Shield adopted in principle a recommended pattern of extended benefits designed to extend the basic service benefit concept of the nonprofit plans into longer periods of coverage and additional areas of care, but only a few of these plans had placed such coverage on the market by the end of 1955.

A revised middle-way program of compulsory national health insurance went into effect in Sweden on Jan. 1, 1955, replacing voluntary plans which, with state aid, had covered 65% of the population. Unlike the British system, Sweden's program called for partial payment for care received by the patient and direct contribution by each individual for insurance. The program was expected to triple the government's contribution for health benefits, to \$150,000,000 a year. (A. G. S.)

Great Britain.—Results published in 1955 revealed new ordinary life sums assured written by British offices in 1954 at more than £1,000,000,000, against about £850,000,000 in the preceding year. A flattening out of the rate of increase of group business was accompanied by an increased volume of new business through individual contracts. Industrial sums assured written by eight leading industrial life offices were £209,589,000 compared with £203,878,000 in 1953, and the average sum assured per industrial policy was £54 against £53.6 in 1953, £48 in 1952 and £45.2 in 1951.

The combined fire and accident premium revenue in 1954, as disclosed in the accounts of 24 selected British offices, was £447,744,000, compared with £428,943,000 and £407,430,000 in the two preceding years. The fire underwriting results reflected heavy earthquake and hurricane losses in the year. The over-all profit ratio for the two departments fell from 6% to 4.9%.

Premium income of the British marine market further con-

Table II.—*Marine Insurance in Great Britain*

Year	(in £000)			
	Premiums	Profit and loss credit	Fund	% of Premiums
1952	48,231	4,716	68,849	142.7
1953	44,130	3,317	70,167	159.0
1954	40,304	4,416	67,875	168.4

Life assurance in 1955 was maintained at a high production level. The distribution of the business followed closely the pattern of the previous year, with a substantial proportion written under new pension and group assurance schemes and in the form of increases under existing schemes. In general, however, the field for new industrial pensions gave evidence of a degree of sales resistance not met with a few years earlier. Endowment assurances specially written to provide retirement benefits for "executive and noncontrolling directors" remained an important factor in the new business total, as also policies of a short-term nature in connection with *inter vivos* gifts, and policies providing for estate duty payments, much of which was placed under the provisions of the Married Women's Property acts. The family income type of policy assuring income for dependents was in demand, and there was an added interest in individual endowment assurances based on maturity at age 65 for the purpose of augmenting the pension benefit granted under the national scheme.

Industrial and scientific development in many countries, combined with a general inflationary tendency, assisted income in the fire account and to a limited degree offset rate reductions in certain areas. Losses by fire were heavier than in 1954. The record of many large fires in the United Kingdom was dominated by an estimated loss of £1,000,000 at a Birmingham cycle accessories warehouse. In the overseas field, the emphasis was on the number of important fires, and these, with severe hurricane losses under extended coverage, again produced a considerable total. Flood damage, unlike windstorm, is not included as a general extension to a fire policy, so that the account was but little affected by devastating floods in the northeastern United States and elsewhere.

The world's trouble spots made no pronounced impact either on the volume or out-turn of the account.

Accident and general insurance increased both in volume and revenue total. Motor insurance, the largest separate section of the composite accident account, was freely sought but, because of unfavourable trading results over a long period, underwriting proceeded with caution. An upward revision in rates for certain classes of private cars and commercial vehicles operating in the United Kingdom became effective in December. Public liability insurance expanded and indemnity covers for £25,000 and £50,000 were commonplace. The insurance of employers' liability showed generally more favourable results. There was an increased demand for fidelity insurance and a sustained interest by employers in group accident insurance to close the gap between employees' wages and the benefits as provided under the National Insurance acts.

Personal accident, burglary and plate glass business was written in the main on profitable lines.

Underwriters of marine risks, hulls and cargo, had to contend with intensive competition and rate cutting in the British market and many areas overseas, and premium income proved difficult to hold even at previously reduced levels. In the aviation market the progressive increase in the insured value of aircraft hulls together with the huge accumulations of liability at risk both in the air and on the ground were absorbed without undue strain on resources.

(See also CO-OPERATIVES; FEDERAL TRADE COMMISSION; FIRES AND FIRE LOSSES; SOCIAL SECURITY; VETERANS ADMINISTRATION [U.S.].) (P. Ss.)

Table I.—*Fire, Accident and General Insurance in Great Britain*

Year	(in £000)			
	Premiums	Claims	Profit and loss credit	% of Premiums
1952	180,059	77,900	17,856	9.4
1953	181,346	83,454	15,462	8.5
1954	184,582	89,828	9,635	5.2
Accident and General				
1952	227,371	127,373	3,422	1.5
1953	247,597	137,653	10,224	4.1
1954	262,852	146,449	12,455	4.7

acted, but transfers to profit and loss (mainly in respect of trading in previous years) were higher than formerly. The ratio of aggregate funds to premium revenue was considerably enhanced.

Insurance, Old Age: *see* SOCIAL SECURITY.

Inter-American Investment Conference: *see* FOREIGN INVESTMENTS.

Interior, U.S. Department of: *see* GOVERNMENT DEPARTMENTS AND BUREAUS, U.S.

Interior Decoration. A survey of interior decoration in 1955 showed great variety and individuality but few clear-cut trends. There was more design to fit specific situations and less widespread imitation of successful experiments.

It was a colourful year, highlighted by the final and sweeping victory of colour in the appliance field, but no particular colours or combinations emerged as favourites comparable with the chartreuse, green and yellow, the charcoal and pink or the pumpkin and turquoise of recent years. Combinations of the neutral earth tones remained popular, but so did monochromatic pastels, especially pink, as well as the basic white scheme sparked with such vivid and dissonant combinations as peacock blue, magenta and orange. Shades of purple, from heliotrope to the deep tones, were used to some extent but probably reflected the availability of a more complete colour range in almost every type of product rather than a true trend.

Interior decorating reflected many changes in architectural practices in 1955. In both homes and commercial buildings, air conditioning made the use of light colours and delicate fabrics more practical and more popular, and the choice between "warm" and "cool" colours a matter of preference rather than necessity. On the other hand, the ever-increasing size of glass areas in all types of new construction produced new types of window treatments to provide positive and flexible control of sunlight and sun heat.

Furniture in 1955 took a new approach toward greater interchangeability and flexibility of use. Small armless chairs appeared which could be lined up to give the appearance of a single long bench. Storage pieces were made in modular dimensions and finished on all sides, to be placed side by side, stacked on top of one another or projected into the room to serve as a room divider. Chests were designed for bedroom, living or dining room use, and many had interchangeable interior features for various types of storage. Small tables were equally suitable for use beside a bed or a living room chair.

In traditional furniture styles, Italian Provincial showed a sudden surge of popularity. The work and influence of Scandinavian and Italian designers were still much in evidence, as were Oriental influences, both Japanese and Chinese. The continuing trend toward scaled down and simplified period ornamentation in traditional styles, on the one hand, and toward softer, warmer, discreetly ornamented modern styles, on the other, resulted in many collections intermediate in feeling. There was great diversity between the products of individual designers rather than any general style. The main points in common were a general adherence to traditional proportions for each piece; upholstered pieces were less severely tailored and chair backs were somewhat higher than in most modern styles; wood members were subtly shaped rather than sharply sculptured.

Walnut and mahogany continued as the most-favoured woods, but there was much use of birch, maple, pecan, beech, cherry, white walnut and elm, some quantities of teak and pine, and limited amounts of rosewood, ebony and other exotic woods. Dull, open-pore finishes, permitting the grain to show through, were almost universal. There was minor use of oil-stain and lacquer finishes but virtually no high-gloss of any type. Brown wood tones from amber to dark walnut were far and away the favourites for almost every variety of wood, though gray finishes began to show up strongly toward the end of the year.

Furniture generally showed free use of contrasting materials like cane, straw cloth, metals, leather, stone, shell and many types of plastic. Vividly coloured plastics were frequently combined with wood, and some new, more textural plastics were introduced.

The major emphasis in floor coverings was on more brighter colours and on area and accent rugs. Random, natural textures were in high favour. There was considerably more use of nylon, even in modestly priced carpeting, along with rayon, viscose and wool. Cotton rug manufacturers were also using nylon and rayon, and their products showed much more use of pattern. Hard-surface coverings displayed more vivid and extensive colour ranges, but few innovations in pattern.

Drapery fabrics emphasized sheers and many types of textured casement cloths, especially in the moderately priced brackets. Printed Fiberglas, in many weights, came into more extensive use. Upholstery fabrics tended toward smoother, less heavily textured surfaces, slight and restrained use of metallic yarns and considerably more use of nylon. Most important, probably was the introduction of new processes to make many kinds of fabrics resistant to soil- and water-spotting.

In wall coverings, large but widely spaced patterns were more popular, and there was much interest in sectional scenic, floral and simulated textures, grass cloth, wheat straw, brick, stone and wood, reached new peaks, but a slight decline was perceptible. There was somewhat more use of highly formal, elegant materials like flocked designs, *moirés* and damasks, silky-textured okami wood. Matching papers and fabrics were moving away from small, all-over designs toward larger, freer patterns.

In lighting fixtures, whether for wall, ceiling, floor or table, adjustability to various positions through the use of pulleys, slides, pivots and universal joints seemed to be of prime importance. There was, however, a revival of interest in ceiling fixtures, especially the many-branched, pierced-brass varieties. Lamps generally seemed to be returning to smooth surfaces, classic shapes. (*See also* FURNITURE INDUSTRY.) (G. M. J.)

International Bank for Reconstruction and Development.

The International Bank for Reconstruction and Development makes medium- and long-term loans to meet urgent economic needs in its member countries. Established by the United Nations Monetary and Financial conference which met at Bretton Woods, N.H., in July 1944, by 1955 the bank had 58 member countries and a subscribed capital of \$9,050,500,000. It had operated at a profit and had built up reserves amounting on Oct. 1, 1955, to approximately \$195,000,000.

International Bank, Member Countries, Oct. 1955

Afghanistan	Denmark	Indonesia	Pakistan
Australia	Dominican Republic	Iran	Panamá
Austria	Ecuador	Iraq	Paraguay
Belgium	Egypt	Israel	Peru
Bolivia	El Salvador	Italy	Philippines
Brazil	Ethiopia	Japan	Sweden
Burma	Finland	Jordan	Syria
Canada	France	Korea	Thailand
Ceylon	German Federal Republic	Lebanon	Turkey
Chile	Greece	Luxembourg	Union of South Africa
China	Guatemala	Mexico	United Kingdom
Colombia	Haiti	Netherlands	United States
Costa Rica	Honduras	Nicaragua	Uruguay
Cuba	Iceland	Norway	Venezuela
	India		Yugoslavia

Lending Operations.—During the fiscal year ending July 30, 1955, the bank signed loans totalling the equivalent of \$400,000,000, or more than in any other year in its history. 20 loans made were in 14 countries and territories and, in earlier years, were mainly designed to strengthen basic services.

A total of \$160,000,000 was lent for transport. The largest

in for this purpose was an amount of \$61,000,000 to finance the rehabilitation and modernization of the Pacific Railroad of Mexico. In Colombia \$16,000,000 was lent to add an extension of 190 mi. to a new railway line which would carry the network to the interior to the Caribbean coast. A loan of \$11,000,000 in El Salvador was to be used to finance the construction of a highway which would open up the fertile but undeveloped coastal area.

In East Africa, rail, port and other transport services would benefit from a loan of \$24,000,000 which would cover part of the cost of imports needed for an expansion program in Kenya, Uganda and Tanganyika. More than half of a loan of \$54,500,000 to Australia was to be used to finance imports of transport equipment. A loan of \$20,000,000 was made to Belgium to help modernize the inland waterways and improve the port of Antwerp.

The bank lent \$110,000,000 for power, almost half of it in South Asia. A loan of \$19,000,000 for a hydroelectric project in Ceylon would increase the power supply in Colombo and in the surrounding area. In India the bank lent \$16,000,000 for a thermal plant to be constructed by the private companies which supply the bulk of the power in Bombay.

A loan of \$14,000,000 in Pakistan would more than double Karachi's generating capacity, thus relieving an acute power shortage in the city.

In Europe nearly half of a \$70,000,000 loan in Italy was to be used to add to the generating capacity of the south. In Austria the bank made two power loans totalling \$22,000,000. The two hydroelectric projects financed would supply neighboring countries as well as the domestic market. Part of a loan of \$12,000,000 in Finland was to be used to help finance a hydroelectric project in the north and a thermal station on the west coast.

A loan of \$4,500,000 was made for power in Colombia. It would help finance steam and hydroelectric capacity near the growing city of Cali.

A total of \$67,000,000 was lent for agriculture. This included \$3,000,000 in Peru, where 125,000 ac. of uncultivated land in the northwest would be irrigated and imports of farm equipment would be financed. A loan of \$5,000,000 for farm machinery was made in Colombia. The loans in Italy and Australia also included funds for agriculture.

Lending for industry and for other development purposes amounted to \$72,000,000. This would help finance expansion and modernization of pulp and paper mills in Finland and the establishment of a number of privately owned industrial enterprises in southern Italy and Sicily and of a cement plant in Peru. In Norway and Australia funds were provided for imports of various types of capital equipment for industry. To help mobilize capital for industrial enterprise in India, the bank assisted in setting up the Industrial Credit and Investment corporation and made a loan of \$10,000,000 to it.

In the period July 1, 1955, to Oct. 1, 1955, the bank made 12 further loans, amounting to \$112,000,000. Five of these, amounting to \$56,000,000, were for transport services. They included \$8,000,000 for road improvements in Guatemala, and smaller amounts for the same purpose in Panamá and Peru. In Pakistan \$5,000,000 was lent for reconstruction and modernization in the port of Karachi.

In Thailand the bank lent \$12,000,000 to renew and modernize the state railway.

A further \$23,000,000 was lent for electric power services. This would help finance a hydroelectric project in Algeria and thermal plants in Managua, Nicaragua, and Montevideo, Uruguay.

The bank also made its first loan in Lebanon. The sum of \$7,000,000 was lent to assist in financing the first phase of a

program for the development of the Litani and Bisri rivers, to benefit both power and agriculture.

In Nicaragua the bank made a loan for the importation of equipment for land clearance, erosion control, pasture improvement and milk processing.

In East Pakistan a new paper mill, using local bamboo as raw material, received a loan of \$4,000,000.

By Oct. 1, 1955, the number of loans made since the bank started operations had risen to 136 in 40 countries and territories. The gross total of loan commitments stood at \$2,436,000,000. Bank disbursements amounted to approximately \$1,770,000,000.

Financial Operations.—The bank's net earnings during 1954-55 reached a new record figure of \$25,000,000. Borrowers made all payments of interest and principal due during the year.

Four issues of bonds, amounting to the equivalent of \$88,000,000, were sold by the bank during the fiscal year. They included the first sale of Netherlands guilder bonds, as well as U.S. dollar, Canadian dollar and pound sterling bonds. In Aug. 1955 a second guilder issue was sold.

On Oct. 1, 1955, the total of the bank's bonds outstanding was equivalent to approximately \$850,000,000, of which nearly half were held outside the United States.

Private investors showed greater willingness to place their capital abroad, and the bank was able to sell increasing amounts of its loans to other investors. During 1954-55 these sales amounted to \$99,000,000, almost all of them without benefit of the bank's guarantee.

A new method was developed of linking bank loans with the investment abroad of private funds. The loans to Belgium and to Norway were made simultaneously with public offerings of bonds in the United States by the borrowing governments.

Other Activities.—The bank continued to give advice and assistance on a wide range of development problems. Three general survey missions—to Nigeria, Malaya and Syria—completed their work during the year. Another such mission—to Jordan—was organized. Other developmental assistance covered specific matters such as agricultural improvements in Japan, scientific and industrial research in Ceylon and electric power development in Mexico.

Plans were completed by the bank for the establishment of an Economic Development institute to act as an economic staff college for senior officials from less developed countries. The first course, which was to be of six months' duration and would have 16 participants, was to begin in Jan. 1956.

Some of the final steps were taken toward the organization of a bank affiliate to be known as the International Finance corporation. The purpose of the corporation would be to stimulate investment in productive private enterprises, particularly in less developed areas. The articles of agreement were drawn up early in 1955, and the governments of almost all the bank's member countries indicated their intention to join the corporation. It was hoped that the corporation would come into existence early in 1956.

(See also BANKING; FOREIGN INVESTMENTS; INTERNATIONAL MONETARY FUND.)
(E. R. BL.)

International Children's Emergency Fund: *see* CHILD WELFARE.

International College of Surgeons: *see* SOCIETIES AND ASSOCIATIONS, U.S.

International Confederation of Free Trade Unions: *see* LABOUR UNIONS.

International Cooperation Administration: *see* FOREIGN AID PROGRAMS, U.S.

International Court of Justice: *see* INTERNATIONAL LAW.

International Geophysical Year, 1957-58.

During the International Geophysical year, 1957-58, the world's scientists were scheduled to conduct the most comprehensive study of the earth ever undertaken. Intensive investigations throughout the world were to be carried out in meteorology, latitude and longitude determinations, geomagnetism, gravity measurements, ionospheric physics, aurora and air glow, solar activity, cosmic rays, glaciology, oceanography, seismology, and through rocket and satellite explorations of the upper atmosphere. Forty-one nations were formally participating in the program: Argentina, Australia, Austria, Belgium, Bolivia, Brazil, Canada, Chile, Chinese People's Republic (Communist China), Czechoslovakia, Denmark, Finland, France, German Democratic Republic, German Federal Republic, Greece, Hungary, Iceland, India, Ireland, Israel, Italy, Japan, Mexico, Morocco, Netherlands, New Zealand, Norway, Pakistan, Peru, Philippines, Poland, Spain, Sweden, Switzerland, Tunisia, Union of South Africa, United Kingdom of Great Britain and Northern Ireland, United States of America, the U.S.S.R. and Yugoslavia. Each country would plan and execute its own program, under a general plan developed by the co-operating countries through a co-ordinating international committee.

The United States National Committee for the International Geophysical Year, established by the National Academy of Sciences, was in charge of planning, directing and executing the U.S. program. Federal sponsorship and support for the program was obtained by the committee through the National Science Foundation, the government agency charged with responsibilities for federally supported basic research. Congress appropriated \$12,000,000 for the U.S. effort.

Because the sun dominates activities on the earth, continuous measurements would be made of changes in solar radiations over the whole range of wave lengths or colours, not only visible light, but down to the invisible X-rays and up to the radio waves. Solar flares would be studied and correlated with changes in cosmic rays, ionospheric and auroral disturbances and meteorological phenomena.

Measurements of temperatures, pressures, humidities and winds during the period would provide information about weather patterns. Emphasis had been placed on high-altitude meteorological observations (up to 100,000 ft.) along four lines of stations (10° E., 75° W. and 110° and 140° E.) extending from the north to the south pole. These observations would be particularly useful in studies of the movements of air masses around the world.

Problems having to do with the nature of oceanic currents, temperatures, composition, sea-level fluctuations and total water content would be studied by oceanographers. Emphasis would also be given to glacier studies, particularly in the arctic and antarctic.

The ionosphere, a region of rarefied ionized gas between 50 and 250 mi. above the surface of the earth, is a complex region of the atmosphere, fluctuating in height and depth and varying in ionization. It is affected by solar activity, geomagnetic disturbances, the aurora and perhaps by meteors. Predicting its effect on radio transmission is one of the major problems in ionospheric physics. Investigations planned by the U.S. involved the arctic, antarctic and equatorial Pacific regions as well as the Americas.

Both aurora and air glow, known to affect radio communications, are optical phenomena of the upper atmosphere and appear as light emitted by atoms and molecules of the atmosphere at about 37 mi. and higher. The aurora, which is the terminus of the path of ionized particles from the sun and the only visible portion of this path, enables theoretical geophysicists to learn a

great deal about this stream of particles, its path through space, its capture in the equatorial ring and its subsequent bombardment of the atmosphere in the auroral zones about 23° from the magnetic poles. Spectroscopic, visual and photographic observations of the aurora would show its distribution. Radar would provide a record of the ionization associated with the aurora.

Geomagnetism has broad and basic implications in the study of the ionosphere, radio-wave propagation, aurora and cosmic rays, as well as other fields of science. U.S. scientists were to explore the physical mechanism causing geomagnetic storms which frequently cause strong aurora displays and radio blackouts and also the ionospheric disturbances. The U.S. would establish stations in Alaska, Antarctica and the equatorial Pacific and an east-west chain of five stations stretching about 1,000 mi. across the western states, with a shorter north-south chain of three stations.

There are clear connections between cosmic rays and solar activity and the earth's magnetic field and magnetic storms. Cosmic rays represent a powerful tool with which to investigate magnetic phenomena many thousands of miles from the earth. Studies of cosmic rays require simultaneous measurements widely made over the earth, and parallel studies of solar activity, geomagnetism, aurora and ionospheric physics.

New techniques permit direct measurement of the upper atmosphere by means of large, ground-launched rockets with an altitude range of about 200 mi. Small rockets, launched from balloons and aircraft, were to be used during the International Geophysical year for measurements up to approximately 60 mi. U.S. rocket studies would be co-ordinated with those of other nations, particularly at crucial times of unusual solar activity. Rockets would measure atmospheric pressure, temperature, density; the earth's magnetic field, especially during auroral displays; night and day air glow; solar and ultra-violet light; X-rays; auroral particles; ozone distribution; ionospheric characteristics and densities; and cosmic radiation.

Observations over a longer period of time would be possible when the U.S. launched satellites which would circle the earth at a distance of 200 to 800 mi., telemetering scientific data back to the earth. The satellites were expected to remain aloft for many weeks, circling the earth approximately once every 90 minutes.

Seismic soundings were to be used for measurement of the depth of ice in Antarctica and mapping of the buried rock faces. Geophysicists would study the earth's deeper structural locations of earthquake rifts or zones of instability in the antarctic continent and various types of microseisms and their relation to meteorological conditions. This work would be co-ordinated with that of an international network for studying the earth's crust and of the deep interior.

The United States planned activities in the arctic, subarctic, middle latitudes of the northern and southern hemispheres including the United States, Central America, South America and adjacent parts of the Atlantic and Pacific oceans), equatorial Pacific and antarctic and subantarctic regions. (H. O. ...)

International Labour Organization.

The International Labour Organization conference, 38th session, held at Geneva, Switz., June 1955, was the chief event of 1955. More than 700 delegates, advisers and observers represented the organization's 70 members. Representatives from other international bodies made a total of 74 countries and territories in attendance, including Spain, the Philippines and such nonmetropolitan territories as Barbados, Gold Coast, Jamaica, Malta, Nigeria, Sierra Leone and Singapore.

The central feature was the report of the director-general, David A. Morse, U.S.A., which dealt with labour-management

relations and was debated by more than 150 speakers, including the U.S. secretary of labour and heads of labour departments of many other countries. Because of its tripartite character, representing employers, workers and governments, the conference had become the centre for airing the conflicts of economic and social ideas of the whole world.

Morse's reply to the criticisms he received was the star event of the conference. He said, substantially, that bridging the gap between technical advance and social thinking has become an urgent task wherever human rights, freedom of association and dignity of labour are denied. To deal with such issues by due process of law has become equally imperative, but "the task of learning to work together for a common objective which benefits society as a whole is the highest work any of us have to face in our lifetime. For the world as a whole this task is today posed in terms of the greatest urgency."

The director-general appointed a committee, under the chairmanship of a former president of the International Court of Justice, to report on the extent of freedom of employers' and workers' organizations from government domination in the 70 ILO member states. The conference also adopted a resolution which requested a review, in the light of the discussion of the director-general's report, of ILO activities as a whole, to promote better human relations in industry everywhere.

The conference adopted one new convention, to abolish penal sanctions for breach of contract of employment by indigenous workers, and a resolution asking a future conference to adopt a more extended measure. The conference also adopted two recommendations: (1) for vocational rehabilitation of the disabled, with a resolution to include war-disabled; and (2) on international standards for treatment of migrant workers in underdeveloped countries.

Both the conference committee and the report of the experts agreed that the supervisory machinery, unique among international institutions, showed improvement, but that more could be accomplished if the employers' and workers' organizations sent their comments, as is their constitutional right and duty. Complaints were general that the load was heavier because of greater application of standards.

Among the resolutions debated and adopted by the conference were those on the tenth anniversary of the United Nations; employment of women; protection of trade-union rights; peaceful uses of atomic energy; disarmament and the use of resources freed by reduction of armament expenditure; elimination of discrimination; labour-management relations; protection of labour; and industrial safety.

Technical assistance and ILO operational work had become increasingly more important than legislative work, especially since the UN adopted its technical assistance program and made the ILO its specialized agency for most of its projects.

Ratifications of conventions numbered more than 1,500 for the first time at the close of the 1955 conference. The conference voted \$7,395,725 for the 1956 budget and allocated that amount as follows: U.S.A. 25%; United Kingdom and U.S.S.R. each 10%; Germany 4.35%; Italy 2.5%; Japan 2%; and all other countries lesser amounts. (See also CHILD LABOUR.)

(S. MCC. L.)

International Law. The secretary-general of the United Nations in his report to the tenth general assembly in Sept. 1955 commented on the slow progress in establishing the rule of law in international relations, and added "we are now, I hope, entering a period that will provide a more favorable atmosphere for strengthening the influence of law in international affairs."

Status.—The right of dependent peoples to determine their own status was asserted at an international conference which

met at Bandung, Indonesia, in April 1955. Present were representatives of 28 recognized and potential states from Asia and Africa, representing more than half the world's population. The conference declared that colonialism is an evil which should soon be ended, affirmed that subjection of peoples to alien rule was contrary to the United Nations charter, declared support for the freedom and independence of all peoples and called upon the colonial powers to carry out these principles. (See ASIAN-AFRICAN CONFERENCE.) Commenting on this, the Belgian representative at the San Francisco conference of June 1955, celebrating the tenth anniversary of the signing of the United Nations charter, expressed his conviction that "complete equality of the races, with all its natural consequences, . . . has become a reality and any contemporary statesman who refuses to admit it will be bound to make a good many mistakes."

The sentiment within the United Nations favoured universal membership in that body, manifested by the statement of an Indian representative at San Francisco that the United Nations "was not intended to be either a Holy Alliance or an exclusive club." The Soviet Union indicated its willingness to admit all the Bandung states to the United Nations, and the independence of Austria was restored by great power agreement during the year, but up to the opening of the tenth session of the general assembly in Sept. 1955 the deadlock in the United Nations on membership and on representation of China continued.

South-West Africa, which continued as a mandated territory under the Union of South Africa in accord with an advisory opinion of the International Court of Justice in 1950, remained controversial. The Union of South Africa, which wished to annex the territory, claimed that the United Nations procedure of supervision through the general assembly acting by a two-thirds vote amounted to more extensive supervision than had existed under the League of Nations council in which the South African government had a veto. An advisory opinion on the issue was requested of the International Court of Justice. The court advised that its opinion of 1950, calling for the same degree of supervision by the United Nations as was exercised by the League of Nations, referred "to the extent of the substantive supervision" and "not to the manner in which the collective will of the General Assembly is expressed." While it found that comparison of the procedures of the United Nations and the League of Nations "presents insurmountable difficulties of a juridical nature," it indicated that observance by the general assembly of its characteristic procedures "cannot be considered as instituting a greater degree of supervision than that which was envisaged by the previous opinion of the court" (International Court of Justice Reports, 1955, p. 12).

Several issues concerning status were discussed judicially. A United States circuit court of appeals reversed the court below which had held that Yugoslavia was not the same state as Serbia and that consequently an extradition treaty of 1902 between the United States and Serbia was no longer valid. The U.S. state department, appearing as *amicus curiae*, objected on the ground that the termination of treaties was a political question, and it regarded the Serb-Croat-Slovene state formed after World War I, whose name was later changed to Yugoslavia, as the same state as Serbia (*Ivancevic v. Artukovic*, 211 Fed. 2nd, 565, 1954). A New York court held that the consul general of the *de jure* government of Lithuania was competent to appear in behalf of citizens of Lithuania under a treaty between the United States and Lithuania, although in fact that state had been absorbed by the Soviet Union for a number of years (Matter of Mike Shaskus, *New York Law Journal*, p. 12 [1954]). A United States court held that Okinawa is not under the *de jure* sovereignty of the United States, and consequently the inhabitants do not owe permanent allegiance to the United States. The

peace treaty with Japan gave the United States extensive jurisdiction but not sovereignty. Japan retained "residual sovereignty" or "*de jure* sovereignty" (*U.S. v. Shiroma*, 123 Fed. Supp. 145, 1954).

Rights of States.—The extent to which international law permits states to impair the rights of individuals for public purposes has been frequently discussed. An Italian court held that the Anglo-Iranian Oil company could not recover oil which came from properties which it had owned in Iran. The company's claim that nationalization of these properties by Iran amounted to confiscation without compensation contrary to international law was rejected. The Iranian "act of state" within its territory had to be recognized by other states, and furthermore the United Nations had recognized the legitimacy of the Iranian nationalization decree. Consequently in pursuance of its duty under the Italian constitution to apply international law the court had to reject the company's claim (*Anglo-Iranian Oil Company v. Societa S.U.P.O.R.*, Civil Tribunal of Rome, 1954; *American Journal of International Law* [*A.J.*], vol. 49, p. 259 [April 1955]).

A number of cases dealt with the immunities of states and their agents. The U.S. supreme court, following pronouncements of the department of state qualifying the immunities of foreign sovereigns, held that the Chinese (Nationalist) government, though not in actual control of most of the territory it claimed, was to be treated as a sovereign so long as it was recognized by the United States, but it was not immune from setoffs raised in an action it brought against a United States bank (*National City Bank of New York v. Republic of China*, 348 U.S. 356, 1955). A New York court held that a bank nationalized by Bolivia did not enjoy sovereign immunities claimed by the Bolivian ambassador because it was only an agent of the Bolivian state and not the state itself (*Koster v. Banco Minero de Bolivia*, *A.J.*, vol. 48, p. 667 [Oct. 1954]).

Italy applied the distinction between governmental and commercial activities of foreign sovereigns and their agents in a number of cases. A Soviet film corporation, though claimed by the Soviet government to be engaged in governmental business, was not considered exempt from Italian jurisdiction which regarded its activities as of a type commonly considered commercial in the community of nations (*Florida v. Sovexportfilm*, Tribunal of Rome, *A.J.*, vol. 49, p. 98 [Jan. 1955]). An Italian court held that the chief executive of a state or its diplomatic agent can represent the state in litigations, but the personal immunity of a diplomatic officer does not prevent a summons to him when he acts as representative of his state in an action where the latter is not immune because the issue concerns commercial matters (*Castiglioni v. Yugoslavia*, Tribunal of Rome, *A.J.*, vol. 49, p. 99 [Jan. 1955]). Italian courts had held that a servant of a diplomatic officer is not immune for acts in his personal capacity (*Case of Mohammed Layed Ahmed*, Tribunal of Rome, *A.J.*, vol. 49, p. 100 [Jan. 1955]), but a diplomatic agent, in this case a third secretary, was exempt from jurisdiction even for unofficial acts (*Lagos Carmona v. Baggianini*, Tribunal of Rome, *A.J.*, vol. 49, p. 101 [Jan. 1955]). On the other hand, the same tribunal held that the chancellor of the United States embassy in Rome was subject to civil jurisdiction of the courts, affirming that this was a rule of customary international law and should be applied even though the United States granted total immunity to the administrative personnel of foreign embassies on a basis of reciprocity (*Soc. Arethusa Film v. Reist*, Tribunal of Rome, *A.J.*, vol. 49, p. 102 [1955]).

The controversial status of executive agreements was dealt with by the U.S. supreme court on *certiorari* from the court of appeals in the Capps case. The court of appeals had held that an executive agreement was void if it transcended the policy of

congressional legislation. The supreme court, however, while affirming the decision of the court below, did it on the ground that the contract involved, which had been made to carry out the executive agreement, had not been violated and expressly declined to discuss the issue of the validity of the executive agreement (*U.S. v. Capps*, 348 U.S. 296, 1955).

Rights of International Organizations.—Proposals of the United States to permit review of decisions of the United Nations Administrative tribunal were criticized in the general assembly as cumbersome and inimical to the independence and efficiency of the secretariat required by the charter, and making the assembly, usually a party to the dispute, a judge in its own case. Extensive consideration by a special committee set up by the general assembly in the spring of 1955 resulted in no consensus. The matter was to be considered by the tenth assembly.

A tribunal of Trieste held that the International Refugee organization does not have international juridical personality but does the United Nations, but an employee has to follow his agreement with the organization for arbitration of disputes with it, so the court could not exercise jurisdiction (*Vicelli v. I.R.O.*, Tribunal of Trieste, *A.J.*, vol. 49, p. 102 [Jan. 1955]).

Rights of Individuals.—The Commission on Human Rights of the United Nations, after five years of discussion, presented the tenth general assembly with two covenants of human rights, one dealing with political and civil rights and the other with economic, social and cultural rights, both including a clause of the right of self-determination. Colonial powers objected to the clause and to the absence of a clause excluding the automatic application of the convention to dependencies. Federal states objected to the failure to include a "federal clause" confining the covenants to matters within the competence of the central government. The high commissioner of refugees objected to the failure to include the right of asylum, which was included in the Universal Declaration of Human Rights. Several Asian powers objected to the division of the field between two covenants and to the inadequacy of procedures for enforcement. No individual right of petition to international agencies was provided. Other states thought that even the mild procedure provided for encroached on the domestic jurisdiction of states. The United States, apparently because of the latter objection, declared that it would not ratify either of the covenants.

The agreement of Oct. 5, 1954, dividing the Trieste territory between Italy and Yugoslavia, provided for implementation of the intention of these two countries to assure protection of human rights in the area. The Universal Declaration of Human Rights approved by the general assembly of 1948 was to be applied in Trieste as operative law. This declaration had been recognized as a standard for human rights in certain conventions on refugees, in the Japanese peace treaty and in the Somaliland trusteeship agreement.

A United States court held that a native-born American who also was a Japanese national did not expatriate himself by participation in Japanese elections. It held that a native-born citizen of the United States cannot be deprived of his nationality without his consent, and consequently the act of Congress depriving such persons of nationality by participation in foreign elections was null and void (*Taradi v. Dulles*, 121 Fed. Supp. 6, 1954).

A British court held that Polish fugitives in Great Britain were not extraditable under a treaty with Poland because they were political offenders excepted from extradition by the treaty. Their offense had been committed in escaping from a fish trawler, whose officers were seeking evidence of their anti-communist character (*Re Kolczynski* 1955, 1 All Eng. L.R. 31).

War and Aggression.—Discussion concerning the right

confiscate enemy property in time of war continued, in connection with the Dirksen bill before the U.S. senate to restore such property in the hands of the alien property custodian (Philip Jessup, *A.J.*, vol. 49, p. 57 [Jan. 1955]). A California court held that the immunities of consular properties provided for in the treaty between the United States and Germany of 1923 continued in spite of the war and made the German consulate in San Francisco immune from local taxation even though it was taken over during the war by the alien property custodian (Brownell v. *San Francisco*, 271 Pac. 2d 974, 1954). The British House of Lords held that war existed between Israel and the Arabs in 1954, consequently money owed to an Arab bank was properly deposited with the Israel custodian in Israel. But the plaintiff's right was suspended, not destroyed, by the existence of war (*Arab Bank v. Barclay Bank* 1954, All Eng. L.R. 26).

A United States court held that France was neutral in 1943 during the Vichy regime and a French citizen could therefore claim immunity from United States draft as determined by the director of selective service. Such determinations were held political in character and the decisions of the executive bound the courts (*U.S. v. Bussoz*, 218 F. 2d, 683, 1955). The United States court of claims held that the American owner of properties in Austria taken over during the war as a United States officers' club was entitled to compensation under the fifth amendment. Constitutional rights, in the opinion of the court, followed the flag even to enemy territory, though at the time Austria was not in fact enemy territory. Furthermore, an executive agreement by which Austria, in return for a sum of money, agreed to free the United States of liability in such cases could not nullify constitutional rights and could not qualify the jurisdiction of the court of claims accorded by an act of congress. The court left open the question of whether a formal treaty might have these effects (*Seery v. U.S.*, 127 Fed. Supp. 601, 1955). An Italian court held that former members of the German armed forces charged with the mass slaughter of civilians in Italy were liable for crimes under international law. They were not protected by their status as British prisoners of war, by the Geneva convention or by the claim that their action constituted legitimate reprisals (Case of Kapper, Italian Supreme Military Tribunal, *A.J.*, vol. 49, p. 96 [Jan. 1955]).

A Philippine court held that it had no jurisdiction over decisions of United States military officers confiscating scrip in possession of a former United States employee in Okinawa. These officers were immune from the jurisdiction of Philippine courts under international law (*Johnson v. Turner*, Philippine Supreme Court, *A.J.*, vol. 49:94, Jan. 1955).

International Adjudication.—Apart from the advisory opinion concerning South-West Africa referred to above, the International Court of Justice decided two cases during the period under review. In the Monetary Gold case between Great Britain and Italy, the court held that since it had no jurisdiction over a controversy between Italy and Albania vital to decision, it could not give a judgment. The case arose out of some gold found in Germany by the Allies after the war and determined by an arbitral tribunal to belong to Albania. Great Britain claimed that the gold should be turned over to it to pay the award of the International Court of Justice against Albania in the Corfu Channel case. Italy, however, insisted that it had prior claims against Albania. The court found that although Albania was free to submit its controversy with Italy to the court, and could in fact intervene in the case between Great Britain and Italy, it had not done so, and, therefore, since international jurisdiction depends upon consent of the parties, the court could not deal with the controversy between Italy and Albania (Case of the Monetary Gold, I.C.J. Reports, 1954,

p. 191).

The International Court of Justice, having earlier determined its jurisdiction in the Nottebohm case, decided on the merits in April 1955, holding that Nottebohm, of German origin, resident most of his life in either Germany or Guatemala, but naturalized in Liechtenstein in 1939, was not entitled to the protection of the latter state for injuries he received in Guatemala. Although a state can normally protect its citizens for injuries received abroad, citizenship acquired without a minimum actual connection with the naturalizing country need not be recognized in international law (Nottebohm Case, I.C.J. Reports, 1955, p. 4). The case was important in determining that nationality for international purposes is not solely a domestic question.

During the year France withdrew its claim against Lebanon in behalf of the Beyrut Electric company which had been pending in the court.

Codification.—The United Nations International Law commission submitted to the tenth assembly a report on the regime of the high seas on which it had been working for five years. The commission also urged modification of its statute to strengthen its work. Its suggestions included transfer of its seat to Geneva, five-year terms for its members, arrangements for co-operation with the Inter-American Council of Jurists, especially in the latter's Mexico City conference in 1956, and more extensive publication of its documents.

The tenth assembly was to consider the draft convention on arbitral procedure submitted by the commission in 1953 and distributed after debate to the states for comment. The responses from the states were meagre, and some expressed the opinion that the procedures set forth in the draft convention go beyond the voluntary character of arbitration fundamental for that institution and distinguishing arbitration from judicial settlement. The draft provides for the establishment of a tribunal at the initiative of one party if the other will not agree in cases which come under the terms of an arbitral convention binding both.

The International Law commission presented alternative proposals that the draft be open for ratification as a convention, that it be the basis of discussion in an international conference and that it be submitted to governments as a model for future negotiations.

Juristic Discussion.—Outstanding among recent books on international law were the studies on the sociological foundations of international law by Charles De Visscher and of the process of international legal development by Sir Arnold MacNair, both writers former presidents of the International Court of Justice. Julius Stone's analysis of the law of pacific and nonpacific settlement of international disputes and Walter Schiffer's analysis of the international community were antidotes to overoptimism on the prospects of a law-governed world.

Influenced by F. S. C. Northrop's and Arnold J. Toynbee's philosophical and historical discussions of the ideological differences among the civilizations of the world, international lawyers were giving attention to the consequences for their subject of the extension of the international community to the world and the entry into independent status of peoples previously subject to European domination (Josef L. Kunz, *A.J.*, vol. 49, p. 370 [July 1955]).

There were numerous meetings of national and international societies devoted to international law during the year. The Hague Academy of International Law held its 26th session at The Hague in July and August 1955. Lectures were given on the historical development of international law, treaty law, general principles, definition of aggression, proscription and responsibility for acts of armed forces. The Inter-American Bar

association met in New York city in April 1955 and concerned itself with the continental shelf, arbitration and review of the United Nations charter among many other topics. At the 49th annual meeting of the American Society of International Law in Washington in April 1955, Pres. Philip Jessup opened a vigorous discussion on the relation of power, facts and law in international affairs. Attention was given during the meeting to regional organizations, international claims commissions and the recognition of China. The Ford foundation announced during the year grants for improving international legal studies to the law schools of Harvard, Columbia, Michigan, Stanford and California universities. On the basis of this grant, the University of Michigan held a conference in June 1955 at which the policy-science approach to international law, the law of international trade and investment, international agreements, fisheries, atomic energy and the United Nations were discussed. Attention was also given to topics inviting research in the field and to methods of education in international law. (See also UNITED NATIONS.) (Q. W.)

International Monetary Fund.

The International Monetary fund came

into existence on Dec. 27, 1945, when its articles of agreement (formulated by the United Nations Monetary and Financial conference, Bretton Woods, N.H., in July 1944) were signed by 29 governments. After an inaugural meeting in March 1946 in Savannah, Ga., the fund officially began operations on May 6, 1946, at its seat in Washington, D.C. On Dec. 18, 1946, the fund announced agreement to the initial par values of 32 of its members and on March 1, 1947, announced its readiness to commence exchange transactions.

As of Sept. 30, 1955, there were 58 members with aggregate quotas of \$8,750,500,000.

International Monetary Fund, Member States, Sept. 30, 1955

Afghanistan	Denmark	India	Pakistan
Australia	Dominican Republic	Indonesia	Panamá
Austria	Ecuador	Iran	Paraguay
Belgium	Egypt	Iraq	Peru
Bolivia	El Salvador	Israel	Philippines
Brazil	Ethiopia	Italy	Sweden
Burma	Finland	Japan	Syria
Canada	France	Jordan	Thailand
Ceylon	German Federal Republic	Korea	Turkey
Chile	Greece	Lebanon	Union of South Africa
China	Guatemala	Luxembourg	United Kingdom
Colombia	Haiti	Mexico	United States
Costa Rica	Honduras	Netherlands	Uruguay
Cuba	Iceland	Nicaragua	Venezuela
		Norway	Yugoslavia

Terms and conditions for the membership of Afghanistan and the Republic of Korea were approved at the ninth annual meeting in Sept. 1954. Afghanistan and the Republic of Korea became members of the fund on July 14, 1955, and Aug. 26, 1955, with quotas of \$10,000,000 and \$12,500,000, respectively.

Pursuant to the terms of a board of governors' resolution, Czechoslovakia ceased to be a member of the fund as of Dec. 31, 1954, for failure to fulfil its obligations to supply certain information required under the fund agreement and to consult with the fund on its exchange transactions. On June 23, 1955, the representatives of Czechoslovakia and the managing director of the fund signed an agreement for the settlement of all accounts.

Assets of the fund as of Sept. 30, 1955, were approximately \$8,738,610,000, including \$1,750,550,000 in gold, \$6,168,730,000 in national currencies (including \$1,642,210,000 in U.S. dollars) and \$814,550,000 in subscriptions receivable from member governments.

During the 12 months ending Sept. 30, 1955, three members purchased currency from the fund amounting to \$43,750,000 as follows: Colombia purchased \$25,000,000 for pesos in Dec. 1954; Iran purchased \$8,750,000 for rials in Jan. 1955; and the

Philippine republic purchased \$10,000,000 for pesos in Jan. 1955. Since the beginning of operations in March 1947, total sales of currency by the fund, including Belgian francs, pound sterling, deutschmark and U.S. dollars, amounted to approximately \$1,207,700,000.

In the same 12 months, Australia, Austria, Ceylon, Denmark, Ethiopia, Finland, the Federal Republic of Germany, India, Iran, Mexico, Paraguay and Turkey repurchased amounts of their currencies with gold and dollars totalling \$125,641,921, bringing the total repurchases since the beginning of fund operations to \$731,810,472, of which \$108,336,295 was paid in gold and \$623,474,176 in U.S. dollars.

Changes in two members' par values were made during the year. The Nicaraguan par value was changed from 5 to 10 córdobas per U.S. dollar and the Pakistan par value from Rs. 3.30852 to Rs. 4.76190 per U.S. dollar.

Nine members of the fund had not yet agreed on an initial par value with the fund, one had changed the agreed par value and had not yet agreed with the fund on an authorized par value, and two had decided that temporarily their exchange rates could not be maintained within the specified margins of the par value agreed with the fund. For several other members the proportion of their total international transactions that was carried on at exchange rates governed by the established par value was small.

As of March 1952, members which availed themselves of transitional arrangements under article xiv of the fund agreement, which provided for the possibility of applying payment restrictions without prior approval of the fund, were required to consult with the fund annually concerning the further retention of their restrictive arrangements. As of Oct. 1955, 47 of the 58 members of the fund availed themselves of the transitional arrangements under article xiv.

In 1954 the fund held consultations with the members maintaining restrictions under article xiv, section 2 of the fund agreement. The picture as a whole during the 1954 consultation period was one of cautious but sustained effort to relax restrictions, consolidation of gains linked with a desire to make further progress, and general improvement despite certain setbacks. General economic trends were everywhere being closely observed as indicators of opportunities for further measures of liberalization. The *Sixth Annual Report on Exchange Restrictions* published in June 1955 reviewed the 1954 consultation surveyed recent developments in the field of restrictions and outlined the restrictive systems of individual countries. In the 1955 consultations the fund's main interest was to ensure the maintenance of the current momentum in the relaxation of restrictions.

In a decision taken in June 1955, the fund welcomed the steps taken by some members to reduce reliance on bilateral arrangements which involved the use of exchange restrictions and represented limitations on multilateral payments. It urged the full collaboration of all its members to reduce and eliminate as rapidly as practicable reliance on bilateralism. Unless this policy was energetically pursued by all countries, both convertible and inconvertible, the fund warned, there would be a serious risk that widespread restrictions, particularly of a discriminatory character, would persist. Moreover, the persistence of bilateralism might impede the attainment and maintenance of convertibility.

The fund was having discussions with its members on the need to retain existing bilateral arrangements or their ability to facilitate the reduction of bilateral arrangements by other countries. The fund was exploring with all countries which were parties to bilateral arrangements which involved the use of exchange restrictions the need for the continuation of the

arrangements, the possibilities of their early removal and ways and means, including the use of the fund's resources, by which the fund could assist in this process.

The tenth annual meeting of the board of governors was held in Istanbul, Tur., from Sept. 12 through Sept. 16, 1955. At that time, the *Annual Report* of the executive directors was presented to the board of governors. The report recorded the various activities of the fund during the fiscal year ended April 30, 1955. It also discussed the prospects of convertibility of currencies, reviewed international trade and payments developments and the recent monetary, fiscal and development policies of various countries. The report stated that in 1954 and the first half of 1955, further considerable progress had been made in the direction of freer and less discriminatory trade, on the basis of freer and more multilateral payments arrangements. Already during the year benefits had accrued from the widening freedom of international payments recorded in the previous year. Many countries had shown a determination to advance further steps toward the liberalization of trade and currency convertibility, and the environment created by the international payments situation had been favourable for these advances. The report also stated that, in the further development of the favourable trends that had been apparent during the last two years, the fund had an important part to play. Its practices, particularly with regard to the use of its resources, had been developed to the point where, in association with its members, it could actively promote the attainment of their common objectives.

The fund's policy concerning the use of its resources was summarized in the *Annual Report*. The fund invariably grants members' requests for gold *tranche* drawings, unless there are overwhelming reasons for not doing so. The fund's attitude toward applications for drawings within the first credit *tranche* is liberal and, should the need arise and should the justification be substantial, drawings on subsequent *tranches* will be permitted. Finally, the fund continues to be ready to introduce fund-by-fund arrangements. (See also INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT.) (F. A. Sd.)

International Red Cross: see RED CROSS.

International Refugee Organization: see REFUGEES.

International Trade. World trade in 1955 again expanded toward new levels, continuing its steady rise since 1952. The value of exports was expected to be in the neighbourhood of \$80,000,000,000 for the year. Following setbacks in some areas in late 1953 and early 1954, the economy of almost every major country in the world is flourishing. All economic indicators in industrial countries pointed to 1955 as a record year for production and foreign trade. In underdeveloped countries, many new projects were under way to help raise domestic standards of living and the levels of agricultural and industrial activity; these tended also to stimulate greatly their levels of foreign trade. In some areas, inflation was threatening to influence adversely the volume and value of foreign trade, but international measures were very generally being taken to halt this threat.

The figures in Table I indi-

cate that trade was increasing much more rapidly on the European continent than elsewhere. In the first half of 1955 continental western Europe's exports rose 14% above those of the same period of 1954, while exports of overseas dependencies were up by 6%. Less spectacular gains were registered by the United Kingdom, British overseas dependencies, United States and Canada, and the rest of the world (including Japan). Two areas, Latin America and the independent sterling countries, showed some fall in export revenues, primarily as a result of lower raw material prices in 1955. Intra-European trade and trade between Europe and other industrial countries rose more sharply than trade between the primary-producing and the industrial countries.

Although there were wide variations in the stability of prices of individual commodities moving in world trade, the price index for the world as a whole showed in the early months of 1955 a slight fall from the level of a year earlier. On the other hand, the increase in the *volume* of goods was about 10% greater in the first quarter of 1955 than in the first quarter of 1954.

During 1955, tariff negotiations were concluded between Japan and certain contracting parties to enable Japan to accede to the General Agreement on Tariffs and Trade (GATT), and on Sept. 10, after receiving enough favourable votes for accession, Japan became the 35th contracting party to GATT. The new agreement provided for certain reductions in the tariffs of the negotiating countries on Japanese goods and tariff concessions by Japan on its imports from them. With the passage of a new three-year extension to the Trade Agreements act of 1934 by the U.S. congress, granting authority to make further modest reductions in U.S. tariffs, new multilateral trade negotiations were planned for Jan. 1956 in Geneva, Switz. About 26 nations signified their intentions to take part in this new round of negotiations, the fourth to be held since World War II. At the ninth session of the contracting parties of the general agreement, held between Oct. 1954 and March 1955, it was recommended to the member governments that a permanent organization be created to administer GATT, to be known as the Organization for Trade Cooperation. The new organization would come into being when accepted by countries representing 85% of GATT trade. (See also TARIFFS.)

United States.—United States trade in nonmilitary goods was soaring toward new highs during 1955, assuming that the reported trade for the first half of the year gave accurate indications of its trend. During January–June U.S. exports of nonmilitary goods were well above recent semiannual levels, totaling \$7,000,000,000. This was an 8% gain over the latter half of 1954 and more than 10% above the first half of 1954. If military exports are included, the total value of all exports declined slightly in the first six months of 1955 from the level a year

Table I.—World Trade, 1951–1955*

Country	(In millions of dollars)				1955	
	1951	1952	1953	1954	First quarter (annual rates)	Second quarter†
World exports, f.o.b., total	76,599	73,903	74,803	77,357	80,518	78,940
United States and Canada	19,082	19,957	20,389	19,534	19,296	20,446
Latin America	7,749	7,013	7,600	7,834	7,693	7,700
Continental western Europe	19,283	19,110	19,450	21,481	22,865	23,575
Dependencies of western Europe	2,784	2,817	2,865	3,064	3,232	3,200
United Kingdom	7,584	7,639	7,525	7,771	8,666	7,570
British dependencies	4,525	3,616	3,231	3,394	3,763	3,600
Independent sterling countries	7,933	7,364	7,695	7,630	8,151	6,200
Rest of world	7,659	6,387	6,048	6,649	6,852	6,649
World imports, c.i.f., total	81,517	80,206	76,469	79,361	85,100	85,890
United States and Canada	16,141	16,115	16,676	15,670	16,284	17,406
Latin America	7,756	7,660	6,527	7,295	7,100	7,200
Continental western Europe	22,088	21,850	21,294	23,649	25,980	26,781
Dependencies of western Europe	3,866	4,326	3,944	4,136	4,260	4,200
United Kingdom	10,925	9,736	9,361	9,462	11,281	10,105
British dependencies	4,057	3,814	3,599	3,552	3,986	3,800
Independent sterling countries	8,779	8,437	7,025	7,615	8,433	8,185
Rest of world	7,905	8,268	8,043	7,982	7,776	8,213

*Excluding U.S.S.R., European Soviet satellites and mainland (Communist) China.

†Partially estimated.

earlier. Contrasting with the increase in nonmilitary exports, there was a reduction between the two periods of more than one-half in military shipments under the Mutual Security program.

Imports made a good gain over the 1954 level, recovering most of their loss subsequent to mid-1953, and reaching \$5,500,000,000 in January-June 1955. The increase over the first half of 1954 was somewhat dampened by the low level of coffee imports. If these are excluded, the gain was 11% over the level of a year earlier. This gain in the value of imports from the first half of 1954 reflected an increase in volume. The unit value index for imports remained unchanged between the two periods, lower coffee prices counterbalancing higher rubber and copper prices.

The favourable U.S. export balance of about \$1,500,000,000 was the same as that in the last six months of 1954. This was well above the levels of the first half of 1954 and the 18 months preceding. The increased expenditures in the United States relative to sales on the part of foreign countries helped to reduce the rate of accumulation of their gold and dollar holdings, although it did not completely halt their growth.

The largest share of the increase in nonmilitary exports from January-June 1954 to January-June 1955 was in nonagricultural commodities. Of these, iron and steel mill products jumped to a high well above any half-year since mid-1952. Half of this advance of \$135,000,000 was in scrap, and reflected especially a 24% increase in scrap exports to western Europe where steel production was soaring. Exports of automobiles, parts and accessories rose by \$100,000,000 from the first half of 1954 to the first half of 1955. Increases of about \$50,000,000 each occurred in exports of nonelectrical machinery and chemicals.

Exports of agricultural products, at \$1,561,000,000 in the first half of 1955, equalled their level of the last half of 1954 and were much higher than their January-June 1954 total. Surplus disposal programs of the U.S. government were key factors in this rise. Such programs included expanded sales of farm products for foreign currencies, barter transactions, famine relief shipments and donations to private welfare agencies for distribution abroad.

The latter tripled their shipments of food by comparison with the figures for either half of 1954. Most of these foods were surpluses, chiefly dairy products, obtained from the department of agriculture for distribution in friendly countries. A total of more than 40 countries received foods through these channels, the chief countries of destination being Italy, India, Egypt, Yugoslavia and the German Federal Republic (west Germany).

The movement of cotton abroad fell sharply from the high figure of the first six months of 1954, but remained well above the low levels prevailing from mid-1952 through 1953. The reduction of 53% in rice exports reflected chiefly a deep cut from the record level of the first six months of 1954 in exports to Japan, where dollar receipts from U.S. military spending had fallen off considerably and sizeable reductions in imports of rice had been planned.

Imports of nonfood commodities in the first half of 1955 advanced by almost \$500,000,000 above their total of a year earlier, regaining completely their decline from January-June 1953. This rebound occurred mainly after the beginning of the year, following virtual stability in 1954. It reflected increased demands by U.S. industry and rising consumer purchasing power as the domestic economy recovered rapidly from the 1953-54 dip in industrial production. Most major nonfood commodities shared in the rise from the low rates of importation prevailing in the first half of 1954. In terms of dollar values, the principal increases occurred in petroleum, crude rubber, sawmill products and textile manufactures. Imports of crude petroleum and fuel oil, which for two years had been steady at a semi-

annual rate of about 185,000,000 bbl., jumped to 220,000,000 bbl. The value of these imports, together with other petroleum products, rose about \$90,000,000 above their first-half 1954 total. Booming U.S. demand for petroleum products and the working off of excessive stocks explained the sharp rise.

The gain in the value of crude rubber imports was of about the same absolute magnitude as that in petroleum products, but was proportionately much greater—almost 75%. This rise resulted mainly from an increased unit value—17½ cents per pound in January-June 1954 compared with 28 cents a pound in the corresponding period of 1955. The quantity of rubber imports also increased by about 9%.

Imports of foodstuffs, in contrast to those of most industrial materials and finished manufactures, were lower by \$289,000,000 than in the first half of 1954. This contraction was traced almost entirely to coffee and cocoa. The total quantity of coffee imported through June 1955 represented an unusually small amount for that season, and the unit value averaged only 8 cents per pound compared with 63 cents for the first six months of 1954.

Table II.—United States Trade by Principal Areas and Countries

Country	General imports (In millions of dollars)			General exports*		
	1954 Jan.-June	1954 July-Dec.	1955 Jan.-June	1954 Jan.-June	1954 July-Dec.	1955 Jan.-June
	1954	1954	1955	1954	1954	1955
Total	5,238	4,972	5,514	7,702	7,393	7,614
Total, excluding military exports	1,135	1,241	1,258	1,420	1,347	1,531
Canada	1,135	1,241	1,258	1,420	1,347	1,531
Latin American Republics	1,809	1,481	1,647	1,546	1,661	1,531
Brazil	362	319	258	211	244	1
Chile	109	88	99	35	40	
Cuba	250	152	221	208	222	21
Mexico	195	133	228	336	297	31
Venezuela	249	255	291	262	271	21
Western Europe	980	1,058	1,108	1,566	1,798	2,016
Belgium, Luxembourg	89	103	115	136	134	1
France	74	83	94	162	170	1
German Federal Republic	132	147	161	235	257	2
Netherlands	81	78	67	196	226	2
United Kingdom	246	255	288	271	421	4
Africa	350	254	320	277	293	3
Union of South Africa	49	42	53	121	108	1
Far east	734	695	889	1,016	873	9
India	105	95	120	82	79	
Japan	125	154	188	431	248	3
Philippines	143	118	140	158	168	1
Other areas	230	243	292	229	214	2

*Totals include all shipments from United States customs area, except supplies to United States forces abroad for their own use. Country totals exclude items in the "special category" class, i.e., commodities to which security restrictions apply regarding publication of detailed export statistics.

As can be seen from the figures in Table II, the principal trading partner of the United States continued to be Canada, who accounted for 23% of both imports and nonmilitary exports in the first half of 1955. Trade with Latin America as a whole declined, while trade with Europe was soaring, having risen 30% between the two half-year periods.

The year 1955 saw the enactment into law of the president's bill, H.R. 1, to lower tariffs and to extend the Trade Agreements act. The essential features of the bill included, in addition to authority to enter into trade agreements for another three years, authority to reduce rates of duty existing on January 1, 1955, by 5% annually during each of the three years of the act. Further, the president was given authority to reduce rates of duty which were above 50% ad valorem down to that level over the three-year period. Several important amendments were written into the bill. One provided that increased imports should be considered as the cause or threat of serious injury to domestic industry whenever the tariff commission found that increased imports contributed "substantially" toward causing or threatening serious injury. It was under this provision of the new law that the president found that the U.S. bicycle industry had suffered or was threatened with serious injury. In a proclamation dated Aug. 18, he granted relief to the domestic industry by increasing duties on imported bicycles.

Canada.—Canadian trade in 1955 was characterized by con-

ing recovery from the recession of 1953-54. The value of ports in January-June 1955 showed a 10% increase over the level of the first half of 1954; imports rose almost correspondingly by 8%. The most important change in the direction of Canadian trade in the first six months of 1955 was the marked increase in the imbalance with the United Kingdom. Canada's export surplus with Britain, which was about \$80,000,000 (Canadian dollars here and throughout this section) in January-June 1954, rose to \$200,000,000 in the like period of 1955. This increased imbalance was brought about by divergent movements. The dock strike in the United Kingdom severely affected Canada's imports from Britain in this period, but not its exports to that country. In addition, British automobiles and machinery faced stronger competition in Canada from domestic producers and from other foreign countries. Exports of Canadian produce to the United Kingdom, on the other hand, were in greater demand. Grain, metal and forest product exports rose substantially. The British share of Canadian exports increased by more than one-third, to 19% of the total, while imports from Britain decreased from 10% to about 8% of total imports.

Table III.—Canadian Trade by Commodity Groups

Commodity groups	(In millions of Canadian dollars)					
	All countries		United States		United Kingdom	
	Jan.-June 1954	Jan.-June 1955	Jan.-June 1954	Jan.-June 1955	Jan.-June 1954	Jan.-June 1955
Exports of Canadian products, total . . .	1,840	2,031	1,121	1,203	285	384
Agricultural products . . .	366	369	99	67	83	145
Minerals and animal products . . .	134	126	91	89	12	8
Food, wood products and paper . . .	632	730	514	582	66	78
Iron and products . . .	160	166	93	96	5	11
Nonferrous metals and products . . .	344	396	191	211	104	121
Nonmetallic minerals and products . . .	68	89	49	65	5	9
Chemicals and allied products . . .	77	106	45	59	7	11
Other products . . .	59	49	39	34	3	1
Imports for consumption, total . . .	2,050	2,209	1,503	1,649	204	183
Agricultural products . . .	255	271	119	131	12	12
Minerals and textiles . . .	168	191	91	105	46	46
Iron and products . . .	735	774	635	695	78	54
Nonferrous metals and products . . .	164	177	123	134	23	23
Nonmetallic minerals and products . . .	274	286	152	148	13	13
Chemicals and prod. . .	109	121	96	106	9	10
Other products . . .	345	389	287	330	23	25

Trade with the United States continued to be responsible for the major share of Canada's trade. Large increases were recorded in exports to the U.S. of wood pulp, metals, asbestos, fertilizer, farm implements, lumber, iron ore and petroleum. Exports of wheat and barley, however, declined sharply. Canada increased purchases in the U.S. in every major commodity group, with especially sharp rises recorded in imports of automobile parts and nonfarm machinery in the iron and products group. The figures in Table III show these commodity changes for the United States and the United Kingdom.

Other important destinations for Canadian products were the Commonwealth countries of South Africa, Australia, New Zealand, and India and western Europe, especially the German Federal Republic and the Netherlands. Imports from all areas, except the United Kingdom, increased in the first half of 1955. Among Canada's principal export industries, those three where there had been heavy investment in recent years—chemicals, iron ore and petroleum—made major contributions to the rising trade level. Exports of petroleum rose by more than 260% between the January-June 1954 and 1955 periods, and those of iron ore by 200%. Exports of grains, which contributed heavily to the low level of exports in mid-1954, changed little in value from the 1954 level. Prices of wheat were below those of the first half of 1954, but those of barley, rye and oats moved upward. Newsprint paper, consistently Canada's largest export since 1950, retained that position in 1955 and showed a con-



BRITISH-MADE TRAWLER, first of 20 being built under a trade contract with the U.S.S.R., entering the water after launching at Lowestoft, Eng., in 1955

tinued upward movement. Planks and boards replaced wheat as the second largest export commodity. By value, Canada purchased substantially more imports of rubber and products, aircraft, vegetables, automobile parts and internal combustion engines in world markets, but substantially less coffee.

Latin America.—The *Economic Survey of Latin America for 1954*, published by the United Nations in July 1955, indicated a balance of payments surplus for this region during 1954, although at a level \$700,000,000 under the surplus of 1953. If Venezuela, a large foreign exchange earner through its exports of petroleum, is excluded, the area showed a net deficit in its payments position of \$150,000,000. This deterioration was ascribed primarily to five countries—Argentina, Brazil, Bolivia, Cuba and Uruguay. Declines in exports of the area to the United States were offset in part by increased shipments to western Europe. Imports from western Europe also rose, as these countries made special efforts to recover Latin American markets by low prices and expanded credit facilities. With those Latin American countries especially affected by the dollar shortage, many European countries worked out bilateral trade and payments agreements. The trade of Argentina, Brazil and Uruguay also increased significantly with eastern Europe.

From the incomplete information available for the first half of 1955, it appeared that the payments surplus of the Latin American republics as a group had again declined. Those countries whose major exports are coffee, cocoa or wheat were particularly affected by lower prices following the earlier boom periods. There were wide variations in the strength and weakness of the trade of the individual countries in this area. Among the countries experiencing difficulty with their trade in the early months of 1955, as compared with a year earlier, were Colombia, El Salvador, Haiti, Argentina, Brazil and Uruguay. In contrast, the trade of Cuba, Mexico and Venezuela was steadily rising.

The first half of 1955 proved especially unsatisfactory for the Brazilian economy. As Brazil normally depends upon a surplus in foreign trade to pay for its "invisible" expenditures such as insurance, freight, etc., a trade deficit brings serious consequences. In the year 1954, instead of the customary trade surplus, there was a deficit on trade alone of \$72,000,000 and

a total current account deficit of \$230,000,000. Brazil's foreign indebtedness was increased by \$200,000,000 and its holdings of foreign exchange dropped as well. This aggravated its position when, in 1955, unsettled conditions in the coffee market continued. Imports had to be further restricted, but still the trade deficit, which in January-June 1954 totalled \$19,000,000, rose to \$49,000,000.

Argentina's trade position also worsened in 1955 because of smaller earnings of foreign exchange from cereal exports. The 1954-55 wheat crop was the largest since 1938-39, but its appearance coincided with a large international surplus, lower world prices and marketing difficulties. As of the end of Aug. 1955, 40% of the estimated export surplus of 4,000,000 tons was unsold. The corn crop, on the other hand, was reduced by drought so that it little more than met domestic needs. This catastrophe resulted in an important loss in foreign exchange earnings. Imports into Argentina had been tightly restricted for two years. The only alternative to further curtailment to meet the new deficit was to draw down foreign exchange reserves, rebuilt with difficulty through import austerity in 1953 and 1954.

Venezuela represents the largest Latin-American market without exchange restrictions, and competition for Venezuela's trade in recent years has been keen. In 1954 this country imported about \$900,000,000 worth of goods and exported \$1,700,000,000, mostly of petroleum. In the first quarter of 1955 on an annual rate basis, imports had risen to \$1,000,000,000 as exports climbed to a new high of \$1,900,000,000.

The Mexican economy recovered strongly in the first half of 1955, after a depressed state following devaluation of the peso in April 1954. Exports were well above those of a year before, especially of base metals, cattle, agricultural products and crude petroleum. The value of imports was reduced by about 12%, mainly in foodstuffs, in January-June 1955 compared with a year earlier. Mexico's gold and dollar reserves, which had sunk to about \$100,000,000, by mid-1955 had recovered to nearly \$300,000,000. There was still a trade deficit for the first six months amounting to \$50,000,000, but earnings from the tourist trade and other invisibles receipts resulted in a substantial improvement in Mexico's balance of payments.

Western Europe.—A wave of prosperity had been sweeping over western Europe for nearly three years. Industrial production in this area, which rose by about 8% in 1954, was reaching new levels in 1955. Industrial output had risen 25% in seven years, paced by chemicals where production had doubled since 1948. Production of crude steel and generation of electricity hit all-time peaks early in 1955. Gold and dollar reserves reached a new high of \$13,607,000,000 at the end of the January-March quarter.

This buoyant situation was naturally reflected in western European trade patterns, as can be seen in Table IV. The value and volume of imports reached record levels in the first quarter of the year, while exports were only fractionally below their record high of Oct.-Dec. 1954. Liberalization of trade controls continued, both among western European nations and with their trading partners in the dollar area, despite continued dollar deficits. This action brought closer the free convertibility of European currencies.

The German Federal Republic's trade position in the western European scene continued to be a leading one. Its exports in 1954 rose by 20% above the level of the year before, from \$4,400,000,000 to \$5,300,000,000. In the first half of 1955 exports reached \$5,800,000,000 on an annual basis. West Germany's imports, which in January-June 1955 exceeded the 1954 level by 18%, expanded even more than exports. This was primarily because of the government's program of liberalizing trade. In March and again in Nov. 1954, west Germany freed

certain imports from European and dollar countries from controls. On May 28, 1955, an extension of the free dollar was made.

As trade was further freed from controls, the favourable trade balance declined somewhat, but west Germany remained only major European power with a substantial excess of exports over imports in January-June 1955. The German Federal Republic's recovery from defeat and devastation reached a turning point when on May 5, 1955, it became once again a sovereign nation, a member of the North Atlantic Treaty organization of the Western European union. Industrial production in the Federal Republic, little more than half prewar Germany in 1945, now surpassed that of prewar Germany. In 1954 west Germany replaced Canada as the third ranking world trader, following the United States and the United Kingdom.

Table IV.—Trade of O.E.C. Countries, by Value and Volume, 1954 and First Two Quarters of 1955

	Exports f.o.b. (in monthly averages in millions of dollars)	Imports c.i.f.	Trade balance	Volume Exports 1950=100
O.E.E.C. countries combined				
Year 1954	2,479	2,818	-339	132
First quarter 1955	2,659	3,157	-498	141
Second quarter 1955	2,629	3,140	-511	137
France				
Year 1954	360	362	- 2	125
First quarter 1955	390	377	+ 13	138
Second quarter 1955	411	415	- 4	140
German Federal Republic				
Year 1954	438	383	+ 55	223
First quarter 1955	469	437	+ 32	237
Second quarter 1955	493	466	+ 27	248
Belgium-Luxembourg				
Year 1954	192	212	- 20	131
First quarter 1955	225	230	- 5	145
Second quarter 1955	221	229*	- 8	†
Netherlands				
Year 1954	199	234	- 35	169
First quarter 1955	211	261	- 50	179
Second quarter 1955	209	255	- 46	180
Italy and Trieste				
Year 1954	136	200	- 64	118
First quarter 1955	133	214	- 81	113
Second quarter 1955	151	230	- 79	†

*Based on two months' data. †Not available.

The French economy enjoyed so good a year in 1954 that the end of December almost every sector had reached the highest levels in history. This expansion made possible France's first favourable balance of payments since the end of World War I. Prosperity persisted into 1955, with continued economic expansion and price stability. The volume of exports, which in 1954 was 25% above 1950, by the end of the second quarter of 1955 had climbed to 40% above 1950. The volume of imports in 1955 was even higher relative to the 1950 base, 46% above the 1950 level. In value terms, France's trade had achieved a small surplus during the first half of 1955. This was brought about by a continuing favourable balance with overseas countries of the French union and with foreign countries, except the dollar and sterling areas. There was a substantial deficit with both of the latter. French reserves of gold and foreign currencies at mid-1955 were at their highest level since the end of the war.

The Belgian economy completed one of its best quarters in the end of June 1955. Exports during the first six months totalled \$1,340,000,000 and imports were \$1,369,000,000, leaving a trade deficit of \$29,000,000, well under that for the comparable period of 1954. Compared with a year before, exports by destination for the first four months of 1955 rose 26% to European destinations, 33% to North America, 43% to Oceania and 21% to South America. In the same period, imports from North America, and especially from the United States, rose by 22% those from Asia 18%, and from Africa 17%. Purchases in Latin America dropped by 35%, mainly because of reductions in imports of coffee from Brazil, Haiti and Guatemala and cereals from Argentina.

The year 1955 brought greater prosperity to the Netherlands. Rising imports were paralleled by growing exports. Despite the lowering of export and import prices, the value of trade

1954 was 15% above the 1953 level. In the first six months of 1955, the value of trade rose another 8%. Because of the easing of import restrictions in 1954, imports were more largely responsible than exports for these rises. Nevertheless, both showed healthy gains. By the end of 1954, the Netherlands' gold and foreign exchange reserves had reached a level five times that of mid-1951. Restrictions against dollar goods had become virtually nonexistent, although the Netherlands ran its usual deficit with the dollar area on its trade account.

As with the other western European nations, the Italian economy in 1954 and 1955 was in high gear. Industrial production was rising and foreign trade was good. In an attempt to reduce its trade deficit, Italy (aided by a bumper wheat crop) limited its imports in 1954 to about the same level as in 1953, while exports rose by 8%. Toward the end of 1954, Italy liberalized dollar imports of certain raw and semifabricated materials. Following this, imports rose by about 10% during the first half of 1955. Demand for Italian exports continued strong, and their value rose, but more slowly, by 4½%.

United Kingdom.—The foreign trade of the United Kingdom during the 12-month period ending June 30, 1955, was severely distorted by two dock strikes, one in Oct. 1954 and the other lasting from May 23 to July 3, 1955. British exports in the second quarter of 1955 were 12% below those of the first quarter, which, however, the carry-over from the October dock strike helped raise to especially high levels. Exports in the entire first half of 1955—when the effects of the two stoppages partially

were drawn on to meet a part of this increasing deficit.

Although the January–June 1955 exports were thought to be less than they would have been but for the strike, all main classes of exports, except fuels and textiles, rose as compared with the like period of 1954. Exports of nonelectrical machinery were 4% above a year before, with increases to Finland, Belgium and the U.S.S.R. being notable, although North America and Australia took less. In road motor vehicles and aircraft there was an increase of more than £1,000,000 a month (5%). Ten thousand more cars were exported than in the corresponding period of 1954. Australia, New Zealand and South Africa were the chief purchasers, with exports declining to Sweden and North America. Textile exports declined in this period, cotton yarns and fabrics suffering a serious drop of 17%.

Total imports in the first half of 1955 were 14% greater than in the same period of 1954. The food, beverages and tobacco group showed a rise of 13% compared with a year earlier, with cereals increasing by 64%, meat by 8% and tea by 17%. These were partially offset by declines in imports of dairy products and sugar. There was a major reduction in the value of imports of raw wool, almost wholly because of lower prices, and of cotton and oilseeds. Other important increases were in the value of imports of rubber, reflecting a price rise, wood, pulp, metaliferous ores and scrap, coal (a tenfold increase) and petroleum. Some of these changes are shown in the figures in Table VI.

Of the average monthly increase in exports of £8,500,000 in the first half of 1955, £3,500,000 went to sterling area countries. Higher shipments to Australia and New Zealand alone accounted for more than half of this rise. Most other sterling area countries except Pakistan increased their purchases in Britain. The smallest proportionate increase in British imports in the January–June period was in arrivals from the sterling area, which rose by only 2% compared with the preceding year. A large increase in the value of sterling tea and rubber imports, together with lesser rises in the value of animals, meat, cereals, tobacco and grey cotton cloth, was nearly counterbalanced by declines in imports of sterling oilseeds, wool and cotton. In the first half of 1955 there was, therefore, a slight improvement in Britain's adverse balance of payments position with the rest of the sterling area, compared with the first half of 1954, but a definite deterioration when compared with the second half.

Britain's exports to the dollar countries as a group did not rise in value in the 18 months ending June 30, 1955. Improved exports to the United States in the first six months of 1955 were balanced by declining shipments to Canada. At the same time, there were substantial increases in purchases from the dollar area, amounting to nearly 50% more than in the first six months of 1954. These increases covered a large variety of commodities, including cereals, animal feed, wood pulp and paper, timber, chemicals, ores and scrap, iron and steel, nonferrous metals, nonelectrical machinery and coal.

Trade with the continental O.E.E.C. (Organization for European Economic Cooperation) countries and their dependencies rose to new levels as a result of the increased program of liberalization of trade and the continuing level of prosperity on the continent. Machinery, iron and steel, and metal manufactures were of increasing importance in the export trade to the continent, while more bacon, margarine, timber, wood pulp, nonelectrical machinery and coal swelled Britain's imports from these countries to a level 15% above that of a year earlier.

Table V.—United Kingdom's Trade, by Areas

(In monthly averages in millions of pounds sterling)

	Total	Dollar area	Sterling area	O.E.E.C. countries and possessions	Rest of world
General imports, c.i.f.					
1954: First half	279	45	133	66	35
Second half	284	58	117	71	38
1955: First half	317	66	136	75	40
Exports and re-exports, f.o.b.					
1954: First half	233	31	113	65	24
Second half	229	31	111	64	23
1955: First half	242	31	117	68	26
Excess of imports over exports					
1954: First half	46	14	20	1	11
Second half	55	27	6	7	15
1955: First half	75	35	19	7	14

offset each other (although the 1955 strike was considerably more severe)—were 3½% above the first half of 1954. Imports, on the other hand, although lower by 11% in the second quarter of 1955 than in the first, were nevertheless 14% greater in the entire first half of 1955 than in the like period of 1954. These substantial increases reflected the rising levels of economic activity in the United Kingdom.

With imports rapidly expanding to meet demands of industrialists and household consumers, the trade gap in the first six months widened to a serious degree, as can be seen from the figures in Table V. This was in part the result of an increase in import prices of about 5% over the first half of 1954 not matched by any change in export prices. Britain's gold and dollar reserves declined during the summer months, as they

Table VI.—United Kingdom's Trade in Selected Commodities

(In millions of pounds sterling)

Commodity group	First half 1954	First half 1955	Per cent change	Commodity group	First half 1954	First half 1955	Per cent change
General imports, total	1,673.7	1,903.1	+14	Domestic exports, total	1,345.1	1,392.8	+4
Meat and preparations	126.2	136.9	+8	Food, beverages and tobacco	76.7	81.6	+6
Dairy products	96.2	83.0	-14	Basic raw materials	51.0	55.6	+9
Cereals and preparations	72.2	118.3	+64	Coal and petroleum	77.5	69.6	-10
Fruits and vegetables	109.6	114.9	+5	Chemicals	99.2	111.0	+12
Coffee, cocoa, tea and spices	103.4	121.2	+17	Cotton yarns and fabrics	59.8	49.9	-17
Other food	142.7	161.5	+13	Other textile manufactures	45.2	43.6	-4
Wool	116.8	108.4	-7	Iron and steel	69.0	77.0	+12
Cotton	66.4	53.9	-19	Metal manufactures	73.0	78.7	+8
Metalliferous ores and scrap	69.5	75.5	+9	Machinery other than electric	213.0	222.4	+4
Other basic materials	268.3	300.0	+12	Electric machinery and appliances	88.4	90.6	+2
Petroleum and products	157.4	165.0	+5	Road vehicles and aircraft	159.3	167.1	+5
Nonferrous base metals	83.8	108.6	+30	Other manufactured goods	291.6	304.3	+4
All other commodities	261.2	355.9	+36	All other commodities	41.4	41.4	...



"LADY, BEWARE!" a cartoon by Holland of the *Chicago Tribune* published in 1955

Union of South Africa.—At mid-1955 the South African economic situation remained extremely bright. Exports, which had risen steadily in value since 1952, were relatively stable at \$490,000,000 for the January-June period, while imports totalled nearly \$750,000,000.

These trade figures exclude exports of gold, one of the union's major exports, production of which was rising further in 1955 above the high levels of 1954.

Exports of wool during the first half of 1955 were at about the level of a year earlier, but diamond exports had risen sharply. In the first five months of 1955, their value was nearly equal to that for the entire preceding year.

Despite a high level of national income and general prosperity, imports of consumer goods into the Union of South Africa continued to be tightly controlled, at 53% of the 1948 level for the year 1955. A policy for lifting these controls was announced which would proceed slowly on a step-by-step basis in order to allow domestic industries to adapt themselves to the removal and to prevent undue hardship.

Middle East.—Available information on 1955 exports from middle eastern countries showed substantial gains over 1954. Production of crude oil, the area's major export commodity, amounted to about 79,000,000 metric tons in the first half of 1955, nearly 10% greater than the output of the previous six months and 20% above the corresponding 1954 period. Kuwait was once again the leading producer, Saudi Arabia second, Iraq third and Iran a low fourth. Expansion of exports had led to rising imports for these countries. Many development plans were under way, necessitating imports of capital equipment as well as consumer goods.

The trade of Syria was continuing to rise, as was that of Israel. Both countries run a substantial trade deficit, which tends to increase as both exports and imports grow in value. This deficit is met each year by foreign capital and remittances, and in the case of Syria, by oil revenues.

Egypt's trade balance deteriorated somewhat during the January-June 1955 period compared with the like period a year earlier. This deterioration—a deficit of £E17,800,000 during the first half of 1955 compared with a surplus of £E9,200,000 in the first half of 1954—was caused almost equally by an increase

in imports and a decline in exports. Imports increased by £E1,000,000 to a total of £E85,000,000 in the first six months 1955, and exports, at £E67,200,000, had dropped by £E13,000,000. Exports of raw cotton, which are about 85% to 90% Egypt's total exports, declined heavily, as foreign demand was reduced. France continued to be Egypt's best customer, followed in declining order by India, the German Federal Republic, Italy, the United Kingdom, Japan and the United States. To help overcome difficulties in the cotton trade in 1955, the government of Egypt entered into barter arrangements with certain countries and granted export credit facilities.

Late in May 1955, a preparatory conference took place in Beirut, Lebanon, looking toward the eventual establishment of an economic organization for the near and middle east. The governments represented included the Arab league countries (Egypt, Iraq, Jordan, Lebanon, Libya, Saudi Arabia, Syria and Yemen) and Afghanistan, Ethiopia, Greece, India, Iran, Pakistan and Turkey. The conference approved a draft agreement to be submitted to their respective governments, stating the objective of the proposed organization which was to assist in the economic development of the member countries, including the encouragement of trade among them with a view to increasing the standard of living of their peoples.

Far East.—The far eastern countries showed a generally rising export and import business in the first six months of 1955 as the figures in Table VII indicate. The most remarkable upsurge was that of Japan. In the first half of 1955, exports to the world were \$892,000,000 and imports were \$1,222,000,000, leaving an adverse balance of \$330,000,000. This compared with a deficit in the first half of 1954 of \$692,000,000. Of the reduction in the deficit between the two periods of \$362,000,000, 52% represented lowered imports and 48% increased exports. Japan's exports of iron and steel products rose 72% above the level of 1954, causing this group of commodities to replace cotton fabrics as the principal export commodity. Between the two years, nearly all of Japan's exports rose in volume with the exception of cotton fabrics, exports of which declined by 22% in the latter period. Half of Japan's 22 major import commodities declined in value from the first half of 1954 to the first half of 1955. Of these, raw cotton, down 12%, and rice, lower by 46%, were the most important. The terms of trade for

Table VII.—Trade of Principal Far Eastern Countries

Country	(In millions of dollars)					
	Exports, f.o.b.			Imports, c.i.f.		
	1954	1955 Jan.—March April—June (annual rates)		1954	1955 Jan.—March April—June (annual rates)	
Australia . . .	1,659	1,873	1,732	1,869	2,217	2,217
Burma . . .	251	249	n.a.	204	211	1
Ceylon . . .	380	448	350	293	299	3
Hong Kong . . .	424	424	408	601	654	6
India . . .	1,182	1,279	1,104	1,259	1,424	1,2
Indonesia . . .	856	802	835	629	528	5
Japan . . .	1,629	1,730	1,838	2,399	2,306	2,5
Malaya and Singapore . . .	1,016	1,257	1,184	1,026	1,197	1,1
New Zealand . . .	683	707	884	687	778	7
Pakistan . . .	359	422	398	325	353	2
Philippines . . .	396	394	455	545	600	6

Japanese goods declined slightly compared with those of a year earlier. Export prices dropped a little in May and June, while import prices remained steady.

In 1955 Japanese accounts showed a partial shift from the dollar to the sterling area as a source of supply. The sterling area also became relatively more important as the destination for Japanese exports. With respect to the dollar area, Japan's balance of payments deficit of \$207,000,000 in the first half of 1954 changed to a surplus of \$78,000,000 in the corresponding period of 1955. These changes represented a substantial reduction in purchases from the dollar area together with an expansion of exports to that area. Sterling area accounts changed

from a deficit of \$5,000,000 to a surplus of \$82,000,000. With other (so-called Open account) countries, Japan's \$35,000,000 surplus in the first half of 1954 changed to a \$20,000,000 deficit in the like period of 1955. Both sales and purchases with countries in this group declined.

The trade of the Philippines continued at high levels in the first half of 1955. As the shipping shortages of the latter part of 1954 were overcome, exports returned to the high levels of early 1954. However, prices for coconut products and sugar, the principal exports, although relatively stable since the end of 1954, were still well below levels of the first half of 1954. Imports rose sharply in the 1955 period, necessitating a net decline in reserves and a drawing of \$10,000,000 from the International Monetary fund during the second quarter. In an effort to correct this imbalance between exports and imports, authorities in mid-1955 took steps to restrict imports in order to prevent further declines in reserves. The Philippines and the United States, its principal trading partner, signed a new trade agreement on Sept. 6, 1955, by which it was agreed that duties on commodities traded between the countries would slowly rise to the same level as those levied on other partners.

Keeping pace with India's buoyant industrial production, and encouraged by a continuance of the government's liberal import control policy, that country's imports during the first six months of 1955 rose by 15% over the corresponding period of 1954. Exports rose in value by nearly the same percentage, as prices for India's principal export commodities remained high. The price of tea, which had risen spectacularly in 1954, finally broke in April 1955, after which export totals dropped off. The terms of trade which had improved in the early months of 1955 therefore deteriorated somewhat during the second quarter. India became the second largest exporter of cotton cloth in the world during 1954, second only to Japan. Its largest single customer for cotton cloth was the United Kingdom, with the African continent also a major market. This development indicated clearly the progress of one phase of India's first five-year plan, since it is not necessary to go far back in history to find the United Kingdom the leading exporter of cotton cloth, with India one of its principal markets.

The trade of other far eastern countries was slowly expanding in 1955. Pakistan, Malaya and Ceylon increased their exports, and imports edged slightly upward as well. While the trade position of few countries in the far east was completely satisfactory to them, the economic outlook in this area was generally encouraging, and economic and trade development plans were being carried out with success.

Oceania.—Australia's trade balance in the year ending June 30, 1955, showed a deterioration from the position of the year before, changing from a surplus of \$329,000,000 in 1953-54 to a deficit of \$152,000,000 in 1954-55. This new deficit had to be met by a substantial reduction in Australia's international reserves.

During 1954-55 total imports amounted to \$1,889,000,000 and exports to \$1,737,000,000. To meet this problem, Australia imposed new import restrictions in March 1955. These were beginning to be reflected in import figures by mid-year, and seemed likely to bring about a better balance by the end of the calendar year. The decline in the value of exports was brought about by lowered income from Australia's exports of primary products. A decline in the price of wool of 12%, compared with the season a year earlier, reduced sharply the value of sales of its principal export earner. Barley, sugar and egg export earnings also dropped, although lamb, butter and wheat earned more income than in 1953-54.

The economy of New Zealand, like that of Australia, is greatly dependent on exports of wool, meat and dairy products. Declin-

ing prices in export markets caused a deficit in the first six months of 1955 of £NZ17,000,000 compared with a surplus of £NZ110,000,000 in the like period of 1954. With the ending of the United Kingdom's bulk purchase agreements of the World War II and postwar periods, New Zealand had been forced to seek out new markets for its products, although Britain remained overwhelmingly the principal destination for its exports. During the 1954-55 season, one of New Zealand's largest new customers was the U.S.S.R. (See also BUSINESS REVIEW: EXCHANGE CONTROL AND EXCHANGE RATES; FOREIGN INVESTMENTS; INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT; INTERNATIONAL MONETARY FUND.) (F. L. H.)

International Wheat Agreement: see AGRICULTURE; WHEAT.

Interstate Commerce Commission. The duties and powers of the U.S. Interstate Commerce commission are set forth in the Interstate Commerce act, passed in 1887 and later amended in many important particulars, and in related acts. The act, divided into four parts, deals with the regulation of (1) railroads, related agencies and oil pipelines; (2) motor carriers; (3) water carriers; and (4) freight forwarders. The commission's regulatory powers extend, among other things, to carrier charges; to questions involving the valuation and financial reorganization of railroads; to the issuance of securities; to acquisitions of control of carriers by other carriers or persons; to accounting practices and the filing of reports; to matters involving proposed institutions of new services by motor and water carriers or freight forwarders or the construction, abandonment and operation of lines of railway; and to safety of facilities and operations in rail and motor transportation. Much interstate motor and water transportation is carried on under exemptions from regulation and by private carriers.

Commissioner Everett Hutchinson succeeded Commissioner Charles D. Mahaffie during 1955. On July 1 Commissioner Hugh W. Cross became chairman for one year in succession to Commissioner Richard F. Mitchell.

There were no amendments to the act during 1955, although a number of important changes received consideration. Major changes would be effected by two bills introduced in the congress—S. 1920 and H.R. 6141—following a report on a special study made by a committee appointed by Pres. Dwight D. Eisenhower and composed of certain members of the cabinet. Extensive hearings were expected to precede any congressional action on provisions of the two bills.

The Defense Transport administration was abolished and its remaining functions, having to do primarily with mobilization plans for national defense requirements, were transferred to the commission under a transport mobilization staff directed by Commissioner Owen Clarke, who had served as defense transport administrator.

There was no general increase in rail freight rates during the year. Motor carriers of general freight in various areas received authority in the year to advance their rate levels. The rail share of intercity ton-miles was slightly less than 50% in 1954. Railroad revenue, \$9,925,000,000 in fiscal 1955, was 59.2% of the revenues of all carriers subject to the commission's jurisdiction.

The upswing in general business activity affected transportation agencies. In the first seven months, rail ton-miles, revenues and net income after taxes increased 11.9%, 5.5% and 73.0% above the level of that period of 1954.

Expenditures for capital improvements in the first half of 1955 were at a considerably lower level than in the same period

of the preceding year. However, technological and operational advances, such as further use of diesel locomotives, occurred.

Floods, droughts and labour disturbances affected traffic movements and required car service orders and other remedial measures by rail and other carriers. Beginning in May 1955, car shortages reached serious proportions. The building of freight cars fell to an extremely low level, while retirements continued at a substantial pace. Five service orders were issued to alleviate the car supply. Motor facilities were in ample supply and there were substantial additions to the equipment of inland waterway carriers. Improvements of highways and construction of toll roads were carried forward at a high level.

Regulated carriers varyingly faced such continuing problems as heavy passenger-train deficits, high costs of handling small shipments, extensive competition of private and exempt carriers, shifts in industry location and adverse highway and street conditions. The transportation milieu remained one of severe inter-agency and other competition with respect to rates, operating authorities and other matters. The commission's work was made markedly more complex by reason of this condition. (See also RAILROADS.)

(R. F. ML.)

Intestinal Disorders: see STOMACH AND INTESTINES, DISEASES OF THE.

Intoxication, Alcoholic. In the year 1955 the study and treatment of alcoholic intoxication in its acute and chronic forms progressed mainly along three lines: (1) the extension of existing organizations and institutions for the care and treatment of problem drinkers; (2) the enormous output of valuable contributions to the literature of this field of knowledge; and (3) the development of pharmacological aids in treatment.

Foremost in its national and increasingly international activities was the group formerly known as Alcoholics Anonymous whose general service headquarters officially assumed the title, The General Service Board of Alcoholics Anonymous Inc. (See SOCIETIES AND ASSOCIATIONS: *Alcoholics Anonymous*.) Other organizations were also making steady progress along educational and preventive lines. Among these was the National Committee on Alcoholism, Inc., New York, N.Y.

In nearly every state of the union, there were special groups of which two might be mentioned as typical. The Boston Committee on Alcoholism, Inc., provided an information and guidance centre and had a regular radio program, consisting of a weekly broadcast, plus regular meetings, university courses and special professional assemblies for medicine, industry and the courts. Active in another section of the country was the National Committee on Alcohol Hygiene, Inc., Atlanta, Ga., which performed a similar function in the south. This organization, which was founded in 1944, published a widely distributed periodical *Alcohol Hygiene*.

The year 1955 was remarkable in the number and variety of publications on this subject. A veritable milestone was the volume *Etiology of Chronic Alcoholism*, edited by Oskar Diethelm. This volume represented the result of a five-year program of investigations supported by the National Research council and carried out by a team of investigators from various disciplines. Particularly interesting in this volume was the chapter "Familial and Personal Background of Chronic Alcoholics," by Manfred Bleuler, psychiatrist and director of the Burghölzli Psychiatric clinic of the University of Zurich, Switz. The organic features of brain disease following the excessive use of alcohol were covered in an authoritative manner by H. Houston Merritt, professor of neurology, Columbia university, in his new *Textbook of Neurology*. Merritt covered the subject of acute and

chronic alcoholism in several sections of this volume. Especially interesting were two articles, "The Ego Factors in Surrender in Alcoholism" by Harry M. Tiebout, and "The Definition of an Intoxicating Beverage" by Leon A. Greenberg, both of which were published in the *Quarterly Journal of Studies on Alcohol*.

Drug treatment remained essentially the same—withdrawal of alcohol, restoration of vitamin and mineral content of the body and the use of various medications along with psychotherapy. In 1955 progress in drug treatment was emphasized by the increasing use of chlorpromazine and the use of Reserpine (Serpasil) in cases of delirium tremens. In this disorder the restoration of body fluid and salt, vitamins, minerals and sedation were essential.

In summary, the year 1955 marked a definite stage of advanced progress in the treatment of what is commonly called alcoholism. Opinions still varied as to whether alcoholism is a primary metabolic disease or a symptom of an underlying disorder. The bulk of evidence favoured the latter and, as for the underlying disorder, it seemed increasingly clear that the alcoholic individual (or the problem drinker) is dealing with depression or some other form of emotional disturbance manifested by symptoms related to increasing anxiety. The alcoholic therefore, is usually attempting self-medication, using alcohol as a drug. Fortunately, there are better drugs and new techniques of psychotherapy and physical treatment to help the individual deal more effectively with his own anxiety, social maladjustments, frustration and underlying depression. (See also LIQUORS, ALCOHOLIC.)

(M. Mo.)

Inventions: see ELECTRONICS; MUNITIONS; PATENTS; PRINTING; STANDARDS, NATIONAL BUREAU OF; TELEPHONE.

Investment Banking: see BANKING.

Investments, Foreign, in the U.S.: see FOREIGN INVESTMENTS.

Iowa. Iowa, nicknamed the "Hawkeye state," was admitted to the union in 1846 as the 29th state. Located in the north-central region, it comprises 56,290 sq.mi., of which 245 sq.mi. are inland water surface. The census figures for 1950 showed a population of 2,621,073, of which 52.3% was rural. The federal estimate of population for July 1, 1955, was 2,690,000 not including men in the armed services. The capital and largest city is Des Moines, with a 1950 population of 177,965. Other chief cities are Sioux City, 83,991; Davenport, 74,549; Cedar Rapids, 72,296; Waterloo, 65,198; Dubuque, 49,671; and Council Bluffs, 45,429.

History.—The 56th general assembly met in Des Moines on Jan. 10, 1955, and adjourned on May 4. Gov. Leo Hoegsberg, elected in Nov. 1954, was inaugurated on Jan. 11. Other state officers were lieutenant governor, Leo Elthon; secretary of state, Melvin D. Synhorst; auditor, Chet B. Akers; treasurer of state, M. L. Abrahamson; secretary of agriculture, Clyde Spry; attorney general, Dayton Countryman; superintendent of public instruction, J. C. Wright. All the state officers, the eight representatives in congress and Senators Bourke B. Hickenlooper and Thomas E. Martin were Republicans.

Appropriations for operating the state government were increased from a total of \$244,745,391 for the 1953-55 biennium to \$273,071,121 for the 1955-57 biennium. To provide for this increase, certain taxes were raised. The sales tax was increased from 2% to 2½%; income taxes were raised; gasoline taxes were increased one cent; and the sales tax was applied, for the first time, to cigarettes, beer and bowling. The question of a toll road received considerable attention, and an authority was created to construct a toll road with revenue bonds if and when

toll road in any adjoining state reaches the Iowa border. Efforts to reapportion the representation in the general assembly on the basis of changing centres of population were voted down in spite of a constitutional provision for periodic reapportionment. Provision was made for the appointment of a legislative research director to aid the lawmakers in drawing up needed legislation, such director to be appointed by a committee of three senators and three representatives.

The visit of the Russian farm delegation to Iowa in the summer of 1955—a visit originally suggested by the *Des Moines Register*—caused great interest and received wide newspaper and radio coverage. Great scientific interest was aroused in late summer by the discovery of the bones of Ice Age man near Turin in western Iowa. Archaeologists believed the skeletons to be those of nomadic Indians who roamed Iowa about 7,000 to 10,000 years ago—the oldest ever uncovered in the state.

Education.—During 1953-54 Iowa had 3,588 public elementary schools, with 399,477 students; 829 high school districts with 123,477 students; and 16 public junior colleges with 7,368 students. The number of teachers and superintendents in the public schools was 23,975. Teacher salaries in 1954-55 averaged \$3,260 as compared with the national average of \$3,932.

There are 26 colleges and universities in the state. The state supports three institutions: the state university at Iowa City; the agricultural college at Ames; and the teachers college at Cedar Falls. Enrolment in the three state institutions increased from a total of 19,388 in 1954 to 21,491 in 1955, or 10.8%. The enrolment in all the colleges in Iowa showed an increase of 12.8% over 1954, while veteran enrolment increased 47%, from 4,570 in 1954 to 6,752 in 1955. The appropriation for the three state-supported schools by the 1955 legislature was \$39,297,062 for the 1955-57 biennium, as compared with \$36,571,416 for the 1953-55 biennium.

Social Insurance and Assistance, Public Welfare and Related Programs.—The 1955 allocation for social welfare totalled \$33,070,000 for 1955-57, as compared with \$34,640,000 for 1953-55. Contributions to the state unemployment fund as of June 30, 1955, were \$4,034,830, compared with \$5,059,204 for 1954; benefit payments were \$7,222,934, compared with \$8,496,319 for 1954; the reserve fund, as of June 30, 1955, totalled \$107,067,487.

Iowa's three penal and two correctional institutions had 2,517 inmates as of Sept. 1, 1955. The six mental hospitals had 8,440 patients.

Communications.—Iowa had in 1955 a total of 8,658 mi. of paved highway. Expenditures for construction in the fiscal year 1954-55 were \$31,569,149; maintenance costs for the same period were \$10,252,732. The state was served by 12 major railroads. Class I roads had a total of 5,515 mi. of track. In 1954 these roads carried 4,349,616 passengers and 2,223,964 tons of freight. The number of passengers carried by motorbus during 1952 was 13,197,165. There were, in 1954, 110 mi. of oil pipeline, 1,034 mi. of gasoline pipeline and 2,999 mi. of natural-gas pipeline in Iowa. In 1955 there were 1,265,480 registered motor vehicles, private and commercial.

Iowa has about 850,000 telephones, about 50 radio stations, 9 very-high-frequency and 2 ultrahigh-frequency television stations. There are about 70,000 mi. of electric transmission lines in the state and 97% of all farms are electrified.

Banking and Finance.—There were, as of June 30, 1955, 562 state banks in Iowa, 160 bank offices, 253 small-loan licensees and 280 credit unions under the supervision of the state banking department. Total assets of the 562 state banks as of June 30, 1955, were \$1,911,830,624 (an increase of \$7,987,547 over the 1954 figures); total deposits were \$1,752,958,339 (an increase of \$3,036,160 over the 1954 figures). As of April

Table I.—Principal Crops of Iowa

Crop	Indicated 1955	1954	Average, 1944-53
Corn, bu.	459,971,000	540,015,000	540,971,000
Wheat, bu.	264,910,000	230,884,000	205,027,000
Oats, bu.	2,865,000	2,052,000	4,019,000
Barley, bu.	324,000	80,000	166,000
Rye, bu.	750,000	600,000	1,635,000
Potatoes, bu.	6,961,000	6,793,000	5,763,000
Hay, tons	42,237,000	55,900,000	35,438,000
Soybeans, bu.	3,264,000	3,347,000	3,360,000
Moist seed, tons			

Source: U.S. Department of Agriculture.

In 1955, there were 95 national banks in the state with total deposits of \$88,126,000 and total resources of \$935,270,000.

The revenue received from all special taxes and liquor profits in Iowa for the fiscal year ending June 30, 1955, was \$203,201,379, an increase of \$8,104,872 over the 1954 figures. The largest single item was the state % sales tax, which brought in \$54,873,792; the gasoline tax was second, with a total of \$43,612,095; motor vehicles brought in \$36,964,716; while the state income tax totalled \$21,900,216. The state general fund had a balance of \$27,000,000 to start the 1955-56 fiscal year. Total property taxes for 1954, assessed locally in 1955, were \$251,913,029. The federal income tax paid by Iowans in 1953 was \$535,808,882. The per capita tax paid in 1953, including state, property and federal income, was \$364.

Agriculture.—Agriculture is the leading industry in Iowa. The state has 25% of all grade A land in the country and produces more than 10% of the nation's food. There were 194,623 farms in Iowa in 1954, compared with 196,251 in 1953. These farms had a total of 34,733,154 ac.; the average size was 178.5 ac. Of the total Iowa farms, 49.6% were owner-operated; 50.4%, tenant-operated.

The total cash income of Iowa farmers for 1954 was \$2,356,759,000; of this total, \$1,892,210,000 was from the sale of livestock; \$456,011,-

Table II.—Livestock of Iowa, Jan. 1

	1955	1954
Hogs	12,048,000	10,433,000
Cattle	6,279,000	5,746,000
Sheep	1,307,000	1,348,000
Horses	90,000	110,000
Mules	2,000	3,000
Chickens	30,378,000	30,052,000
Turkeys	141,000	147,000

000 from crops; and \$9,538,000 from government payments. The total cash income was \$39,851,000 less than in 1953. On Jan. 1, 1955, there were 63,705 trucks on Iowa farms, 279,457 tractors, 81,763 grain combines and 107,238 mechanical corn pickers; all figures showed an increase over the 1954 figures.

Manufacturing and Industry.—Iowa's principal industries are based on farm needs and farm production: agricultural machinery, meat-packing plants, food processing plants. There were 3,736 manufacturing plants

Table III.—Principal Industries of Iowa

	All employees 1953	Salaries and wages 1953 (in 000s)	Value added by manu- facture 1953 (in 000s)	Value added by manu- facture 1952 (in 000s)
Food and kindred products	48,374	\$185,387	\$353,913	\$311,012
Apparel and related products . . .	*	*	*	12,295
Printing and publishing industries .	*	*	*	77,106
Chemicals and allied products . . .	*	*	*	65,602
Rubber products	3,889	15,746	33,204	24,812
Stone, clay and glass products . . .	5,601	20,762	51,569	45,427
Primary metal industries	5,628	22,336	40,060	*
Fabricated metal products	7,686	29,805	51,701	49,640
Machinery (except electrical) . . .	37,237	158,962	281,424	299,683
Electrical machinery	9,139	31,070	49,413	49,720
Transportation equipment	4,567	18,952	25,882	23,394
Instruments and related products . .	*	*	*	13,494
Miscellaneous manufactures	12,562	45,456	57,528	*
Administrative and auxiliary	501	2,572	...	...

*Withheld because the estimate did not meet publication standards, either on the basis of the associated standard error of estimate or on the basis of a consistency review.
Source: U.S. Department of Commerce, Annual Survey of Manufactures, 1953.

in Iowa, employing 168,750 persons, in 1954. The average weekly wage was \$76.39. The estimated value of all manufactured products was \$3,800,000,000. Iowa's per capita income for 1954 was \$1,667, an increase of \$149 over the 1953 figure. (M. Te.)

Mineral Production.—Table IV shows the tonnage and value of those mineral commodities produced in Iowa in 1952 and 1953 (preliminary) whose value exceeded \$100,000. Iowa ranked third among the states in production of gypsum and in 1953 stood 33rd in the value of its mineral output, with 0.36% of the U.S. total.

Table IV.—Mineral Production of Iowa

Mineral	(Short tons, except as noted)			
	1953	Value	1952	Value
Cement (bbl.)	9,111,000	\$23,330,000	9,337,000	\$22,850,000
Clays	913,000	981,000	865,000	2,682,000
Coal	1,388,000	5,262,000	1,381,000	5,297,000
Gypsum	1,152,000	2,940,000	1,122,000	2,798,000
Sand and gravel	10,385,000	6,401,000	10,797,000	6,033,000
Stone	10,715,000	13,215,000	9,899,000	13,037,000
Other minerals . . . . .	...	...	...	...
Total		\$52,001,000		\$52,481,000

Iran (PERSIA). An independent kingdom of western Asia, Iran is bounded east by Pakistan and Afghanistan, north by the U.S.S.R., west by Turkey and Iraq and south by the Persian gulf and Arabian sea. Area: 636,293 sq.mi. Pop. (1955 est., no census ever taken): 21,037,000. Language: mainly Persian, but Turkic and Armenian in the northwest, Kurd in the west, Arabic in the south and Pushtu in the east. Religion: Moslem, mainly Shia but the Kurds (850,000) are Sunni; Christian (there are about 50,000 Gregorian Armenians, a few thousand Catholic Armenians and 40,000 Nestorians); Jewish 40,000; and about 10,000 Zoroastrian. Chief towns (1950 est.): Tehran (cap.) 618,976; Tabriz 279,168; Isfahan 196,134; Meshed 191,794; Hamadan 123,931; Shiraz 116,274; Resht 111,978; Kermanshah 108,484. Ruler, Shahanshah Mohammed Riza Pahlavi; prime

ministers in 1955, Gen. Fazlollah Zahedi and (from April 7) Hussein Ala.

History.—When the shah returned to Tehran from his visit to Europe and America in March 1955, the prospects for Iran seemed more stable and assured than in any year since World War II. Foreign relations were on a sound footing; the settlement of outstanding disputes with the U.S.S.R. and the signature of a treaty of commerce and navigation with India (both in Dec. 1954) were followed by an exchange of ambassadors with Japan in February and a treaty of friendship, economic relations and consular rights with the United States in August. U.S. military and financial aid continued at a high level (\$45,000,000 for the fiscal year 1955–56). Many countries competed for contracts in Iran, and these were awarded on a basis of deliberately balanced distribution. A contract for a pipeline from Abadan to Tehran was divided between French and British firms in April; a £30,000,000 contract for the reconstruction and extension of Iran's roads was awarded to a British firm in May; contracts aggregating £57,000,000 for various building projects were shared by three firms (U.S., French and western German) at the end of August; and the German Federal Republic also received a contract for supplying 180,000 telephones.

The "iron curtain" countries were largely excluded from this revival of political and economic co-operation between Iran and the outside world, though the shah accepted an invitation to pay a formal visit to Moscow. The process of re-establishing Iran's links with the west reached a climax with the announcement on Oct. 11 of the government's intention to join the Baghdad treaty, which already linked Turkey, Iraq and Pakistan with Great Britain in a defensive system covering the northern tier of middle eastern countries adjoining the U.S.S.R. This decision was formally put into effect on Nov. 3, after a Soviet note of protest had been rejected.

In domestic affairs the situation was less satisfactory, though greatly improved since the days of Mohammed Mossadegh. The aftermath of the conspiracy against the regime, which had been uncovered in 1954, still remained to be liquidated; and General Zahedi's government failed to satisfy the shah of its ability to deal with the internal state of the country, especially with the wide prevalence of graft and corruption. The shah spoke publicly on March 22 of the misery of the masses of the population and plainly warned his government of his dissatisfaction. Two weeks later, on April 5, he accepted Zahedi's resignation and appointed in his place Hussein Ala (at that time minister of court, and more than once previously prime minister). Ala received a vote of confidence in the *majlis* by 92 votes to 2 (with 7 abstentions) on April 17, but a few days later he, like Zahedi, retired to Europe for medical treatment, leaving the foreign minister, Abdollah Entezam, to take charge. After Ala's return to Iran a considerable reshuffle of the government took place in August.

Meanwhile the arrest and punishment of conspirators continued. Kazem Hasibi, formerly Mossadegh's oil adviser, was arrested on March 21, and five other colleagues of Mossadegh were arrested for conspiracy against the regime on May 19. On Aug. 18 six officers convicted of participation in the 1954 conspiracy of the Communist-controlled Tudeh party were shot—the last of a long series; thereafter the shah commuted the remaining death sentences. The shah's preoccupation with the task of political conciliation and social reform was further shown in the continuation of his program of distributing land among the peasants (starting with his own) and by a ban on the cultivation of opium, which became law on Oct. 4.

See L. P. Elwell-Sutton, *Persian Oil* (London, 1955). (C. M. WE.)

Education.—Schools (1953–54): primary 5,959, pupils 790,200, teachers 26,965; secondary (1950) 333, pupils (1953–54) 119,300, teachers (1950) 3,546; vocational (1950) 186, pupils 7,776, teachers 494. Uni-

versities 2, students (1951) 5,600. Teachers in training (1950) 1,414.

Finance and Banking.—Monetary unit: rial, with a principal buying rate of 75 and a principal selling rate of 76.5 to the U.S. \$1. Budget (1954–55 actual; 1955–56 est. in parentheses): revenue 10,848,000,000 rials, (12,065,648,000 rials); expenditure 13,058,479,000 rials, (15,591,302,000 rials). Currency circulation: (Oct. 1954) 9,780,000,000 rials, (April 1955) 9,840,000,000 rials. Bank deposits: (Oct. 1954) 10,590,000,000 rials, (April 1955) 13,200,000,000 rials. Gold and foreign exchange: (Dec. 1954) U.S. \$186,000,000, (Aug. 1955) U.S. \$204,000,000.

Foreign Trade.—(1954) Imports (including those by oil companies) 22,090,000,000 rials; exports 12,300,000,000 rials. Main sources of imports: U.S. and Canada 24%; Germany 15%; Japan; other continental Europe 15%. Main destinations of exports: U.S.S.R.; Germany 16%; other continental Europe 22%; U.S. and Canada 9%; U.K. 6%; Japan. Main export commodities: rugs 16%; cotton 17%; petroleum (1953) 2%, (1951) 61%.

Transport and Communications.—Roads (1953) 26,000 km. Motor vehicles in use (1953): cars 24,100; commercial vehicles 21,200. Railways (1954) 2,567 km.; passenger-km. (March 1952–53) 386,000,000 freight, ton-km. (March 1954–55) 1,221,600,000. Telephones (Jan. 1955) 39,300. Radio receiving sets (1950) 184,000.

Agriculture.—Main crops (metric tons, 1954): wheat 2,100,000; barley 820,000; cottonseed 87,000; cotton, lint 50,000; jute 4,000; rice 522,000; beet sugar, raw (1954–55) 68,000; raisins 50,000; dates 140,000; tobacco (1953) 18,500; sesame (1953) 10,000; tea (1951–52) 3,500. Livestock (1951): sheep 18,000,000; horses 365,000; mules 126,000; asses 1,200,000; buffaloes 12,000; goats 700,000; cattle (March 1955) 5,000,000; camels (1949) 600,000; chickens (1949) 13,000. Wool production (1954) 10,000 metric tons.

Industry.—Raw materials (metric tons): crude oil (1954) 2,946,000; coal (1953) 150,000. Manufactured goods (metric tons, 1953): cement 52,400; cigarettes 5,772,000; tobacco 5,167; cotton, ginned 43,000; (1951) motor fuel 2,205,000; kerosene 1,260,000; all fuel oils 8,247,000.

Iraq. An Arab kingdom, Iraq is bounded northwest by Syria, north by Turkey, east by Iran, southeast by Kuwait and the Persian gulf, south by Saudi Arabia and west by Jordan. Area: 171,599 sq.mi. Pop.: (1947 census) 4,816,185; (1954 est.) 4,948,000. Language: Arabic 77%, Kurdish 15%, other 8%. Religion: Moslem 93.6%, Christian 3.1%. Chief towns (pop., city proper, 1947 census): Baghdad (cap.) 364,041; Mosul 203,273; Karbala 122,719; An Najaf 106,776; Basra 94,000; Kirkuk 93,000. King, Feisal II; prime minister in 1955 Nuri es-Said.

History.—Iraq's proposed adherence to the Turco-Pakistan defense treaty had wide repercussions in the country's foreign relations. Early in Jan. 1955 the Soviet government withdrew its representative from Baghdad in view of "Iraq's unfriendly attitude" and at the end of the month the Arab league, inspired by Egypt, exerted considerable pressure on Iraq to force it to withdraw from its Turkish commitments. Meanwhile the Turkish prime minister, Adnan Menderes, had paid a state visit to Baghdad, at which time he stressed that the new treaty would not be exclusive and the hope that it would attract the co-operation of other Arab middle east countries. After his visit the Iraqi prime minister, Nuri es-Said, emphasized that the proposed treaty with Turkey conflicted neither with the United Nations charter nor with the Arab league collective security treaty. His government's policy was designed to serve the vital aims of the Arabs and to assure Iraq's safety. At the end of the month, after the abortive mission to Baghdad of an Arab league delegation, Nuri es-Said refused to accept the terms dictated by Egypt that Iraq should sign the treaty only if it was approved by the majority of the Arab league. He protested officially to Cairo against the introduction into Iraq through Egyptian diplomatic channels of propaganda publications inciting Iraqi opposition to his government's policy.

On Feb. 24 the treaty was signed, having obtained the overwhelming support of both the Iraqi houses of parliament. In his speech recommending its acceptance, Nuri es-Said stated that Iraq had accepted no commitments outside its own frontiers or outside the frontiers of Arab countries, as specified in the Arab league security treaty, and that Iraq would continue to co-operate fully with the Arab states whether inside or outside the Arab league. But, he added, no one could dictate Iraq conditions for co-operation. On March 2 Egypt and Syria

signed an agreement to which Saudi Arabia and Yemen subsequently adhered. It laid down principles for close military and economic co-operation and included an undertaking not to join the Turco-Iraqi treaty. A fortnight later a Syrian delegation visited Baghdad and on the conclusion of its mission undertook 'to submit the Iraqi viewpoint to the Syrian government with a view to closing the Arab ranks and establishing the desired understanding between the Arab states.' On April 4 Great Britain adhered to the Turco-Iraqi treaty and a new agreement was announced covering Anglo-Iraqi relations. By it the British air bases would be handed back to Iraq while Great Britain guaranteed all assistance to secure their efficient upkeep. In the event of foreign aggression, Great Britain, at the request of Iraq, would send all material assistance for the defense of the country.

Meanwhile, the British foreign secretary, Sir Anthony Eden, visited Baghdad and on March 24 a new oil agreement between the Iraqi government and the foreign-controlled Iraq Petroleum Company was signed assuring Iraq of a notable increase in annual revenue; and on April 2 a final settlement of outstanding war debts between Iraq and Great Britain was made.

In August, on the outbreak of disturbances in Morocco, Iraq associated itself with the general protests of the Arab league and subscribed £250,000 for the relief of "Arab Morocco victims of French hostilities in Morocco." (O. M. T.)

Education.—Schools (1953-54) including private and foreign: primary 7,549, pupils 280,378, teachers 9,521; secondary 197, pupils 46,463, teachers 2,679; vocational 11, pupils 1,874, teachers 90; teacher training colleges 11, students 1,744, teachers 78. Institutions of higher education 2, students 5,255, teaching staff 234.

Finance and Banking.—Monetary unit: Iraqi dinar at par with the pound sterling and with an exchange rate of 0.359 dinars to the U.S. \$1. Budget (1955-56 est.): revenue 50,970,000 dinars, expenditure 51,550,000 dinars. Currency circulation: (Jan. 1955) 41,600,000 dinars; (May 1955) 44,000,000 dinars. Deposit money: (Jan. 1955) 22,000,000 dinars; (April 1955) 23,000,000 dinars. Foreign exchange reserves (all banks, April 1955) U.S.\$333,700,000.

Foreign Trade.—(1954) Imports 74,100,000 dinars; exports 155,600,000 dinars, of which 101,300,000 dinars by foreign oil companies. Main sources of imports: U.K. 31%; other sterling area 13%; France and other continental European Payments union countries 25%; U.S. and Canada 14%. Main destinations of exports: Netherlands 17.3%; Germany 14.04%; U.K. 11%; Denmark 10.13%; India 6%; U.S. 4.14%; Saudi Arabia 3%. Main exports: petroleum 88%; barley 6%; dates 2%.

Transport and Communications.—Roads (1953): 19,300 km. Motor vehicles in use (1955): cars 14,052; commercial vehicles (including buses, taxis) 16,716. Railways (1954): 1,690 km. Air transport (1954): passenger-km. 19,858,000; freight, 302,900 ton-km.; (1953) 1,144,000 km. Town. Telephones (March 1954) 28,010. Radio receiving sets (1953) 6,000.

Agriculture.—Main crops (metric tons, 1954; 1955 in parentheses): barley 1,240,000 (899,000); wheat 1,160,000; rice 180,000; cotton, lint 1,000; cottonseed 20,500; wool 8,000; dates (1953) 350,000. Livestock (1953-54): sheep 10,000,000; cattle 1,510,000; buffaloes 718,000; horses 300,000; mules 500,000; (1953 est.): asses 1,000,000; camels 00,000; goats 2,000,000.

Industry.—Crude oil production (1954) 30,084,000 metric tons.

Ireland, Republic of. The Republic of Ireland has about 85% of the area (south, centre and northwest 26 of the 32 counties) and about 75% of the population of the whole of Ireland. Area: 27,136 sq.mi. Pop.: (1951 census) 2,960,593; (1954 est.) 2,933,000. Languages: English about 76%, Erse (Gaelic) about 24%. Religion (1946 census): Roman Catholic 94.3%; Anglican 4.2%; Presbyterian 0.8%; Methodist 0.3%; Jewish 0.1%. Chief towns (pop., 1951 census): Dublin (cap.) 522,183; Cork 74,567; Limerick 50,820; Dun Laoghaire 47,920. President in 1955, Sean T. O'Kelly (Seán T. Ó Ceallaigh); prime minister, John A. Costello (Seán Ua Choisdealbha).

History.—The first six months of 1955 gave John A. Costello's interparty government no reason for alarm or despondency. The half-yearly exchequer returns showed ordinary revenue comfortably up and expenditure on the central fund and supply services slightly down. But this satisfactory budgetary position coincided with a mounting adverse balance of trade.

The explanation of the paradox lies in a system of taxation devised for industrialized Great Britain and taken over almost



BRITISH DETECTIVES carrying part of a load of arms and ammunition believed to have been stolen from an army depot by Irish terrorists Aug. 13, 1955. The arms were discovered in an empty shop in London

unchanged by a small agricultural country—an anomaly that became startlingly apparent in 1955. Under this system, income tax, normally a true mirror of national progress or adversity, remained virtually static, being paid by a small minority; and of the increase of revenue for the first six months of the year, almost £3,000,000 over that for the corresponding period for 1954, nearly half came from higher customs receipts; that is, as a reflection of a higher volume of imports. At the same time there was an ominous fall in exports, particularly of cattle and cattle products to Great Britain. Provisional figures for the first nine months of 1955 showed an excess of imports over exports of £71,021,000, an increase over the corresponding period of 1954 of £18,983,000. Part of this adverse balance was offset by a good tourist year, but the inner reality of the situation, with revenue buoyant and the balance of trade increasingly shaky, gave the government no cause for elation.

The trade squeeze began, in fact, to imperil the interparty government, and two results followed. First, the minister for finance, Gerard Sweetman, hinted at an inquiry into the whole system of taxation; second, Sean Lemass, formerly minister for industry and commerce in Eamon de Valera's government, produced a five-year economic plan clearly designed to form the main plank in the Fianna Fail, or opposition, party's platform for the next general election.

By October some observers were hinting that a general election might not be long delayed. The Irish banking system is, in effect, a kind of provincial reservoir connected by subterranean channels with the main reservoir in London, and the restrictions on credit in Great Britain were already having an effect in the republic. Sean Lemass' opposition party counter was to propose an ambitious program of capital outlay by government and public authorities, the finance to be provided by calling to some extent on the £228,000,000 of external assets held by the Irish banking system, but without reducing those funds below the level necessary to maintain liquidity of funds. Such a proposal, if translated from theory to reality, would involve a radical departure from the republic's hitherto extremely conservative financial policy. But the main significance of Lemass' opposition plan was that it foreshadowed the possibility of an Irish election fought for the first time on purely economic issues.

Meanwhile, if there were hints of new economic lines of division in Irish politics, there was one purely political issue on which government and opposition seemed to speak with one voice—or, more significantly, not to speak at all. The Irish Re-

publican army raids on barracks in Northern Ireland and Great Britain were condemned in the *dail eireann* by some speakers as "undemocratic," by others as right in principle but wrong in timing. The minister for external affairs, speaking for the government, threw cold water on the enthusiasm of the I.R.A. and its youthful admirers by publicly acknowledging that even if all British forces were withdrawn from Northern Ireland tomorrow, the problem of partition would remain unsolved. That, however, was as far as anybody went, and open recruiting for the I.R.A., not to mention advertising for recruits, continued unchecked. The crux of the matter was, as always, that any Irish government rash enough to challenge the I.R.A. might find itself out-bidden in political sentiment on the subject of Irish unity.

The same reservoir of political sentiment forbade any public declaration by the government on the subject of the republic's potential role as a member of the North Atlantic Treaty organization. The official attitude remained that to discuss such a matter on the basis of partition would be to admit by implication that partition was either justified or permanent, or both.

(D. L. I.)

Education.—(1953) Schools: primary 4,880, pupils 468,707, teachers 13,000; secondary 441, pupils 52,151, teachers 4,170; vocational 844, pupils 86,843. Teacher training colleges 10, students 1,173. Universities 2 (excluding St. Patrick's college, Maynooth), students (1952-53) 7,601, professors and lecturers 82.

Finance and Banking.—Monetary unit: (Irish) pound, at par with the pound sterling. Budget (1955-56 est.): revenue £110,620,000; expenditure £112,700,000. Internal debt (March 1953) £122,000,000, external debt £40,600,000. Currency circulation (May 1954) £71,600,000; (May 1955) £75,900,000. Bank deposits (May 1954) £86,800,000; (May 1955) £95,000,000. Gold and foreign exchange (May 1955) U.S. \$247,000,000.

Foreign Trade.—(1954) Imports £179,930,000; exports £115,100,000. Main sources of imports (1954): U.K. 56%; other sterling area 10%; continental European Payments union countries 16%; U.S. and Canada 9%. Main destinations of exports: U.K. 89%; continental E.P.U. 5%; U.S. and Canada 2%.

Transport and Communications.—Roads (1953) 80,600 km. Motor vehicles in use (Aug. 1953): cars 108,805, commercial vehicles 33,196. Railways (including cross-border systems, 1954): 4,170 km.; passengers carried (1952-53) 16,505,620; freight, ton-km. (1954) 444,000,000. Air transport (1954): passenger-km. 125,008,000; freight, ton-km. 1,973,400. Navigable inland waterways (1953) 800 km. Telephones (Jan. 1954): 103,798. Licensed radio receivers (1953): 406,000.

Agriculture.—Main crops (metric tons, 1954): wheat 450,000; oats 483,000; barley 179,000 (1955, 268,000); rye 3,000; potatoes 2,284,000; beet sugar, raw 101,000; flax fibre (1953) 2,200. Livestock: (Sept. 1954) cattle 4,494,000, sheep 3,113,000, pigs 958,000, chickens 13,462,000; (1953) goats 46,200, horses 329,000, mules 3,500, asses 105,700. Production (metric tons, 1954): wool 5,000; milk 2,505,000; butter 59,000; cheese 1,900; meat 189,000 (including pork 89,000, beef and veal 80,000).

Industry.—Fuel and power (1954): coal 200,800 metric tons; electricity 1,406,400,000 kw.hr.; manufactured gas 177,600,000 cu.m. New houses built under state aid (1954) 10,490. Index of industrial production (Dec. 1953; 1948=100) 150. Unemployment (May 1954) 8.4%, (May 1955) 7.3%.

Iron and Steel. Data presented in the three major parts of this article and the accompanying tables are based on the statistics available in Nov. 1955, as reported by the U.S. bureau of mines.

Iron Ore.—In 1954, the first shipments of iron ore were made from two new producing operations, in Venezuela in January and in Canada in July. Table I gives data on iron ore output by countries producing more than 100,000 tons yearly.

In the first eight months of 1955 iron ore outputs in Chile and Peru lagged behind the rate in 1954 but those in Canada and Venezuela had already exceeded production in the full year 1954.

Iron ore production in the United States, and imports from specified countries that supply the greatest quantities to the United States, are shown in Table II. In 1954 important progress was made in utilizing new or previously little used sources of iron ore supply. Imports increased but more significant was the increase in capacity of foreign sources for the United States. In 1954 imports of iron ore from Peru totalled 2,152,165 tons compared with 945,819 tons in 1953 and none in 1952. Although

Table I.—World Production of Iron Ore

	(In thousands of short tons)					
	1949	1950	1951	1952	1953	1954
United States	95,130	109,810	130,486	109,669	132,155	87,201
Canada	3,675	3,606	4,680	5,272	6,501	7,288
Brazil	1,641	2,190	2,653	3,355	3,467	3,748
Chile	2,863	3,280	3,585	2,435	2,387	2,191
Venezuela	—	218	1,400	2,172	2,531	5,941
Austria	1,640	2,049	2,612	2,924	3,039	2,991
Czechoslovakia	1,800	2,000	2,200	2,600†	2,500†	2,500
France	34,639	33,089	38,802	44,882	46,709	48,301
Germany	10,320	12,356	14,898	17,919	17,457	16,000
Great Britain	15,005	14,519	16,550	18,180	17,715	17,421
Luxembourg	4,560	4,238	6,200	7,986	7,904	6,511
Spain	2,068	2,292	2,633	3,156	3,333	3,711
Sweden	15,155	15,352	16,959	18,683	18,721	16,911
U.S.S.R.	39,000*	49,000*	52,900*	55,100*	66,000*	72,000*
Yugoslavia	909	806	642	745	876	1,221
India	3,146	3,321	4,096	4,397	3,987	4,171
Japan	859	1,003	1,287	1,537	1,699	1,791
Philippines	408	660	995	1,290	1,343	1,571
Algeria	2,798	2,836	3,112	3,408	3,735	3,321
Morocco, French	393	356	588	718	558	366
Morocco, Spanish	1,040	948	1,033	1,030	1,087	1,012
Sierra Leone	1,075	1,306	1,278	1,544	1,532	981
South Africa	1,375	1,311	1,566	1,939	2,173	2,081
Australia	1,636	2,649	2,728	3,006	3,695	3,941
Total	246,000	276,000	324,000	328,000	371,000	335,000

Table II.—Production of Iron Ore in the United States

	(In thousands of short tons)					
	1949	1950	1951	1952	1953	1954
Crude ore						
Production	117,433	140,828	170,367	143,796	175,406	114,031
Open-pit	87,542	108,492	134,581	112,234	139,149	?
Underground	29,891	32,337	35,786	31,563	36,257	?
Shipments	117,015	141,010	170,330	143,796	175,406	?
To consumers	71,138	78,885	95,196	78,793	91,562	?
To concentrators	45,877	62,125	75,134	65,003	83,844	?
Usable ore						
Production	95,130	109,496	130,485	109,668	132,154	87,201
Shipped direct	71,646	78,746	95,516	78,802	92,024	?
Concentrated	18,382	25,548	28,794	24,682	32,661	?
Sintered	4,501	4,872	5,339	5,509	6,778	?
Haematite	85,414	97,615	113,715	93,537	114,860	?
Brown ore	1,731	2,929	3,377	3,057	2,507	?
Magnetite	7,384	8,621	12,757	12,397	14,096	?
Shipments	94,849	109,496	130,178	109,729	131,961	86,231
Imports	7,663	9,220	11,356	10,932	12,403	11,671
Algeria	465	545	500	74	24	3
Brazil	394	775	1,162	1,132	513	661
British West Africa	67	215	286	244	259	281
Canada	1,818	2,082	2,197	2,041	2,062	3,961
Chile	2,942	2,875	3,099	2,085	2,647	1,861
Liberia	34	—	123	641	796	851
Mexico	190	214	190	162	271	151
Sweden	2,270	2,282	2,825	2,364	2,349	1,541
Venezuela	—	—	711	2,067	2,184	5,211
Exports	2,716	2,845	4,848	5,737	4,762	3,521
Consumption	99,924	119,404	128,618	112,717	136,780	113,251

*Estimate. †Preliminary.

the tonnage of magnetic taconite from Minnesota and flotation concentration of Michigan jaspers was relatively small, progress in research and in actual plant construction was significant. Also additional plants for ore beneficiation were built in 1954.

In the first eight months of 1955, output of iron ore in the United States totalled 73,634,000 short tons; imports were 16,108,502 tons (exclusive of ore containing 10% or more manganese) valued at \$108,167,442. Of this 79% was supplied by three countries—Canada 38%, Venezuela 34% and Peru 7%. Iron ore exports in the period totalled 3,146,489 tons, of which more than 96% went to Canada and 3% went to Japan.

Pig Iron.—World production of pig iron decreased in 1954. Table III gives the details. Output of pig iron in the United States

Table III.—World Production of Pig Iron and Ferroalloys

	(In thousands of short tons)					
	1949	1950	1951	1952	1953	1954
Australia	1,170	1,472	1,484	1,735	2,064	2,011
Austria	924	977	1,159	1,295	1,456	1,411
Belgium	4,133	4,073	5,366	5,280	4,648	5,011
Canada	2,366	2,498	2,819	2,914	3,166	2,311
Czechoslovakia	1,993	2,180*	2,290*	2,570*	3,075*	3,111
France	9,210	8,641	9,793	10,886	9,655	9,811
Germany	1,744	1,856	2,606	2,804	2,626	2,711
Soviet Union	8,142	10,811	12,166	14,912	14,023	15,211
Great Britain	10,641	10,822	10,868	12,015	12,516	13,311
India	1,842	1,860	2,043	2,076	1,990	2,131
Japan	1,791	2,534	3,557	3,952	5,129	5,211
Luxembourg	2,615	2,755	3,480	2,391	3,000	3,011
Poland	?	1,640*	1,738*	1,964*	2,534*	2,811
U.S.S.R.	18,400*	21,500*	24,800*	27,600*	30,900*	33,011
United States	54,868	66,371	72,472	63,391	77,201	59,711
Total	127,800	148,000	166,000	168,000	186,000	175,000

Table IV.—Data on Pig Iron and Ferroalloys in the U.S.

	(In thousands of short tons)						
Pig Iron	1948	1949	1950	1951	1952	1953	1954
Production	60,073	53,323	64,500	70,278	61,308	74,853	57,948
Imports	60,051	52,219	64,526	70,250	61,235	64,163	57,783
Exports	222	100	796	1,066	380	590	291
Consumption	60,026	53,447	64,943	71,414	61,551	74,708	58,662
Open-hearth	7,833	6,939	8,669	9,664	8,059	8,868	7,004
Bessemer	47,267	41,783	50,946	56,055	49,374	61,307	48,632
Electric	4,778	4,612	5,170	5,551	3,999	4,351	2,849
Others	132	108	154	144	119	182	178
Ferroalloys							
Production	1,893	1,544	1,871	2,194	2,083	2,336	1,805
Imports	1,952	1,425	1,982	2,207	2,038	2,209	1,707
Ferromanganese	659	560	731	796	738	900	800
Spiegelisen	109	54	65	77	—	—	46
Ferrosilicon	819	590	795	846	761	773	599
Others	365	221	391	488	539	536	262

states decreased 23% in 1954 compared with 1953, a record year. Table IV gives salient features of the industry in the United States.

Steel.—World production of steel declined 5% in 1954 from

Table V.—World Production of Steel

	(In thousands of short tons)					
	1949	1950	1951	1952	1953	1954
Australia	1,304	1,597	1,606	1,839	2,295	2,490
Austria	921	1,044	1,133	1,166	1,415	1,822
Belgium	4,243	4,163	5,571	5,585	4,900	5,431
Canada	3,190	3,384	3,569	3,703	4,115	3,194
Czechoslovakia	2,767 ²	3,186 ²	3,504 ²	3,784 ²	4,850 ²	4,883 ²
France	10,040	9,528	10,828	11,980	11,019	11,714
Germany	19,327	20,922	2,869	3,112	2,959	3,094
Italy	10,864	14,458	16,599	19,510	19,398	21,704
Japan	936	1,155	1,422	1,608	1,701	1,644
Poland	1,515	1,610	1,680	1,768	1,888	1,887
Spain	2,265	2,604	3,376	3,897	3,856	4,637
Sweden	3,429	5,333	7,167	7,703	8,446	8,543
Switzerland	2,504	2,702	3,392	3,309	2,931	3,117
United Kingdom	2,541	2,772	3,078	3,509	3,973	4,370
U.S.S.R.	1,509	1,584	1,658	1,836	1,939	2,027
U.S.S.R.	25,400 ²	29,800 ²	34,700 ²	38,600 ²	42,400 ²	45,000 ²
United States	77,978	96,836	105,200	93,168	111,610	88,312
Total	175,300	208,500	232,500	233,700	259,500	246,200



LAST FURNACE, first to be constructed with a hearth 30 ft. in diameter, operating near Detroit, Mich., in 1955. Built for the Great Lakes Steel Corp., the furnace required a crew of 90 men and had a rated capacity of 50,000 tons of pig iron per month

1953. Table V gives the data by countries. Output of steel in the United States declined 21% in 1954. Capacity for steel-making in the U.S. increased from 124,800,000 tons in 1953 to 125,800,000 tons in 1954, but the operating rate was 71% of capacity in 1954 against 94% of capacity in 1953. The first installation in the U.S. to employ the Linz-Donawitz steel-making process (an oxygen process) went into operation at Trenton, Mich., in 1954. The same company had two of the world's largest electric furnaces (200-ton capacity) in operation

Table VI.—Steel Industry in the U.S.

	(In thousands of short tons)					
	1949	1950	1951	1952	1953	1954
Capacity, Dec. 31	96,121	99,393	104,230	108,588	117,547	124,330
Production	77,978	96,836	105,200	93,168	111,610	88,311
Basic open-hearth	69,742	85,662	92,387	82,143	99,828	80,019
Acid open-hearth	507	601	779	703	646	308
Bessemer	3,947	4,535	4,891	3,524	3,856	2,548
Electric	3,783	6,039	7,142	6,798	7,280	5,436
Shipments	58,104	72,232	78,929	68,004	80,152	63,153
Domestic	54,586	69,660	76,165	64,733	77,472	60,619
Exports	3,518	2,566	2,764	3,271	2,680	2,534

in the same locality. The world's largest blast furnace was under construction at Ecorse, Mich.

Table VI, which was compiled from data of the Iron and Steel institute, includes only those castings made by steel ingot producers. (See also FOREIGN INVESTMENTS.)

(F. E. H.; B. B. M.)

Iron and Steel Institute, American: see SOCIETIES AND ASSOCIATIONS, U.S.

Irrigation. United States.—Irrigation water supplies in the western states were much like those of 1954 except in the northwestern areas, where, although smaller, they were generally adequate. The decline in sufficiency was gradual from north to south. In Arizona, New Mexico, southern Utah, much of Nevada and localized spots in California the gravity supplies were extremely low and consequent pumping of ground water, especially in Arizona and California, was heavy. Studies by the U.S. geological survey in the San Joaquin valley disclosed an extensive valley floor subsidence attributed largely to long-continued overdraft. A utility company considered that a better distribution of the pumping draft could lessen the danger of depletion in various sections, as the normal sources of replenishment appeared sufficient to meet the current demands; however, if the near-drought conditions should continue through another season, the water shortages of many San Joaquin valley areas would become acute.

Again reservoir storage was depended upon to support many western valleys through the irrigation season, but in almost all such cases the carry-over supplies were smaller than at the opening of the 1954 season. The total March 31 storage of 114 reservoirs built or operated by the bureau of reclamation was about 9,400,000 ac.-ft., or 20%, less than on the same 1954 date. The Hoover dam storage on the Colorado river held less water than at any time since its first filling, while the Salt river (Arizona) reservoir system held barely two-thirds the 1954 amount. Later, localized benefits were received, notably in the Columbia and Colorado river basins, also in eastern New Mexico, southeastern Colorado and western Oklahoma, through above-normal precipitation, while in California cool spring temperatures in the mountains deferred snow melting and consequent runoff into the growing season of crops. On June 1, although storage in the bureau of reclamation reservoirs had been increased by more than 7,000,000 ac.-ft. and with flow into the northern units continuing, the total was still less than a year before. In mid-August the storages averaged 86% of the 1954 figures, which had likewise been less than in previous years. The bureau considered the available amounts enough to mature 1955 crops on most of its projects, but feared that holdover



CONTROL OF CATTAILS in drainage and irrigation ditches demonstrated by photographs taken in 1954 and 1955. Elimination of the plant was caused by application of Dalapon, a product of the Dow Chemical Co. especially designed for use on narrow-leaved plants



storage would be nearly exhausted before the 1956 season unless above-normal rainfall should occur meanwhile.

The geological survey announced the most extensive program in its history to investigate ground and surface water supplies throughout the nation. A congressional appropriation of \$4,350,000 to support the work was to be matched by state contributions. Drought conditions in the west and need for larger water supplies to meet irrigation and other increasing demands were cited as reasons for the program, irrigation use having increased from 65,000,000 ac.-ft. in 1920 to 72,000,000 ac.-ft. in 1940, 88,000,000 ac.-ft. in 1950 and 92,000,000 ac.-ft. in 1953.

Despite the threatening conditions of recent years, the irrigated acreage continued to grow, although largely at the expense of the ground water. A utility company estimated that the irrigated acreage in California, which had been getting about half its irrigation supply by pumping, was increasing at the rate of 500,000 ac. a year, while in the high plains of Texas, where ground water was almost the only irrigation source, the acreage was reported to have increased from about 1,900,000 ac. in 1950 to 2,500,000 ac. in 1952 and 3,000,000 ac. in 1953. The University of Nebraska announced that in 1954 alone more than 1,700 irrigation wells were installed in Nebraska, most of them east of the 100th meridian, this number being almost one-fourth the previous number in the state.

At the end of the 1954 season the bureau of reclamation had calculated that federally constructed works could supply either complete or supplemental water to 7,147,528 ac. in the 17 western states (about one-fourth their irrigated total). Congressional appropriations in 1955 supported a program expected to extend full service to 65,000 ac. of new lands and supplemental supplies to other areas. Ten new projects were to be started, with construction continuing on 34 others and operation and maintenance on 49. Prominent among the new undertakings were the Trinity unit of the Central valley project, California, and the Yellow Tail dam project, Montana. The Trinity project at a possible cost of \$220,000,000 was expected to provide 704,000 ac.-ft. of water for Central valley lands and 233,000 kw. of installed hydroelectric generating capacity. The system would include a 450-ft. earth- and rock-fill dam on upper Trinity river

and several tunnels and power plants. By these and other works surplus water would be diverted annually into the Sacramento river for the Sacramento canals unit as well as other lands farther south. The Yellow Tail development, part of the over-Missouri basin project, would have as its key structure a multipurpose dam on Big Horn river, creating storage capacity 1,375,000 ac.-ft. and generating capacity of 200,000 kw. The total estimated cost would be \$89,583,000.

Legislatures of North Dakota, South Dakota and Oregon enacted laws affecting withdrawal and use of ground water, thus bringing to 12 the number of western states having such controls. Still without statutory restrictions on diversion and use of percolating water were California, Nebraska and Montana; but the acreage irrigated with ground water in 1949 (last federal census) was 3,700,000, while in Texas, Arizona and Colorado, which had statutes authorizing the imposing of restrictions in limited areas, 2,600,000 ac. were reported. The effective regulation of ground water diversions was still absent in the areas that appeared to need it most.

Greece.—Contracts were let to start the long-studied Moudova project. While the primary purpose was production of electric power at the 150-ft.-high Nevropolis dam, irrigation 28,500 ac. (of 31,000 irrigable) in the Karditsa plain was to be effected with part of the water released at the dam. The irrigation obligation of \$2,300,000, to be assumed by a public irrigation district, was to be repaid from assessments on the benefited lands and the sale of water. Crops to be irrigated included cotton, wheat and other small grains, corn, sesame, beans, citrus fruits, vegetables, alfalfa and pasture. The total estimated cost was \$12,000,000 to \$13,000,000; the dependence on power capacity 84,000 kw.; date of functioning, 1959.

Israel.—Diversion of water from the Yarkon river was made via a 66-in. pipeline begun in 1953, which was expected, when in full operation, to supply water to 50,000 ac. in the Negev desert about 70 mi. southward. Completion was planned for 1956. The final cost of the initial project, including seven pumping stations and three reservoirs, was estimated at \$22,000,000. Beginning a twin line to the eastern Negev was planned for 1958. Service by both conduits was to increase the irrigable area of Israel 100,000 ac., or 50%.

Italy.—Progress in the government plan to improve living standards south of Rome included initial financing of the Cat

project, Sicily. The plan, based principally on a storage dam at Pozzillo, on the Salso river northwest of the Catania plain, proposed the irrigation of 75,000 ac. in 1,500 farms. Higher production of citrus fruits was expected, with a shift from beans and coarse grains to cotton, sugar beets, tomatoes and other vegetables and livestock forage. Project completion was scheduled for 1961 but with the major works in operation and water flowing by 1958. With full citrus production in about 1967 the value of annual farm production was expected to reach \$22,400,000, three times the 1955 value, with a quadrupling of net income to farmers and farm labourers. The final estimated cost was \$48,700,000.

Lebanon.—Partial financing of a government-sponsored project on the Litani river was announced by the International Bank for Reconstruction and Development, following feasibility studies by the U.S. bureau of reclamation. While the main purpose was to develop electric power, irrigation of 8,500 ac. in a narrow coastal strip between Beirut and Saida was also planned. The scheduled date of completion was 1961; total estimated cost (all phases), \$40,000,000. Principal crops would be citrus fruits, bananas and vegetables.

Venezuela.—Contracts were let for construction of the Guárico river dam, key structure of a project planned to irrigate 72,000 ac. To cost \$13,200,000, the dam would be 9½ mi. long, with a maximum height of 100 ft., creating a storage capacity of nearly 6,000,000 ac.-ft. Most of the land would be developed for beef and dairy production, but on the remainder corn, sesame, rice and black beans would be grown. Estimated cost of the project, to be completed in 1956, was \$30,000,000. (See also DAMS; FLOODS AND FLOOD CONTROL; SOIL CONSERVATION.) (P. A. E.)

Islam. On the whole 1955 was marked by a steady progress in cultural matters throughout Islam. There were also visible signs that Moslem countries were cementing their cultural ties with one another. The pace of the progress was accelerated by the exchange visits of heads of various Moslem states, such as the visits to Pakistan, Jordan, Iran and Egypt by King Ibn Saud of Saudi Arabia, those to Pakistan and Egypt by King Hussein I of Jordan, the visits to Pakistan and Iraq by Pres. Celal Bayar of Turkey, to Pakistan, Saudi Arabia and Egypt by Pres. Achmed Sukarno of Indonesia and the visits of the prime minister of Egypt, Gamal Abd el-Nasser, to Pakistan and Saudi Arabia. In Karachi a Pakistan Middle East society was formed to promote social, economic and cultural relations between Pakistan and the countries of the middle east.

The year saw the emergence of three great new Moslem states—the Sudan, Tunisia (which had achieved a limited form of home rule) and Nigeria, the state with the most Moslems in West Africa. Morocco and Malaya were also well on the way to independence and Algeria fought to achieve at least its cultural independence. In a homogeneous government, education in Tunisia began to be directed by a Tunisian minister of education for the first time since the French occupation in 1881, although the French language continued to be compulsory along with Arabic. In the Sudan the Sudanese officials who had replaced two-thirds of the expatriate officials did all in their power to wipe out adult illiteracy by providing adequate schools for the juvenile population. A good-will mission to Indonesia from Malaya resulted in arrangements for the interchange of experts to discuss the standardization of the Indonesian and Malay languages and to consult with one another on education and educational equipment.

The independent countries of Pakistan, Egypt, Saudi Arabia, Turkey, Indonesia and Iraq steadily progressed in their educational plans. In Pakistan the University of the Panjab, Solan, was actively engaged in preparing an encyclopaedia of Islam in

Urdu. The universities of West Pakistan devised ways and means of promoting Islamic studies, emphasizing the teaching of Islamic history, Arabic language and the contribution of Moslems to the advancement of culture. The government of Pakistan decided to construct a new university town near Karachi at a cost of £3,000,000. The government also announced a new £3,000,000 development plan for economic, social and educational advancement in the North-West Frontier province. In East Pakistan the government decided to open 6,000 primary schools. In Pakistan more than 1,300 village-aid workers were trained during the year to educate villagers in modern methods of agriculture. In Turkey work was started on the new Atatürk university in eastern Turkey and three new broadcasting stations were inaugurated. In Saudi Arabia the government decided to establish a university either at Jidda or Riyadh. The rector of the two-year-old National University of the Lebanon announced that a committee had been formed to compile an Arabic encyclopaedia. In Egypt 300 schools were built in accordance with the plan to wipe out illiteracy within ten years.

An Iranian good-will mission headed by the Iranian minister of education, Raza Jafri, visited Pakistan. Jafri stressed in his speeches the cultural and religious affinities of his country with Pakistan and voiced the desire for an interchange of teachers between Iran and Pakistan. Pakistan also received a cultural good-will delegation from Nigeria.

The second congress of the Arab Association for the Advancement of Science, held at Cairo, Egy., decided that an Arab dictionary of technical terms should be prepared to which the Arab league should be asked to contribute £50,000 toward the cost of production. The fourth annual convention of Arab students in the United States, held at the University of Wisconsin, Madison, adopted a resolution that the Arab league be asked to sponsor the immediate establishment of a national Arab university, equipped to train Arab men and women from all Arab countries. For the first time in Moslem history an international assembly of Moslem youth was held, at Karachi, Pakistan, in Jan. 1955. (A. Md.)

Isle of Man: see GREAT BRITAIN & NORTHERN IRELAND, UNITED KINGDOM OF.

Israel. A republic, proclaimed on May 14, 1948, Israel is bounded north by Lebanon, east by Syria and Jordan, south by Egypt and west by the Mediterranean. Area: 7,984 sq.mi. Pop.: (Nov. 1948 census) 782,000, including 713,000 Jews; (1955 est.) 1,748,000. Religion: mainly Jewish, but by 1952 there were 120,000 Moslems, 16,000 Druses and 40,000 Christians. Chief towns (pop., 1953 est.): Jerusalem (cap., Israeli part only) 143,500; Jaffa-Tel Aviv 354,500; Haifa 153,500. President of the republic in 1955, Isaac Ben-Zvi; prime minister, Moshe Sharett and (from Nov. 3) David Ben-Gurion.

History.—Relations with the United States became somewhat cooler in 1955 following greater U.S. interest in the Arab states. Little progress was made with the Eric Johnston plan for joint use of the Jordan valley waters by the adjacent countries. The shooting down of an Israeli commercial plane over Bulgaria in July impaired relations with that country. The visit of U Nu, prime minister of Burma, to Israel in May was followed by a 16-man purchasing commission from Burma. Trade and relations with Turkey improved in spite of the Turkish-Iraqi defense treaty in February.

Relations with Egypt seriously deteriorated, starting with the detention of the Israeli ship "Bat Galim" in Sept. 1954 and the Israeli "spy" trial in Cairo in December (leading to two hangings, one suicide and seven imprisonments) and culminating in heavy fighting in and around the Gaza strip in Sept. 1955.

Home Politics.—Elections to the *Histadrut* (General Federa-

tion of Jewish Labour) in May 1955 showed little change in the relative strength of the several labour parties. The municipal elections were followed by the usual interparty bargaining. The Religious parties refused to endorse a Labour mayor of Jaffa-Tel Aviv (Mrs. Golda Myerson, minister for labour), and the former right-wing mayor (Haim Levanon) retained office. As a result, the Religious parties mayor of Jerusalem was replaced by Gershon Agron, a Labour candidate and editor of the *Jerusalem Post*. The Labour mayor of Haifa, Aba Khushi, retained office.

In July, in the third Israeli general election, more than 1,000,000 electors had the vote, as compared with 500,000 in the first election in 1949. About 83% went to the polls and reversed to some degree the strengthening of the centre parties in the second election in 1951 in favour of the nationalists and the extreme left. The 14 parties represented in 1949, which were reduced to 13 in 1951, were further reduced to 10, none having fewer than five seats in a house of 120 members.

The libel charges brought by Israel Kastner, a former Jewish communal leader in Hungary and now an Israeli civil servant and a member of the Mapai (Labour) party, against an obscure Israeli periodical which accused him of sacrificing the bulk of the Jewish community to the nazis, resulted in July in acquittal on two charges and trifling damages on the third. This decision accentuated the attacks on the Mapai party and might have influenced the election results.

Economic Situation.—The nationalist disturbances in North Africa led to a strong movement of Jews toward Israel, in spite of French opposition. The quota of 30,000 new immigrants for the whole year from all countries had to be raised to 45,000 from North Africa alone. On arrival, the new immigrants were taken from ship to village instead of, as formerly, to temporary reception camps.

The first stage of the Huleh drainage scheme was completed. The 66-in. pipeline from the Yarkon river to the northern Negev, a distance of about 70 mi., was also completed. Oil was discovered in the northern Negev in September.

Agricultural production in 1955 rose by 22% over that in 1954; industrial output rose by 19% in the same period. The drive for greater efficiency in production and the cheapening of costs, coupled with the vigorous search for new markets, increased exports. Exports in 1955 covered 30% of imports as compared with 20% in 1951.

Creeping inflation continued. The cost of living index (1948=100) stood in June 1955 at 246. The rising cost of living led to a series of strikes by senior civil servants to secure higher salaries.

The budget for the year ending March 31, 1955, was balanced at IL.572,525,000. Increased taxation was imposed later in the year to cover the additional cost of settling more immigrants than had been originally anticipated. Collections from Jews abroad were also stepped up. The sale of Israel bonds in the United States, the Netherlands, Switzerland and Ireland, which provide much additional revenue for state investment in Israel, was also stepped up.

Miscellaneous.—The elections for the chief rabbinate resulted in the re-election of Israel Herzog as chief Ashkenazic rabbi and the election of Yitzhak Nissim as chief Sephardi rabbi. The latter election was invalidated by a supreme court decision and had to be revalidated by legislation. For the first time in 20 years, the Purim carnival was held in Tel Aviv in March. (See also RELIGIOUS EDUCATION.) (E. H. SL.)

Education.—(1953-54) Official schools: Hebrew primary 906, pupils 219,129, teachers 9,077; Arab primary 110, pupils 23,723, teachers 696; Hebrew secondary 75, pupils 14,640, teachers 1,308; Arab secondary 5, pupils 687, teachers 41; vocational and agricultural 69, pupils 8,229, teachers 1,028; Teacher training colleges 21, students 3,312.

Finance and Banking.—Monetary unit: Israeli pound, divided into 1,000



TROOP STRENGTH OF ISRAEL AND NEIGHBOURING ARAB STATES, 1955. Figures for Israel include a ready-reserve of 200,000 men

prutoth, with a principal exchange rate of IL.1.80 to the U.S. dollar (other rate, IL.1.30=U.S. \$1). Budget (1955-56): balanced at IL.63,000,000. Currency circulation: (Sept. 1954) IL.151,100,000; (Jan. 1955) IL.150,500,000. Bank deposits: (June 1954) IL.217,500,000; (Sept. 1954) IL.242,800,000. Gold and foreign exchange: (central bank, Jan. 1955) U.S. \$34,300,000; (other banks) U.S. \$34,700,000.

Foreign Trade.—(1954) Imports IL.438,400,000; exports IL.132,500,000. Main sources of imports: U.S. and Canada 31%; U.K. 10%; other continental European countries 36% (mainly Turkey and Finland). Main destinations of exports: U.K. 23%; U.S. and Canada 18%; Turkey 15%. Main exports: citrus fruits 36%; industrial products 19%.

Transport and Communications.—Roads (1953): 3,100 km. Motor vehicles in use (1953): cars 15,000, commercial vehicles 19,000. Railways (May 1954): 451 km.; passenger-km. (1953) 169,214,000; freight, ton-km. (1954) 124,200,000. Shipping: merchant vessels of 100 gross tons and over (July 1954) 32; total tonnage 119,162. Air transport (1955) passenger-km. 130,663,000; goods, ton-km. 4,153,000. Telephones (1954): 47,430. Radio receiving sets (1953): 211,117.

Agriculture.—Main crops (metric tons, 1954): wheat 31,400; barley 89,700; olives 21,000; olive oil 4,000; peanuts 16,700; bananas 11,000; oranges and tangerines 395,000; grapefruit 62,000; lemons, limes, etc., 13,000; figs (1952) 5,000. Wine production (1953): 6,000 metric tons. Livestock (1954): cattle 80,600; sheep 78,000; goats 100; chickens 3,659,000. Milk production (1954): 151,300 metric tons. Fisheries (total catch, metric tons, 1954): sea 2,300; inland 6,600.

Industry.—Electricity (1954): 896,400,000 kw.hr. Salt (1953): 21 metric tons. Manufactured goods (metric tons, 1954): superphosphate 74,500; cement 563,000; industrial diamonds (exports, value) IL.5,600. New dwellings completed (1954): 595,970.

Italian Literature.

The tenth anniversary of the Italian liberation was commemorated during 1955 through all mediums of expression by statesmen, historians and writers.

The history of the resistance was presented by M. Salvemini in *Storia della Resistenza Italiana* (Neri Pozza), C. L. Ragazzini in *Disegno della Liberazione Italiana* (Lischi-Nistri), and by R. Battaglia with G. Garritano with their *Breve Storia della Resistenza Italiana* (Einaudi). The background of the resistance

d the achievements of democracy were investigated by various experts in *Il Secondo Risorgimento* (Ist. Poligr. della Stato) and *Dieci anni dopo* (Laterza), the latter representing the opposition's point of view. The most noteworthy monographic and documentary works included *Un anno di lotta a Firenze* (Pontedera) by C. Francovich, *Uomini e città della Resistenza* (Laterza) by P. Calamandrei and *Non Mollare* (Nuova Italia), a phototypic edition of the first clandestine antifascist paper published in Florence in 1925.

The inventory revealed that, notwithstanding what had so far been achieved, the spirit of brotherhood and self-sacrifice, which united classes and parties for the common good during the Resistance, had cooled off with the end of hostilities. The spiritual and social regeneration for which many had fought against fascism and nazism had not taken place. If one compared concrete achievements with the magnitude of pressing social problems, little had been done and innumerable obstacles had been raised to prevent their solution. From this climate arose that general feeling of disappointment, discouragement, despair, bitterness and even apathy which pervaded the different social strata of the country and generated an involution of democratic life and a resurrection of conflicting political extremisms.

This state of mind was reflected in the bulk of the year's literary production. It was best epitomized in *Un banco di nebbia* (Mondadori) in which G. Soavi laid bare the spiritual plight of his generation which, left at the mercy of the fascist educational system, believed, obeyed and fought until they discovered for themselves that they had been betrayed by the government and particularly by their elders who had done nothing to open their eyes. They therefore emerged from the war with a desire to make over and a "fog bank" as their only base from which to take off toward the future.

That section of the same generation, either living a life of inertia in a spiritual vacuum or abandoned to their own destiny, was portrayed in R. Brignetti's *La deriva* (Einaudi) and P. Pasolini's *Ragazzi di vita* (Garzanti). The struggle and hopelessness of the humble whose attempts to rise are frustrated by a merciless society were delineated by I. Calvino in *Il sentiero dei nidi di ragno* (Einaudi), T. Varni in *L'escluso* (Mondadori), and L. di Falco in his *Paura del giorno* (ibid.). The repercussions caused by nature's violence and man's brutality, by squalor, dejection and selfishness, were graphically described by P. A. Quarantotti Gambini, *Amor militare* (Einaudi), and R. Romano, *Campane a quattro* (Mondadori), G. Testoni, *Il dio di Rosario* (Einaudi), G. Rimanelli, *Peccato originale* (Mondadori), B. Fenoglio, *La malora* (Einaudi), A. de Jaco, *Le domeniche di Napoli* (ibid.), N. Saito, *Gli appassionati siciliani* (Einaudi), and D. Rea, *Quel che vide Cummeo* (Mondadori).

The human, social and economic conditions of the have-nots and backward areas inspired a new unrhettorical documentary literary form and a crop of sensitive new writers coming from various professions. The most significant works included *Diario di un giudice* (Einaudi) by D. Troisi, a judge; *Il sarto della strada lunga* (ibid.) by G. Bonaviri, a physician; *Baroni e contadini* (Viareggio prize, Laterza) by G. Russo, an essayist; *Utopia e realtà* (Einaudi) by G. Guarnieri, an educator; and *Un paese* (Einaudi), the story and life of an Emilian town narrated by its inhabitants and presented by C. Zavattini, the movie writer.

A note of hope was struck by a group of mostly young writers, for whom courage and perseverance, love of life and of one's neighbours, combined with a deep appreciation of the simple and real values of life, can help man shoulder its burdens. This was the import of G. Zangrandi's *I Brusaz* (Deledda prize, Mondadori), G. Dessi's *I passerai* (Nistri-Lischi), G. Mosca's *Gianfrancesco* (Rizzoli), S. M. Bonfanti's *La Speranza* (Noi Donne prize, Einaudi) and G. Bonaluni's *Gli ostaggi* (Veillon prize,

Vallecchi).

This impressive exposé of the present social, moral and spiritual crisis was highlighted by two thought-provoking studies: E. Garin's *Cronache di filosofia italiana* (Viareggio prize, Laterza), a fine synthesis and interpretation of Italian thought during the first half of the present century, and A. Capitini's *Religione aperta* (Guanda), a profound search and plea for an up-to-date all-embracing religion.

The best novels produced outside the neorealistic field, both in critical and popular opinion, were V. Pratolini's *Metello* (Viareggio prize, Vallecchi), the poetic and warmly human story of a mason and of his Florence at the turn of the century; A. Moravia's *Il disprezzo* (Bompiani), the elegy of a conjugal conflict resolved by death and purified by memory; and V. Brancati's *Paolo il caldo* (Bompiani), a posthumous work on the moral and physical dissolution of the Sicilian aristocracy.

The outstanding collections of short stories, also not connected with the neorealistic trend, were *Un gatto attraversa la strada* (Strega prize, Mondadori) by G. Comisso—smooth, delicate, entertaining tales inspired by the realities of daily life, sublimated by time and fantasy; *Invito a pranzo* (Mondadori) by A. de Céspedes, who probes inner experiences with the skill of a surgeon; and *Un filo che si svolge in trenta anni* (Ceschina) by L. Repaci, which contains his best stories, including some on American themes, lost during the war.

C. E. Gadda published *Giornale di guerra e di prigionia* (Sansoni), his World War I diary in first draft, and G. Berto *Guerra in camicia nera* (Garzanti), his diary covering the last phase of the North African campaign. Both documents reveal the striking differences between the spirit of the fighting men and the conduct of the Italian army during the two world wars.

The field of criticism contributed such works of note as G. Ravegnani's *Uomini visti* (Viareggio prize, Mondadori) and E. Cecchi's *Di giorno in giorno* (Garzanti), which survey the contemporary literary scene; and E. De Michelis' fine essay on A. Moravia, *Introduzione a Moravia* (Nuova Italia). C. S. Singleton brought out the long needed new critical edition of Boccaccio's *Decameron* (Laterza), based on all manuscripts known to exist, and V. Pernicone integrated the *Stanze di Messer Angelo Poliziano* (Loescher-Cantore).

Numerous tributes were paid the muse of poetry. Among the most distinguished were C. Betocchi's *Poesie* (Viareggio prize, Vallecchi), S. Quasimodo's *Il falso e vero verde* (Schwarz), and A. Manfredi's *Poesie* (Mondadori).

In conclusion, 1955 proved to be a highly productive year. If it gives an impression of general bewilderment and of an alarming spiritual crisis, it is due neither to indifference nor lethargy. It should be construed rather as a vigorous sign of consciousness and concern, of courage and vitality symptomatic of the determination to find new solutions to old problems. (M. F. C.)

Italy. A republic of southern Europe, Italy is bounded on land northwest by France, north by Switzerland and Austria and northeast by Yugoslavia. The country includes the whole of the Apennine peninsula, the large Mediterranean islands of Sicily and Sardinia and a number of smaller islands. Area: 116,316 sq.mi. Pop.: (1951 census) 47,140,052; (1954 est.) 47,783,000. Language: mainly Italian, but in Venezia Tridentina there were about 210,000 German-speaking Tyrolean and about 10,000 speaking Rhaeto-Romance dialects; in the area east of Udine there were about 11,200 Slovenes, and the population of Val d'Aosta (about 6,600) was French-speaking. Religion: mainly Roman Catholic (99.6%). Chief towns (pop., 1951 census): Rome (cap.) 1,657,588; Milan 1,268,994; Naples 1,011,919; Turin 712,596; Genoa 680,563; Palermo 483,777; Florence 376,383; Bologna 339,195; Venice 316,228; Catania 297,531; Tri-

este 271,899; Bari 267,795; Messina 218,906; 12 towns with a population of from 100,000 to 200,000. Presidents in 1955: Luigi Einaudi and (from April 29) Giovanni Gronchi. Prime ministers in 1955: Mario Scelba and (from July 6) Antonio Segni.

History.—During 1955 the curious seesaw of Italian politics continued between the right and left within the Christian Democratic party and beyond it. Although the Christian Democrats were by far the strongest party, and although some of them were eager that their party should take the sole responsibility for governing the country, they still depended in the chamber upon the support of the small democratic parties, Social Democrats, Liberals and Republicans (of whom the Republicans no longer held office). Since the Liberals were a party of the right they were bound to clash with the Social Democrats over questions such as that of the rights of landlords to evict their tenants, over which legislation was discussed at length but not effected in 1955. Such differences were constantly exploited by the enemies of the Scelba government, the Communists and Nenni Socialists on the left and the Monarchists and neo-Fascists on the right.

The New President.—Since Luigi Einaudi's term of office as president of the republic had come to an end, the national assembly of both chambers met on April 28 to elect his successor. After two inconclusive ballots the choice lay between Cesare Merzagora, an industrialist and right-of-centre Christian Democrat who was president of the senate, and Giovanni Gronchi, another Christian Democrat politician known for his leftist inclinations. Ironically the secretary of the Christian Democratic party, the left-of-centre Amintore Fanfani, supported Merzagora, while a right-wing Christian Democratic group associated with Giuseppe Pella joined with the Communists and Nenni Socialists to vote for Gronchi. These tortuous intrigues, partly resulting from dislike of Fanfani, who was able but high-handed, gave Merzagora 245 and Gronchi 281 votes in the third ballot. The constitution required an absolute majority at this stage, so that this result was still inconclusive. But Merzagora stood down, and on April 29 Gronchi was elected by a huge majority. Since Gronchi had been known to favour the much-discussed "opening to the left" or plan of bringing Pietro Nenni, the pro-Communist Socialist leader, into the government, the new situation was viewed with consternation by many politicians. When, however, on May 12, the prime minister, Mario Scelba, made a formal resignation to the new president, the latter correctly refused to accept it.

On June 5 elections were held in Sicily. Instead of losing votes after their display of factiousness, the Christian Democrats increased their strength in the Sicilian assembly from 30 to 37 out of a total of 90 seats, at the expense of both Communists and neo-Fascists. A coalition government was formed at Palermo to include Christian Democrats, Social Democrats and Liberals as in Rome, and the Scelba government appeared to be rather more secure in consequence. On June 22, nevertheless, Scelba was forced to resign, not because of defeat in parliament, but because the right wing of his own party revolted again.

The Segni Cabinet.—The new crisis was quickly ended. On June 26 Antonio Segni, a former minister of agriculture with views similar to those of Fanfani, agreed to attempt the formation of a government, and on July 6 his cabinet was sworn in. It consisted of 14 Christian Democrats, 4 Social Democrats and 3 Liberals. Although the friends of Fanfani were well represented in the new government, two right-wing Christian Democrats, Guido Gonella and Giulio Andreotti—but not Pella—accepted office. It was noteworthy, too, that the ministry of public instruction, usually controlled by a Christian Democrat, went to a Social Democrat, Paolo Rossi, while Ezio Vanoni re-

mained as minister of the budget. The chamber of deputies the senate voted in favour of the government on July 18 22, respectively.

The formation of the moderate Segni government exasperated the extremists on both right and left. As soon as the summer holiday was over in September a "pact of action" was made between the neo-Fascist M.S.I. and the major group of Monarchists led by Alfredo Covelli; it was directed against the government and against the smaller group of Monarchists led by Achille Lauro, who supported Segni.

As for the hopes of the extremists on the left, although the presidential candidate had been chosen, the new government put an end to the project so warmly sponsored by the Social Democratic leader, Giuseppe Saragat, for an "opening to the left." In the first half of the year there were signs that, although their Socialist allies were thus sought after and had made gains in the Sicilian elections, the Communists themselves were losing ground. In April 1955 in the Fiat factories, where, it was thought, their influence had been on the wane for some time, shop steward elections led to the choice of only 59 members of the Communist-dominated Confederation of Labour by contrast with 100 Catholics and Independents. On Jan. 20 new regulations were issued regard to the recruitment of dockers in the port of Genoa led to a strike of about 1,600 repair workers. This strike, which was called by the Communists and which lasted until May 18 was followed by short sympathetic strikes by other groups of workmen under Communist influence, caused serious loss to the country, and ended in Communist defeat; in future, labour in the port was to be engaged by government officials and not by the old companies, which were dominated by the Communists. In the autumn, however, when shop stewards were elected at the Pirelli rubber works in Milan and the Alfa Romeo and Ilva works in Naples, the Communists were able to hold their position easily.

Economic Policy.—Segni lost no time in making a declaration on Aug. 1 in favour of the ten-year plan. This had been worked out in the first place by Vanoni and had been much discussed since the latter minister had made it public on Jan. 8. It aimed at a tremendous achievement in investment in the national economy, especially in southern Italy, and presumed a continuing annual increase of 5% in the gross national product. This was to lead to the creation of 4,000,000 new jobs in industry in the following ten years and to the reduction of unemployment to only 3½% of the available labour force. If this could be achieved Italy's biggest problem, that of surplus labour, might be solved since the rate of increase of the population was expected to decline after 1964.

The solution of the other great problem of the Italian economy, the supply of basic fuels, was brought substantially nearer during 1955. The production of methane gas continued steadily to increase, and it was used more and more for industrial and domestic purposes; in July a pipeline from the Po valley to Genoa was completed. But interest centred in 1955 upon the production of oil. This had been developed remarkably in Sicily by the "Petrosud" company, a combination of the Montecatini with the American Gulf Oil corporation, which had struck oil near Ragusa early in 1954; by June 1955 it was reported that there were six reservoirs with a total capacity of 8,000 cu.m. of oil at Palermo, so that ships calling there could now refuel on Sicilian oil. But already in February there had been still more sensational news when oil was struck at Alanno near Pescara in the Abruzzi; the Abruzzi oil was reported to be of better quality and dreams of becoming self-sufficient in petroleum, and all this would mean for the Italian economy, seemed no longer to be fantastic.

A political controversy had inevitably arisen over the ex-

ation of Italy's new oil supplies. Communists and Socialists considered that these should be monopolized by the state, and the same view was taken by Mattei and his colleagues of the Ente Nazionale Idrocarburi (E.N.I.), who regarded oil, like gas, as their affair. But the Liberal party and others on the right considered that the monopoly in the Po valley granted to E.N.I. in 1953 had reduced its efficiency and, further, that it was short-sighted to discourage the investment of foreign capital in Italian oil. Clearly, if Americans interested themselves in the matter they would wish to have oil development concessions made to them and not merely the chance to finance Italian state activities. This view was urged by Luigi Sturzo, himself a Sicilian, partly on the ground that the law passed by the Sicilian regional assembly in 1950, by allowing exploration permits to foreigners, had led to such successful development in the Ragusa area. Although Italy's oil potentialities aroused much interest during the rest of 1955, the exploitation of the Abruzzi finds (there was another important oil strike in that region on Sept. 28) was held up pending the necessary legislation. On Oct. 25 the cabinet did in fact approve a bill by which 60% of the value of the oil, after the cost of production had been subtracted, was to go to the Italian government.

Italy continued during 1955 to have an adverse balance with the European Payments union, as efforts to increase Italy's exports were still inadequate.

Foreign Policy.—The Italian parliament voted with substantial majorities for the Paris agreements which established the Western European union, the chamber of deputies by 335 votes to 215 on Dec. 23, 1954, and the senate by 139 to 82 on March 1, 1955. After that Italian representatives played an active part in the Western European union's affairs, for instance in the preparation of the plebiscite in the Saar. Scelba visited London from Feb. 15 to 20 and Canada and the United States from March 24 to April 8; the results were considered satisfactory, the United States offering help in the development of nuclear energy in Italy. On June 1 the first \$70,000,000 loan by the International Bank for Reconstruction and Development to the Massa del Mezzogiorno was announced, actually the result of a visit of Vanoni to the United States in the previous October.

On the whole the year 1955 was an anxious time for the Italian ministers of foreign affairs and of defense (Gaetano Martino and P. E. Taviani in both the Scelba and the Segni cabinets). The treaty of May 15 which neutralized Austria and caused the withdrawal of the troops which had occupied that country encouraged the fellow-travelling neutralists of Italy and left it in a much more exposed position from a military point of view. The government's apprehension on this score was increased by the apparent reconciliation of Yugoslavia with the U.S.S.R. and then by the tension which developed over Cyprus. When late in August the London conference on this matter brought something like a breach between Greece and Turkey, with a consequent threat to the survival of the Balkan alliance, Italian anxieties increased. But the chiefs of the North Atlantic Treaty organization decided that about 5,000 U.S. troops from Austria should be transferred to Italy, and the NATO manoeuvres on Italian soil in September also helped to reassure the rulers of Italy.

The first year after the return of Trieste to Italy (Oct. 1954) had left most of that city's economic problems unsolved. This was one reason for the conference held in Rome in November between Italy, Yugoslavia, Austria, the German Federal Republic and Hungary, the countries considered to be most concerned, to discuss the current aspect of the question of Trieste.

(E. W.L.)

Education.—Schools (1953): primary 40,467, pupils 4,530,659, teachers 173,652; secondary 2,799, pupils 505,851, teachers 52,573; vocational 7,724, pupils 538,558, teachers 50,881. Teachers' training schools 435, students 67,990, teachers 8,849. Institutions of higher education (1954)



INAUGURAL RUN of the first subway train in Rome, It., Feb. 1955

52, of which 28 universities, with 211,128 students. Fine arts and music schools (1954) 100, students (1953) 19,018, teachers 2,219.

Finance and Banking.—Monetary unit: lira (pl. lire), with an official exchange rate of 624.9 lire to the U.S. dollar. Budget: (1954–55 est.) revenue 2,058,000,000,000 lire, expenditure 2,335,000,000,000 lire; (1955–56 est.) revenue 2,446,000,000,000 lire, expenditure 2,726,000,000,000 lire. Public debt (Sept. 1954): 4,036,000,000,000 lire. Currency circulation (Dec. 1954): 1,533,000,000,000 lire. Deposit money (Dec. 1954): 2,237,000,000,000 lire. Gold and foreign exchange (Nov. 1954): U.S. \$1,039,000,000.

Foreign Trade.—(Including Trieste, 1954): imports 1,501,000,000,000 lire; exports 1,022,000,000,000 lire. Main sources of imports: continental European Payments union countries 39%; U.S. and Canada 13%; U.K. 7%; other sterling area 17%; Latin America 6%. Main destinations of exports: continental E.P.U. 44%; Latin America 10%; U.S. and Canada 9%; U.K. 8%; other sterling area 10%.

Transport and Communications.—Roads (1953): 195,000 km. Motor vehicles in use (1954): cars 614,000, commercial vehicles 290,000. State railways (1954) 16,966 km.; passenger-km. (1953) 22,344,000,000; freight, ton-km. (1954) 12,862,000,000. Shipping: merchant vessels, 100 gross tons and over (July 1954), 1,146; total tonnage (Sept. 1954) 4,009,964. Air transport (1953): passenger-km. 229,183,000; freight, ton-km. 5,100,000. Telephones (Jan. 1954): 1,774,462. Licensed radio sets (1953): 4,849,000.

Agriculture.—Main crops (metric tons, 1954): wheat 7,251,000; maize 2,954,000; barley 278,000; oats 546,000; rye 115,000; potatoes 3,183,000; rice 859,000; beet sugar, raw (1953–54) 750,000; broad beans 534,000; dry beans 163,000; tobacco 63,900; olives 1,674,000; olive oil (edible) 240,000; oranges and tangerines 664,000; lemons 314,000; grapes (1953) 7,900; hemp 41,800. Wine production (1954) 45,000,000 hl. Livestock (1954): cattle 9,250,000; sheep 9,500,000; pigs 4,500,000; goats 1,850,000; horses (1953) 705,000; mules 401,000; asses 735,000; buffaloes 12,000. Meat production (metric tons, 1954): beef 367,200; pork 197,900; lamb 45,000. Cheese (1954) 337,000 metric tons.

Industry.—Index of employment in manufacturing, including public utilities and mining (Nov. 1954; 1948=100), 100. Fuel and power (metric tons, 1954): coal 1,073,400; lignite 638,000; gas (c.u.m. 1954) natural 2,982,400,000, manufactured 2,063,000,000; electricity (kw.hr., 1954) 34,649,000,000. Raw materials (metric tons, 1954): crude oil 69,600; iron ore (50% metal content) 1,092,700; pig iron 1,345,800; crude steel 4,208,000; lead, smelter 37,300; zinc, smelter 67,400; aluminum, smelter 57,600. Manufactured goods (metric tons, 1954): cement 8,755,000; cotton yarn 169,700; rayon filament yarn 63,200; rayon staple fibre 61,700; motorcars (units) 180,770; commercial vehicles 36,180. Merchant shipping launched (1953): 262,512 tons. Index numbers of industrial production (Jan. 1955; 1948=100): general 176; mining 185; manufacturing 178.

Ivory Coast: see FRENCH UNION; FRENCH WEST AFRICA.

Jamaica. A British colony in the Caribbean. Dependencies: Cayman Islands (93 sq.mi.; pop., 1953 est., 7,895) and Turks and Caicos Islands (202 sq.mi.; pop., 1953 est., 7,000); also Pedro and Morant Cays (2 sq.mi.). Area (colony): 4,411 sq.mi. Pop.: (1943 census) 1,237,063 (77% Negro, 18% mixed, less than 2% white); (Dec. 1953 est.) 1,503,047. Language: English. Religion: Christian, including (1943) Anglican 350,311; Baptist 318,655; Methodist 109,446; Presbyterian 92,975; Roman Catholic 70,535. Chief towns (pop., 1943 census, 1953 est. in parentheses): Kingston (cap.) 109,056 (142,464);

Spanish Town 12,007 (12,300); Montego Bay 11,547 (12,000). Governor in 1955, Sir Hugh Foot. Chief ministers W. A. Bustamante and (from Jan. 13) Norman Manley. Commissioners: A. M. Gerrard (Caymans), P. Bleackley (Turks).

History.—During 1955 Jamaica celebrated 300 years of association with the English crown. Distinguished visitors during the year included Princess Margaret and Princess Alice, countess of Athlone, Pres. Paul Magloire of Haiti, Luis Muñoz Marín, governor of Puerto Rico, Pres. William V. S. Tubman of Liberia and Adlai Stevenson of the United States.

In the general elections, held on Jan. 12, the People's National party under the leadership of N. W. Manley obtained 18 seats; the Jamaica Labour party, headed by W. A. Bustamante, 14. Jamaica participated in talks on the proposed British Caribbean federation.

Because the production of sugar in the island was in excess of its exportable quota under the international and commonwealth sugar agreements, it was proposed to cut back sugar production substantially as from 1957. The agricultural interests, fearful of a return of unfavourable terms of trade, pressed for guaranteed markets for exportable products.

Important items of policy which received legislative attention were: (1) a system of land bonds to give the government power to acquire land by bonds on a voluntary basis (with compulsory acquisition in special cases); (2) the establishment of a youth corps to take youths off the labour market and use their labour for the creation of capital assets; (3) the establishment of a farm development scheme to increase agricultural production and productivity.

(H. D. Hs.)

See W. A. Roberts, *Jamaica: The Portrait of an Island* (New York, 1955).

Education.—*Colony* (1953): Schools: public primary 691, teachers 4,204, pupils 214,500; secondary 27, teachers 384, pupils 7,800; vocational 10, teachers 64, pupils 2,260; teachers' training colleges 4, teachers 23, pupils 318. University college of the West Indies (1954), students 369, teaching staff 101. *Dependencies* (1952): Schools: primary 25, pupils 1,851; 1 middle, pupils 40; 4 private secondary.

Finance and Trade.—Monetary unit: pound sterling (with local notes). Budgets: *Colony* (1954-55 est.): revenue £15,336,464; expenditure £15,334,486. *Dependencies* (1953-54 est.): Cayman, revenue £60,208, expenditure £60,546; Turks and Caicos, revenue £75,818, expenditure £66,498. Foreign trade (colony, 1954): imports £37,200,000; exports £33,700,000. Principal exports: (colony), sugar, bananas, rum, copra, cocoa, pimento, citrus fruits, ginger, bauxite; (dependencies), turtles,

rope, salt, conches. Production: (metric tons, 1954) sugar 388,000; bananas (export) 190,685; rum (1953) 1,394,000 gal. (1955, ten months) 1,472,637 gal.; bauxite (1953) 1,240,000.

Japan. A constitutional monarchy consisting of four large islands in the northwestern Pacific, Hokkaido, Honshu, Kyushu and Shikoku (total area: 142,801 sq.mi.), and minor adjacent islands. Total population: (1950 census) 109,637; (est. Mar. 1955) 88,800,000. Chief cities (1950 pop.): Tokyo (cap.) 5,385,071; Osaka 1,956,136; Kyoto 1,101,800; Nagoya 1,030,635; Yokohama 951,189; Kobe 765,435. Principal religions: Buddhism, Shintoism. Emperor: Hirohito; prime minister in 1955, Ichiro Hatoyama.

History.—*Foreign Affairs.*—The year 1955 saw a rising demand among Japanese of all parties for a more independent foreign policy. The Hatoyama government, on taking office in Dec. 1954, made clear its desire for greater freedom of action within the framework of Japan's alliance with the U.S. and the free world.

The United States continued to press Japan for more rearmament, but Prime Minister Hatoyama had promised that the budget would not be materially increased. In April an agreement was reached whereby Japan's contribution to the cost of maintaining U.S. troops in Japan (originally set at \$155,000,000 annually) would be reduced by \$50,000,000 in the 1955-56 fiscal year, on condition that Japan increase its own defense outlay to \$30,000,000 and spend \$20,000,000 on enlarging airfields and the use of the U.S. (and eventually the Japanese) air force.

In August Foreign Minister Mamoru Shigemitsu visited Washington, D.C., where he outlined a plan to increase Japan's armed forces to 260,000 by 1960. This, the Japanese felt, would permit the withdrawal of all or most U.S. ground troops by 1958. The presence of U.S. troops was causing dissatisfaction and had given rise to a number of popular demonstrations. Shigemitsu, stating that the alliance with the U.S. was the keynote of Japanese foreign policy, nevertheless called for revision of the terms of the alliance. He also asked for the release of the remaining war criminals and the return to Japanese jurisdiction of Ryukyu and Bonin Islands. A joint communiqué at the close of his visit stated that agreement had been reached in principle on eventual treaty revision, gradual withdrawal of U.S. forces as Japan became strong enough to assume primary responsibility for its own defense, and progressive reduction of Japan's

PRINCESS MARGARET ROSE of Great Britain floating down the Rio Grande river, Jamaica, with Lady Hugh Foot, wife of the governor of Jamaica, during the princess' visit to the island in Feb. 1955



tribution to the cost of U.S. forces in Japan. Simultaneously, the U.S. announced the release of 22 war criminals.

During 1955 the U.S. made various efforts to assist Japan to become economically self-sufficient by expanding its foreign trade. As the result of a series of tripartite negotiations (including the U.S.) belonging to the General Agreement on Tariffs and Trade (G.A.T.T.) concluded agreements with Japan for the reciprocal reduction of tariff barriers. In some cases the countries concerned made tariff concessions to Japan and received equivalent concessions from the U.S., which in turn obtained concessions from Japan. These agreements paved the way for Japan's formal admission in September to membership in G.A.T.T. In Nov. 1954 a preliminary accord was reached with the U.S. on the transfer to Japan of \$100,000,000 worth of surplus agricultural products, chiefly cotton, wheat and rice. Of this, \$15,000,000 would be a gift, \$25,000,000 would be paid for in yen and spent by the U.S. in Japan for various purposes, and \$60,000,000 would be a loan to be used for Japan's economic development. The details of this transaction required extended negotiation because of differences of opinion on the terms of the loan and the uses to which it should be put, but in May 1955, an agreement was finally signed.

Following repeated overtures to Japan, the Soviet Union in 1955 formally offered to begin negotiations to end the anomalous state of war between the two countries. During the January election campaign Prime Minister Hatoyama stressed the need to "normalize" relations with the U.S.S.R. and Communist China. Conversations with Soviet representatives began in London on June 1. The U.S.S.R. demanded immediate withdrawal of U.S. forces from Japan, recognition of Soviet sovereignty over southern Sakhalin and the Kurile Islands (occupied by the Russians after World War II), closure of the straits giving access to the Sea of Japan to all warships except those of Japan, the U.S.S.R. and Communist China, and a clause barring Japan from "alliances or military coalitions directed against any power that fought against Japan in World War II." In return the U.S.S.R. offered to support Japan's admission to the U.N. and to conclude tariff and fisheries agreements. Japan found these conditions unacceptable. It was especially anxious to secure the return of Habomai and Shikotan Islands, north of Hokkaido, which it asserted were part of Japan proper and not the Kuriles. Japan also urgently demanded the return of Japanese prisoners in the U.S.S.R., said to number 13,000. Despite this wide divergence the talks continued during the summer.

Little progress was made toward establishing diplomatic relations between Japan and Communist China, but unofficial contacts increased. A Chinese delegation to Japan concluded in May an agreement with private Japanese organizations for £30,000,000 of trade each way. Agitation among Japanese businessmen for development of trade with mainland China and for further relaxation of the ban on strategic exports was unabated. Japan's relations with Korea continued to be bad in 1955 despite Japanese efforts at amelioration. In April an agreement was concluded with Thailand for settlement of war claims, but a tentative reparations agreement with the Philippines, reached in Manila in June, failed of confirmation in Tokyo.

Domestic Affairs.—After the fall of Shigeru Yoshida's Liberal cabinet in Dec. 1954, Ichiro Hatoyama was chosen by the diet as prime minister. Hatoyama's newly formed Democratic party (consisting of the former Progressive party plus dissident Liberals) did not have a majority, but the Socialists voted for Hatoyama after exacting a promise that he would soon dissolve the diet. In the Feb. 27 election the Democrats secured a majority in the lower house, while the Liberals lost heavily; Left Socialists also made substantial gains. Aside from the



REPATRIATED PRISONER, returned to Japan in 1955 after 10 years in the U.S.S.R., stands among his countrymen as they welcome him, waving flags and shouting "Banzai!"

budget, little important legislation had been passed when the diet adjourned in July. The January session was largely devoted to debate (with an eye on the coming election) on rearmament, constitutional revision, relations with China and the U.S.S.R., and financial policy. In the next session the government introduced a bill to set up a Constitutional Research council to study the question of revising the postwar constitution adopted in 1946 during the Allied occupation. Attention was centred on Art. 9, renouncing war and prohibiting any military establishment. Prime Minister Hatoyama favored amending this clause to remove any doubt of the legality of rearmament. The Liberals were also inclined to support such action, but it was opposed by both Socialist parties, who had enough diet seats to block amendment. Another government bill proposed to establish a National Defense council to formulate plans for rearmament and defense policy. Both bills were passed in the lower house but were killed by a Socialist filibuster in the upper chamber. The government, however, immediately set up the proposed defense council on a temporary basis.

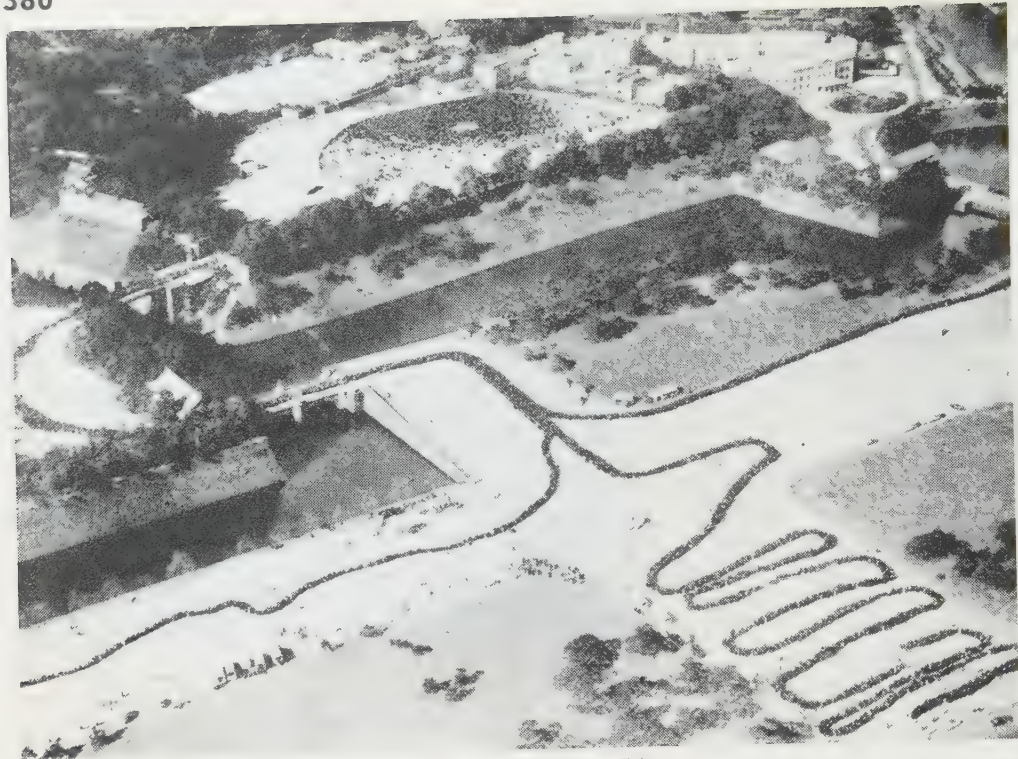
On Oct. 14 the Left and Right Socialist parties reunited in a single Socialist party headed by the Leftist Mosaburo Suzuki. Spurred by this move, the Democrats and Liberals merged on Nov. 15 to form a single conservative (Liberal-Democratic) party under the former Liberal president, Taketora Ogata. Hatoyama was re-elected as prime minister on Nov. 22 with a new cabinet representing former Liberals as well as Democrats, but was expected to yield the office to Ogata in the spring of 1956.

In 1955 the Japanese Communist party, which though not formally outlawed had been operating largely underground and was losing strength, adopted a new policy emphasizing moderate and legal tactics and aimed at creating a popular front with other left-wing groups.

Table I.—Japan: Balance of Payments

(In millions of U.S. dollars)

	Jan.—June 1955	1954	1953
Commodity exports	876	1,532	1,156
U. S. procurement and troop expenditures	328	596	809
Other invisible exports		181	155
Total receipts	1,205	2,309	2,120
Commodity imports	905	1,962	2,101
Invisible imports	159	248	213
Total payments	1,065	2,209	2,314
Net balance	+140	+100	-194



THOUSANDS OF JAPANESE lined up outside the imperial palace, Tokyo, Jan. 1955. They proceeded into the palace grounds to wish the emperor and empress a happy new year

Economic Affairs.—In the last half of 1954 and the first half of 1955 Japan's balance of payments position greatly improved (see Table I), in spite of a decline in U.S. "special procurement" orders. A notable expansion of exports was accompanied by a heavy reduction of imports. In consequence, Japan's holdings of foreign exchange, which had been falling dangerously, rose from \$788,000,000 on June 30, 1954, to approximately \$1,200,000,000 on June 30, 1955. The improvement resulted in part from the deflationary policy adopted by the government, on American advice, in the latter part of 1953, and partly from a combination of favourable external factors, including increased business activity in Europe and a relaxation of restrictions on Japanese exports in the sterling area.

Business conditions in Japan, however, were not particularly good in 1955. Industrial activity was still increasing, but there were some signs of overproduction. There was little new investment, because of the government's policy of restricting credit, and in some business circles it was argued that "austerity" had served its purpose and should now be relaxed in favour of a policy of encouraging economic expansion. Although Hatoyama

Table II.—Japan: Financial Statistics
(In millions of yen)

	1955-56 budget	1954-55 budget
Revenue, general account	991,457	999,588
Revenue, special accounts*	1,797,860	2,313,196
Expenditure, general account	991,457	999,588
Expenditure, special accounts*	1,701,475	2,135,107
*Covering government enterprises.		
Government debt	March 1955 775,931	March 1954 686,038
Bank of Japan note issue	530,703	534,625
Commercial banks (83 in 1955)		
Paid capital reserve and surplus	129,088	105,152
Loans	2,449,338	2,265,433
Deposits	2,896,364	2,480,187
Wholesale price index (1934-36=100)	34,750	36,090
Consumer price index (1951=100)	118.4	119.0

Table III.—Japan: Foreign Trade
(In thousands of U.S. dollars)

	Imports	Exports	Balance
1952	2,028,163	1,272,915	-755,248
1953	2,409,637	1,274,843	-1,134,794
1954	2,399,376	1,629,334	-770,042
1955, Jan.-April	794,064	584,679	-209,385

had been regarded as synthetic to such arguments appointed as his finance minister Hisato Ichimada, a servative financier and a money man.

Education.—In 1954 Japan had 22,036 primary schools with 314 teachers and 11,750,925 pupils; 15,906 secondary schools (lower and upper) with 331,933 teachers and 8,209,320 pupils; and 528 colleges and universities and junior colleges with 60,598 teachers and 560,000 students. Expenditures on education by the national government and local governments in the fiscal year 1953-54 were 414,672,000,000 yen.

Finance.—The monetary unit was the yen, with an official value of 1954-55 of 360 to the U.S. dollar. See Table II for other data.

Trade and Transport.—By value Japan's exports in 1954 were 77% of the 1934-36 average, in 1955 77%. Asia absorbed 49% of the country's exports (by value), followed by America 21%, South America 9%, Europe 9% and Africa 8%. America provided 46% of the country's imports, Asia 31%, Europe 8%, Australia 7%, and Oceania 6%. Manufactured goods formed 80% of total exports, raw materials and fuels 8%. Raw materials and fuels accounted for 58% of total imports, food 27%. Textiles, metal manufactures and machinery were the principal exports; textile fibres, cotton and ores the principal imports. See Tables III and IV for other data.

Agriculture.—After two years of poor rice crops, unusually good weather in the 1955 growing season was expected to produce a bumper crop, some 15% above the previous year. For other data see Table V.

Manufacturing and Mining.—In March 1955 the index of industrial production (1934=100) stood at 185.2, against 179.3 in March 1954. March 1955 indexes, on the same base, were (March 1954 figures in parentheses): utilities 270.1 (252.8), mining 121.6 (128.4), all manufacturing 185.6 (178.5), durable goods 219.7 (232.5), nondurable

Table IV.—Japan: Transport and Communications
(Monthly averages, 1954)

Railway mileage, main track (km.)	2
Passengers carried, government railways (millions)	1
Passengers carried, private railways (millions)	1
Freight carried, government railways (thousand metric tons)	4
Freight carried, private railways (thousand metric tons)	4
Freight carried on highways (thousand metric tons)	4
Freight carried by coastwise shipping (thousand metric tons)	4
Motor vehicles registered (thousands)	4
Merchant ships, number	4
Merchant ships, gross tons (thousands)	4
Telephones, number (thousands)	4

*Nine months. †March 31. ‡Steel ships of 100 gross tons and over, Dec. 31.

Table V.—Japan: Chief Agricultural Products

	Area (In thousand acres)			Production (In thousand bush)	
	1955*	1954	1953	1955*	1954
Rice (rough)	7,500	7,507	7,367	640,000†	555,284
Wheat	1,639	1,660	1,693	53,976	55,700
Barley	1,070	1,105	1,000	52,680	57,920
Naked barley	1,390	1,400	1,275	46,300	48,575
Oats	205†	217	215	10,500†	11,230
Millet	220†	227	245	4,000†	3,650
Sweet potatoes	876	894	894	264,552	213,285

*Preliminary. †Unofficial.

Table VI.—Japan: Industrial Production

	Monthly averages 1955	Jan.-March 1955	1954
Coal (thousand metric tons)	3,503	3,560	
Crude petroleum (kl.)	28,579	28,140	
Gas (million cu.m.)	240	187	
Electricity (million kw. hr.)	4,613*	4,695	
Pig iron (thousand metric tons)	393	384	
Steel ingots and castings (thousand metric tons)	726	646	
Refined copper (metric tons)	9,381	8,874	
Cement (thousand metric tons)	724	890	
Ammonium sulphate (thousand metric tons)	180	182	
Machine tools (units)	1,209	1,510	
Motor vehicles including cycles (units)	25,311	27,755	
Ships (gross tons)	37,218†	36,958	
Cotton yarn (metric tons)	36,256	38,708	
Cotton fabrics (million sq.m.)	210	222	
Synthetic fibres and yarns (metric tons)	27,496	25,243	
Rayon fabrics, woven (million sq.m.)	106	91	
Raw silk (thousand kg.)	943	1,013	
Wheat flour (thousand metric tons)	169	170	

*Jan.-Feb. †Jan.-April.

3.9 (148.3). Nonagricultural employment in Mar. 1955 was 23,740,000, against 23,230,000 a year earlier. From Mar. 1954 to Mar. 1955 number of persons totally unemployed rose from 590,000 to 840,000. Table VI for other data. (M. S. F.)

Java: see INDONESIA.

Javelin Throw: see TRACK AND FIELD SPORTS.

Jehovah's Witnesses. Jehovah's Witnesses are a society of Christian ministers. They are elected through the Watch Tower Bible and Tract society, a nonprofit corporation organized in 1884. Preaching the "good news of the kingdom" by 642,929 ministers in 1955 was conducted in 158 lands through 78 branches.

Outstanding in the organization's activity for 1955 was an international series of 13 "Triumphant Kingdom" assemblies of Jehovah's Witnesses. Beginning in June, they were held on successive weeks in Chicago, Ill., Vancouver, B.C., Los Angeles, Calif., Dallas, Tex., New York, N.Y., London, Eng., Paris, France, Rome, It., Nuremberg and Berlin, Ger., Stockholm, Swed., The Hague, Neth., and Helsinki, Fin. The featured event was a Bible discourse, "World Conquest Soon—by God's Kingdom," heard by a total of 403,682 persons.

Thousands attended from more than 60 nations. A total of 100 U.S. and Canadian delegates travelled to Europe in 42 chartered aeroplanes and two chartered steamships. At the series of conventions 13,016 newly ordained ministers symbolized their dedication to Jehovah God's service by water baptism.

During 1955 the Watch Tower Bible and Tract society continued its building program to meet its expanding needs. New branch offices and printing plants were under construction in Toronto, Ont., and Brooklyn, N.Y. Other offices were being built in El Salvador and Costa Rica. The erection of a 13-floor plant costing approximately \$2,000,000 was expected to double the New York printing facilities. It was to be devoted to the publication of the *Watchtower* and *Awake!* magazines. The *Watchtower* is printed in 40 languages and had in 1955 a circulation of 50,000 copies; *Awake!* in 13 languages, had a circulation of 50,000.

BIBLIOGRAPHY.—Watch Tower Bible and Tract society, *Yearbook of Jehovah's Witnesses* (annual), *Qualified to be Ministers* (1955), *Let Your Word Be True* (rev. 1952), the *Watchtower* and *Awake!* magazines (semi-monthly). (N. H. K.)

Jet Propulsion. **Turbojets.**—For some time several companies had been working on development of the Mach 2 series of engines, superpowered jets designed to propel an aeroplane at more than twice the speed of sound. In 1955, three of these engines passed their type tests and manufacturers prepared to put them into production. Two of the engines were U.S.: Pratt and Whitney Aircraft's J-75 and General Electric company's J-79, slated to be the power plant for the U.S. air force's first supersonic bomber, the Convair F-108 Hustler.

Although internal features of these engines were still highly classified, both shared a common design feature—they were smaller and lighter than engines of lesser thrust, indicating some real internal design progress. Specific fuel consumption ratios were also lower than those of predecessor engines. Both engines were basically rated at 15,000-lb. thrust, with plans for further development up to the 20,000-lb. range.

In Britain, The de Havilland Engine Co. Ltd.'s axial flow turbojet, the Gyron, successfully passed a 150-hr. type test at 15,000-lb. static thrust. The engine was also flight tested in a Port Sperrin SA. 4 flying test bed. A number of engine tests were run at figures well above the 15,000-lb. type test requirement (up to 18,000 lb.) and the company hoped to top the 20,000-lb. mark with this power plant.

The major production engine in the U.S. was Pratt and Whitney's 10,000-lb. J-57, power plant for several military planes and the most likely engine for the commercial jet transports being built in the United States. Later versions of the J-57, in development during 1955, were expected to reach a 13,000-lb. rating. Pratt and Whitney was also turning out in limited quantity its 7,200-lb. thrust centrifugal flow J-48, as replacement engines for planes already in service.

General Electric was still producing various models of its J-47, power plant for the Boeing B-47 jet bomber, with power ratings up to 7,500 lb., and the 9,000-lb. J-73.

Allison division of General Motors corporation was turning out its relatively low-thrust J-33 and J-35 engines, with ratings from 4,600-lb. to 5,600-lb. basic thrust, as replacement power plants for early model aircraft or for subsonic missiles. The company was also producing the 10,000-lb. axial J-71.

Westinghouse (Aviation Gas Turbine division) completed a 50-hr. endurance run of its new PD-33 axial flow turbojet, rated at 6,000 lb. plus. This engine, which featured a low frontal drag area, was a private venture of the company, aimed at the medium-power market, either future business-type aircraft or specialized military planes which would not require high thrust.

Wright Aeronautical division of Curtiss-Wright corporation was working on its J-67, U.S. version of the Bristol Olympus, slated for eventual development to 15,000-lb. thrust, and producing in quantity the J-65 Sapphire, a 7,200-lb.—7,800-lb. axial.

Similarly, in Britain, Bristol Aeroplane Co. Ltd. continued development of the Olympus and reportedly ran a modified version on a test bed at 16,000-lb. thrust. Latest version was the Mark 106, designed for supersonic aircraft. The company was also working on a medium-power (no rating announced) engine, the Orpheus, designed for trainers or lightweight fighters.

Armstrong Siddeley Motors Ltd.'s production consisted of the Sapphire, now up to 10,000-lb. thrust in the latest version, and the 1,600-lb. thrust Viper.

Rolls-Royce Ltd. had in production three versions of the 5,000-lb. thrust Nene and several modifications of the Avon, variously rated at from 7,000 lb. to 10,000 lb. The company was working on a lightweight, 1,800-lb. thrust engine, the Soar, and the Conway, a by-pass engine in which one portion of the air stream by-passes the compressor and rejoins the main flow at a point aft of the turbine, making for lower fuel consumption. The Conway, designed as a power plant for the V. 1000 military transport, was type tested at 13,000-lb. thrust, a considerable increase over its original specifications.

The de Havilland Engine Co. Ltd. continued production of its 5,000-lb. thrust Ghost and started development of a new model, the Mark 104. The company also announced development and successful initial test of the Gyron Junior, based on the design of the powerful Gyron but with power scaled down for smaller aircraft. The Gyron Junior was to be in the 8,000-lb. thrust class.

In Canada, A. V. Roe Canada Ltd. (Avro) formed a new subsidiary company known as Orenda Engines Ltd. to handle its power plant development and production. The company continued production of the Orenda engine, basic thrust of which was about 8,000 lb., and started development of a new, very high-thrust engine known as the PS-13. Thrust specifications were not released, but the engine was slated to power the Avro CF-105, a new supersonic all-weather fighter.

In France, Société Nationale d'Etude et de Construction de Moteurs d'Aviation (SNECMA) was turning out its 6,600-lb. thrust Atar 101D axial and had developed its Vulcain, originally rated at 10,000 lb., to the 13,000-lb. level. Société Rateau had similarly developed its SRA-101 axial up to 8,800 lb., and Hispano-Suiza continued development of the Verdon R450, a 7,700-



"FLYING PLATFORM" in vertical ascent with test pilot at controls, as unique apparatus was put through flight trials in 1955 by the U.S. navy at Palo Alto, Calif.

lb. thrust axial developed from the Rolls-Royce Tay.

The Soviet union disclosed no new information on its engines, but official statements, based on studies of photos of new Russian aircraft, indicated that the U.S.S.R.'s progress in the jet field was at least as far advanced as that of the U.S. and Great Britain.

Turboprops.—New impetus was given development and production of turboprop engines (those in which turbine power is transmitted to a propeller) by several factors: the acceptance by the military of this type of power for use in large transport aircraft, commercial announcements of new turboprop transports, and a trend toward use of turbines in helicopters.

Allison division was in production with its 3,750-h.p. T-56 engine, power plant for the Lockheed C-130 heavy transport. The company was also developing a coupled version of the T-56, the 7,500-h.p. T-54.

Pratt and Whitney was turning out limited quantities of its 5,500-h.p. T-34. In addition, the company was developing a new turboprop known as the PT2G-3, a 6,000-h.p. unit. Of major interest was the new, high-powered T-57, still in early development stage. A 15,000-h.p. engine, it was destined to power a huge, new super-size air force transport, not expected to make its appearance until at least 1957. Curtiss-Wright was also developing a very high-powered turboprop, the T-49, but released no specifications.

In Britain, D. Napier & Son, Ltd. announced development of a new turboprop, the 1,260-h.p. Gazelle. Napier was also work-

ing on the Oryx, a 750-h.p. gas generator for a helicopter two versions of its higher powered Eland, the 3,000-h.p. E.152 and the 4,000-h.p. E.153.

Rolls-Royce continued development of its RB-109, originally rated at 4,400-h.p. but presumably higher in the current modification. Rolls-Royce also continued production of various versions of its Dart, rated at from 1,500 h.p. to 1,800 h.p. while Armstrong-Siddeley continued development and production of its Mamba (1,500 h.p.), Double Mamba (3,000 h.p.), Python Mark 3 (4,100 h.p.). Bristol also continued work on Proteus, in the same power category as the Python.

Miscellaneous.—Intensive development work continued on rocket engines of all types, and a number of such power plants were in production. Information was scanty, however, since practically all such units were involved in the secret guided missile programs.

Britain announced development of the Scarab, a 3,000-lb. thrust solid fuel rocket built by the Royal Aircraft Establishment. In the U.S., Curtiss-Wright's XLR-25, the first rocket engine capable of being throttled like a jet, reached flight status. The 12,000-lb. thrust XLR-25 was installed and flown in the Bell X-2, a supersonic research plane designed for flight at more than 2,000 m.p.h. The X-2 was slated to attempt high performance trials late in 1955.

Development of a nuclear reactor for aircraft propulsion remained hidden by a veil of official secrecy, although the Atomic Energy commission permitted itself a cautious announcement to the effect that encouraging progress was being made. No flight date was predicted, but it was reported that Convair division of General Dynamics corporation had readied a modified B-36 bomber for first altitude trials of a reactor late in 1955. The reactor, however, would not be the B-36 power source on the trials. (See also AIRCRAFT MANUFACTURE; AVIATION, CIVIL; AVIATION, MILITARY; MUNITIONS.) (J. J. HYMAN)

Jewels: see DIAMONDS; GEM STONES.

Jewish Literature. Hebrew Literature.—In spite of the decline in the number of Hebrew books published in Israel during 1955, there appeared a significant array of works of fiction and nonfiction.

S. Kadari's *Etz ha-Ahava* ("Tree of Love") is a novel distinguished by vivid descriptiveness, subtlety and an ingratiating style. It tells of the life of young artists in the new social milieu of Israel. *Rehov ha-Madregot* ("Street of the Stairs") by Yehuda Hendel is a novel which conveys with freshness and interest psychological overtones the effect of the war of liberation on various segments of Israeli youth. The volume *Harpatkaot u-Mitakot* ("Ahitam's Adventures") by a writer of the younger generation, David Shaham, is a caustic, witty story dealing like with the contemporary Israeli scene, as do A. Shaanan's *Hillel Korin* and D. Shahar's collection of tales *Al ha-Halom* ("On Dreams"). In contrast to these, the volume of stories *Me-Emesh* ("Out of Yesterday") by the dean of Hebrew writers, Deborah Baron, represents a lyrical recapturing of the past in a Jewish world that is now but a memory. The past, of Jewish pioneering in Palestine, is also recalled in the poem collection *Im Perida* ("At Parting") by Moshe Smilansky.

Arugot, a collection of impressionistic essays and of poems by the eminent writer Jacob Fichman, must be noted, as well as a book of keenly written essays by D. Shimoni, *ba-Hashai* ("In the Path"). A volume of historical writing, *be-Mifneh ha-Dorot* ("Between the Generation Turns") by Ben Zion Dinur, treats learnedly some social, political and cultural aspects of Jewish life in modern times, while the long, incisive essay, *Israel ba-Amim* ("Israel Among the Nations") by I. Ber, attempts to gauge the role

ry within the general scheme of history, with special refer-
e to the period of the second Temple and of the Mishna.
publication of the first volume of H. Shirman's annotated an-
logy *ha-Shira ha-Ivrit be-Sfarad u-Provence* ("Hebrew Po-
y in Spain and Provence") was an outstanding event. The
or displays wide erudition and literary taste of a high order.
orew creativity during the "golden age" in Spain (950-1150)
thus presented with authority and distinction. Another event
importance was the appearance of *Baalai ha-Tosafot* ("The
aphists") by E. E. Urbach. In this remarkably comprehen-
e work the commentators on the Talmud, their history, writ-
s and methods are closely examined, and their achieve-
nts evaluated, against the background of their place and
e, northern France and Germany between the 10th and 12th
turies.

During the year there appeared the final volume of an ency-
aedia on the historic topography of Israel as well as a
ame of collected political essays by David Ben-Gurion, *Me-
amad la-Am* ("From Class to Nationhood"); a trenchant
k analyzing some problems which nationhood brought about,
Shana Shel Atzmaut ("Test of Independence") by Eliezer
neh; and a volume of memoirs on celebrated personalities,
ong them the ideologists and shapers of Zionism, by Zalman
zar, *Or Ishim* ("Light of Men"), which interprets the spirit
e moves men to deeds. As if to counterbalance this, a modest
k of reminiscences by Hayim Toren, *Bait Abba* ("Father's
se"), offers flavourful vignettes of pre-World War I life in
ewish small-town setting of eastern Europe.

A volume entitled *Barak ba-Boker* ("Lightning in the Morn-
") by Leah Goldberg contains poems marked by lyricism, a
emplative, if somewhat tired, tone and grace of imagery.
Sim al Herev u-Maitar ("Poems on Swords and Strings") by
a Vered bears evidence of a promising, still growing talent.
ender volume of poems, *Moadai Erga* ("Time of Longing"),
David Rokeah should be noted for some subtle and deli-
lines.

Hebrew literary activity in the United States was on the
le rather quiescent, while the trend of American Hebrew
tors to have their works published in Israel continued. Thus
imes of verse by three poets appeared there: *Maalot u-Mora-*
("Uphill and Down") by E. E. Lisitzky, who sings of the
ageless order of things in accord with rather old poetic tradi-
s; *Goral u-Pitom* ("Fate and Suddenly") by Israel Efros,
rein on an occasionally wider scale, somberly and with fre-
ntly arresting imagery, some visions are revealed; and *Aderet*
Shanim ("Mantle of Time") by Hillel Bavli, poems unusual
their clarity of exposition, integrity and nobility of expres-
sion. The autobiography *Pirke Hayim* ("Chapters of a Life") by
noted scholar and essayist, Chaim Tchernowitz (Rav Tzair),
lly and with humour and sagacity recreates the era and
eu of 19th-century Jewish life and its colourful personalities.
book of thought-provoking essays and impressions on Hebrew
ers and the American scene by Menahem Ribalow, *Me-Olam*
Olam ("From World to World"), and S. L. Blank's volume
stories *be-Maarbolet ha-Hayim* complete the report on He-
w literary production for the period under review. (G. P.)

Yiddish Literature.—Yiddish literature of 1955 produced a
t variety of works which reflected the creative resources as
as the spiritual needs of the world-wide Jewish community.
he field of fiction there were new works by two outstanding
esentatives: *Grosman un zun* ("Grossmann and Son"), a
el of contemporary Jewish life in America, by Sholom Asch,
Joseph Opatoshu's last work, *Der letster oyfshtand—Bar*
hba ("The Last Revolt—Bar Kochba"), a historical novel
ing with the time of the Maccabees. An epic of traditional
ish life in a Polish town before World War I was B. Dem-

blin's *Erev Nakht* ("Before Nightfall"), intended as the first
volume of an autobiographical sequel. A specimen of a new genre
introduced by I. I. Trunk was his *Di velt is ful mit nisim* ("The
World is Full of Miracles"), a lengthy humorous tale based on
elements of Jewish folklore.

In the field of poetry there were new works by well-known
figures of the older generation, including *A blat oyf an eplboym*
("A Leaf on an Apple Tree"), by H. Leivick; *Lider fun a mid-
bernik* ("Poems of a Hermit"), by A. Esselin; and *Lider fun*
mayne lider ("The Poems of My Poems"), by Melech Ravitch.
The younger poets were represented by A. Sutskever, who pub-
lished *An ode tsu der toyb* ("An Ode to the Dove"), and A.
Vogler, whose collection *Friling oyfn tract* ("Springtime on the
Highway") was his first since 1939. A posthumous volume of
translations of American English poetry by M. Likht appeared
under the title *Moderne amerikaner poezye* ("Modern American
Poetry"). In connection with the American Jewish tercentenary,
two anthologies were published: M. Bassin's *Yidishe poezye oyf*
amerikaner motivn ("Yiddish Poetry on American Themes"),
and N. Mayzl's *Amerike in yidishn vort* ("America in Yiddish
Literature"). A notable event was the appearance of an exten-
sive autobiographical poem by a former communist, L. Fein-
berg's *Der farmishpeter dor* ("The Doomed Generation"). New
editions included works by M. L. Halpern and the popular "folk"
poet, M. Gebirtig.

Significant contributions were made in the fields of history
and social sciences. The new ten-volume edition of S. Dubnow's
Velt-geshikhte fun yidishn folk ("World History of the Jewish
People") neared completion. Various aspects of Jewish life in
Europe and America were treated in separate monographs; e.g.,
the history of a leading Yiddish New York daily *Der forverts*
("Forward"), written by its editor H. Rogoff. Several volumes
were devoted to the history of modern political ideologies
among the Jews. Noteworthy was P. Mints's *Geshikhte fun a*
falsher ilyzye ("History of a False Illusion"), expressing disillusion-
ment with communism. But by far the largest part of his-
torical literature was concerned with the history of the catas-
trophe which resulted from the German occupation of Europe.
The works in this category included collective monographs com-
memorating destroyed Jewish communities of Europe, biographi-
cal lexicons and personal narratives of surviving eyewitnesses.
The *Lerer-yizker-bukh* ("Teachers' Memorial Book"), edited by
C. S. Kazdan, is a biographical dictionary of several hundred
teachers of the Yiddish schools in Poland who perished during
the German occupation. A number of serious works were added
to the fields of literary criticism, biography and history of the
Jewish stage, including *Fun undzer friling* ("From Our Spring-
time"), a history of the literary group Di Yunge, active in Amer-
ica between 1905 and 1915, by one of its founders, R. Ayzland;
Zeks yidishe kritiker ("Six Yiddish Critics"), by N. B. Minkoff;
Shmuesn mit yidishe shrayber ("Conversations With Yiddish
Writers"), by J. Pat; and *Treyst mayn folk* ("Console My Peo-
ple"), the first exhaustive biography of I. L. Peretz, written by
his disciple, the poet M. Schweid. (D. Az.)

Jewish Religious Life: see JUDAISM; RELIGIOUS EDUCA-
TION.

Jewish Welfare Board, National: see SOCIETIES AND
ASSOCIATIONS, U.S.

John Simon Guggenheim Memorial Foundation: see
SOCIETIES AND ASSOCIATIONS, U.S.

Johnson, Lyndon Baines (1908–), U.S. senator,
was born near Stonewall, Tex.,
on Aug. 27. He took a bachelor's degree from Southwest Texas
State Teachers college at San Marcos in 1930 and later (1935)

studied law at Georgetown university in Washington, D.C. From 1930 to 1932 he taught in public schools of Houston, Tex., and during the next three years was secretary to Texas Congressman R. M. Kleberg in Washington, D.C. He then was Texas state director of the National Youth administration (1935-37). Johnson was elected as a Democrat to fill a vacancy from the 10th Texas district in the 75th U.S. congress (1937-39) and was re-elected for five successive terms (1939-49), broken only by service as a U.S. naval officer during 1941 and 1942 in Australia and New Zealand. Elected senator from Texas on the Democratic ticket in 1948 for the term 1949-55, he was named chairman of the defense "watchdog" subcommittee of the senate armed services committee in 1950 and devoted most of his time during his first term to spurring the U.S. defense program. In Jan. 1951 he was elected majority whip of the senate. Re-elected senator in 1954 for the term 1955-61, Johnson continued as senate Democratic leader in the 84th congress until a heart attack suffered July 2, 1955, prevented him from attending the closing weeks of the session. After his re-election in 1954 Johnson pledged his party's co-operation with the Eisenhower administration's program in congress. On June 29, 1955, however, he declared that the Democrats would not "carry out instructions like a bunch of second lieutenants taking orders."

Joint Chiefs of Staff: see GOVERNMENT DEPARTMENTS AND BUREAUS, U.S.

Jordan. An Arab kingdom, Jordan is bounded west by Israel, north by Syria, east by Iraq and southeast by Saudi Arabia. Area (including Arab Palestine): about 37,264 sq.mi. Pop.: (1952 census) 1,329,174; (1954 est.) 1,500,000, including (1953 est.) 745,786 in west Jordan (Arab Palestine). Capital: Amman, pop. (1953 est.) 170,000. Language: mainly Arabic. Religion: Moslem (chiefly Sunni); Christian about 8% (mainly Arab-speaking Greek Orthodox). King, Hussein I. Prime ministers in 1955: Tewfik Abulhuda and (from May 30) Said el-Mufti.

History.—During King Hussein's visit to Great Britain in Dec. 1954 there had been exploratory talks in London on the revision of the Anglo-Jordan treaty and a British subsidy of £2,500,000 had been agreed on, partly to cover an expected deficit in the Jordan 1954-55 budget and partly to finance certain projects included in the Jordan five-year plan. Arrangements were also made for the release of dollars from sterling areas during 1956 for Jordan national purposes; and early in Feb. 1955 a further annual grant of £350,000 for two years was made available by the British treasury to meet the cost of the Jordan national guard. Frontier tension between Jordan and Israel persisted throughout 1955. However in April, as a result of an agreement between the two countries which was sponsored by the United Nations truce supervision organization, the situation in and around Jerusalem improved notably. By it both parties agreed to appoint special responsible officers to command the respective garrisons. They would be in telephonic communication with each other and no indiscriminate shooting would be permitted across no man's land. In May both countries also agreed to treat any soldiers or police captured by either side as prisoners of war according to the terms of the Geneva convention. But elsewhere along the frontier clashes, mostly insignificant, continued sporadically.

In the Iraqi-Egyptian dispute over the Turkish-Iraqi treaty during the first three months of the year (see IRAQ), Jordan did send a representative to Baghdad with the Arab league delegation to try and dissuade Iraq from its policy; but generally speaking Jordan maintained an aloof position in the matter. However in March King Hussein paid official visits not only to

Baghdad and Pakistan but also to Cairo; and when in June the tension first became acute between Egypt and Israel along the frontier, the Jordan government informed the British, French and U.S. governments that in the event of an outbreak of serious hostilities between Egypt and Israel, Jordan would not stand aside. In August the Egyptian government announced the construction of a new link road with a ferry service from Sinai to Aqaba which would give direct communication between the two countries.

But meanwhile, toward the Egyptian-Syrian military and economic pact to which Saudi-Arabia and the Yemen adhered, Jordan, like Lebanon, refused to be committed.

In September a country-wide strike was declared in sympathy with the Moroccans, and anti-French riots took place in Amman.

Also in September the government decided to nationalize the British Cable and Wireless organization which had been operating in the country under a concession.

During the year discussions continued about the plans for irrigating the Jordan valley which had been proposed by the Johnston (U.S. Pres. Dwight D. Eisenhower's envoy to the Middle East) and counterproposals suggested by Arab engineers. Decisions were reached.

In April King Hussein married his cousin, Princess Dina el-Hamid. In May Tewfik Abulhuda, who had been prime minister since May 1954, resigned. He was succeeded by Said el-Mufti who also became foreign minister. (O. M. T.)

See P. G. Phillips, *Hashemite Kingdom of Jordan: Prolegomena to a Technical Assistance Programme* (Chicago, 1954).

Education.—Schools (1952): primary 445, pupils 95,291, teachers 2,101; secondary 42, pupils 5,673, teachers 260; vocational 4 (including 2 teachers' training colleges), pupils (1950) 201, teachers 17.

Finance and Banking.—Monetary unit: Jordan dinar at par with pound sterling, and with an exchange rate of 0.35 to the U.S. dollar. Budget: (1953-54 est.) revenue 5,345,000,000 dinars, expenditure 7,000,000,000 dinars; (1954-55 est.) revenue 5,926,000,000 dinars, expenditure 7,822,000,000 dinars.

Foreign Trade.—(1954) Imports 19,840,468 dinars, exports 2,840,000 dinars (re-exports, 1953, 200,000 dinars). Main sources of imports: U.S.A. 15.4%; U.S.A. 9.6%; German Federal Republic 5.5%; France 4.2%; Syria 0.23%; Lebanon 0.1%. Main destinations of exports: Lebanon 42.5%; Syria 24%; Iraq 14%; Saudi Arabia 2.6%.

Transport and Communications.—All-weather roads (1952): 1,520 km. Motor vehicles in use (1951): cars 2,900; commercial vehicles 1,000. Railways (1954): 400 km. Air transport: Arab Airways and Air Jordan scheduled routes (1955) 9,222.4 km.

Agriculture.—Main crops (metric tons, 1953): wheat 105,000; sorghum 13,000; oats 2,000; chick-peas 3,000; lentils 1,000; figs (1954) 20,000; maize (1952) 12,000; *kersennah* (1950) 1,000; tobacco (1948) 400; dry beans (1948-50) 1,000. Livestock (1954): cattle 31,467; sheep 222,936; horses 2,576; mules 7,165; asses 5,000; poultry 887,115; goats 347,836; camels 13,805; pigs 37; buffaloes 1.

Judaism. A major problem facing world Jewry during the 1950s was the religious and cultural rehabilitation of European Jewish communities. During and immediately following World War II, the conditions of the smaller European Jewish communities seemed hopeless and the major activity of Jewish organizations were to assist as many as possible to emigrate to Israel. While most Jews coming from concentration camps availed themselves of the open doors to Israel, some emigrants settled in Germany, Austria, the Scandinavian and Balkan countries. These communities were too small to establish their former religious and cultural life. To find means of dealing with these problems, the American Jewish Committee, the Anglo-Jewish Association of Britain and the Alliance Israelite Universelle of France convened in London in 1955 to consider plans for the mobilization of support from established Jewish communities for the reconstruction of the religious and cultural life of the smaller European communities. Another problem that held the attention of Israel and the world Jewry was the plight of the Jews of Morocco following disturbances in North Africa. While the people of Israel were eager to accept Jews who sought asylum, they found themselves



ALLERY VIEW of the exhibition "Art of The Hebrew Tradition," opened at Metropolitan Museum of Art, New York city, Jan. 21, 1955. Ceremonial sets for the synagogue and home were displayed

greatly burdened with the problem of absorbing more than 800,000 Jews who had reached Israel since 1948. To help Moroccan Jews, Israel levied a special tax, and Jews of other countries were also expected to mobilize their resources to enable 45,000 Jews to leave Morocco during 1956.

After years of protracted negotiations by the Committee of Jewish Material Claims on Austria with the Austrian government, an agreement was reached which would benefit about 100,000 former Austrian Jews living abroad. Sums ranging between \$400 and \$2,000 were to be granted to Jews from Austria who were in need and who had been imprisoned by the nazis.

Clashes between Israel and Egypt in the Gaza area continued to command the attention of the political world. To cope with the situation and prevent further deterioration of the existing armistice, the United Nations Security council recommended a number of safeguards. A major step toward the establishment of peace in the middle east was taken by United States Secretary of State John Foster Dulles, who offered on behalf of the United States government to guarantee the safety of Arab-Israeli refugees and to participate in an international loan for compensation to displaced Arabs. However, these proposals were contingent upon the reaching of an understanding between Israel and the Arabs in regard to boundaries and related issues.

On Feb. 13 the Israeli government announced that four of the Dead Sea Scrolls discovered by Bedouin shepherds near the northern end of the Dead Sea in 1947 had been acquired and brought to Jerusalem. The acquired scrolls consisted of: Isaiah; Manuscript A, the earliest known complete manuscript of the book of Isaiah; a commentary on the book of Habakkuk; "The Manual of Discipline" of a Jewish religious sect or community; an Aramaic "Lemech Apocalypse," referred to in several ancient texts, no copy of which was previously known. The other three scrolls were acquired by the Hebrew university in 1947.

Jewish religious circles in America were concerned with issues relating to marital problems and the place of women in Jewish religious leadership. The Rabbinical assembly, representing Conservative Judaism in America, resolved to use a revised formula for the Jewish religious marriage contract known as Ketubah. Among other things the new formula provides that should the husband arise for divorce the parties concerned must undertake to seek the counsel of the Beth Din (rabbinical court) of the Rabbinical assembly and failure to respond to the summons of such Beth Din would entail penalties. The purpose of this new Ketubah was to meet abuses of the Jewish law by those who would use to issue a Get (bill of divorcement) after the civil decree had been granted.

At the annual meeting of the Central Conference of American Rabbis, representing the Reform groups, it was proposed that women become eligible to hold the position of rabbi, but no formal action was taken. However, for the first time, a Reform congregation engaged a woman to serve as cantor for the high holidays.

Among the significant writings in the field of Judaica and Hebraica was the publication of a new edition of the Tosefta, edited by Saul Lieberman of the Jewish Theological seminary, New York city, which was considered one of the outstanding contributions to rabbinic literature. The Tosefta is an ancient code of Talmudic law.

Another significant volume was the *Anthology of Jewish Music*, edited by Chemjo Vinaver, sponsored by the department of education and culture of the Jewish agency. The *Anthology* contains biblical cantillations, prayer chants, psalms, Sabbath hymns and Hassidic songs and recitatives of old cantorial masters.

To meet the needs of adult Jewish education, the B'nai B'rith undertook to publish a series of "Great Jewish Books."

The problem of teaching religion in public schools continued to be a subject of concern to Jewish organizations and institutions. The American Jewish congress was in the forefront opposing any project or activity that would undermine the "high wall of separation" between church and state.

(See also ISRAEL; RELIGIOUS EDUCATION.) (S. M. B.)

Judo: see WRESTLING.

Jugoslavia: see YUGOSLAVIA.

Jumping: see TRACK AND FIELD SPORTS.

Junior Colleges: see UNIVERSITIES AND COLLEGES.

Justice, U.S. Department of: see GOVERNMENT DEPARTMENTS AND BUREAUS, U.S.

Juvenile Delinquency. The United States senate subcommittee on juvenile delinquency, consisting of chairman Robert C. Hendrickson of New Jersey, Sen. William Langer of North Dakota, Sen. Estes Kefauver of Tennessee and Sen. Thomas C. Hennings, Jr. of Missouri, conducted hearings and investigations throughout the nation. Hundreds of witnesses with professional competence in the field of juvenile delinquency were summoned and lay opinion was tapped in a cross section of the public. Many states set up conferences to study the subject.

Typical of the findings of these investigations were the following recommendations of the State Conference on Youth and Delinquency which met in Albany, N.Y., Oct. 3-5, 1955: (1) that a permanent state youth commission should be set up, consisting of lay members as well as state officials, and employing an expert staff to handle the prevention and treatment of delinquency; (2) that jails for juvenile delinquents should be ruled out in favour of special regional detention homes; (3) that probation and parole personnel should receive better training and higher salaries; (4) that the state should finance day-care centres for children of ages three to twelve in communities that need them; (5) that more psychological services should be provided in schools, for the early detection of potential delinquency; (6) that the state labour department should make a study of assisting teen-agers who are subject to the draft but who need jobs; (7) that more housing should be made available for middle-income groups and for large families; (8) that the facilities of public and private welfare agencies should be expanded to help sustain and strengthen the vulnerable family.

The senate committee warned against misdirected publicity and professional isolationism. It charged that by headlining juvenile delinquency, negative and punitive attitudes had been

aroused rather than the stimulus to scientific social action. The cleavage between the professions of law and psychiatry, sociologists and practical workers, had prevented, in part, the harmonious teamwork of all citizens, lay and professional, necessary to effective treatment. It recommended that the services of the U.S. office of education, the National Institute of Mental Health and the department of justice should be made effective parts of a united front.

The interpretation of the Uniform Crime reports of the federal bureau of investigation seemed to indicate a small per capita decrease in delinquency. Reported urban offenses increased 19.4%, but urban population increased 19.5%.

It is worthy of note that in communities with a Youth Board program, such as was operating in Wisconsin and Massachusetts, the rate of juvenile delinquency was decreasing. (See also CHILD LABOUR; CHILD WELFARE; EDUCATION.) (M. V. W.)

BIBLIOGRAPHY.—United States Children's Bureau in Cooperation with the National Probation and Parole Association, "Standards for Specialized Courts Dealing with Children"; Year Book of National Probation and Parole Association, "Reappraising Crime Treatment"; J. Louise Despert, *Children of Divorce* (New York, 1953); Children's Bureau, U.S. Dept. of Health, Education and Welfare, Publication No. 349, "Parents and Delinquency" (Washington, D.C., 1954).

Kansas. Located in the geographical centre of the continental United States. Kansas was admitted to the union as the 34th state on Jan. 29, 1861. It is frequently referred to as the "Sunflower state," but it is known also as the "Jayhawker state," a name of mysterious source. The total area of the state is 82,276 sq.mi., of which 82,113 sq.mi. is land. Kansas is the geodetic centre of the North American continent from which point all geodetic surveys are made. Population of the state: (1950 federal census) 1,905,299; (July 1, 1955, est.) 2,021,000. For the three largest cities (Topeka being the state capital) the 1955 population was: Topeka, 82,921; Wichita, 224,700; Kansas City, 128,666 (1955 state census). According to the 1950 federal census, Kansas population was 50.3% rural and 49.7% urban.

History.—The principal state officials in 1955 were: Fred Hall, governor; John McCuish, lieutenant governor; Paul R. Shanahan, secretary of state; George Robb, auditor; Adel Throckmorton, superintendent of public instruction; Frank Sullivan, commissioner of insurance; Harold R. Fatzner, attorney general; Ferdinand Voiland, state printer; Richard Fadely, treasurer.

Continuing the state's mental health program, the 1955 legislature authorized a 50% increase in the state ad valorem tax levy to be used as a building fund for mental hospitals, such increase being from one-half to three-fourths of a mill.

State aid for Kansas high schools finally won legislative approval in the 1955 session after suffering defeat in each session since 1949.

Following a two-year study of the need for a revised labour-management relations law, the legislature enacted a law which requires election procedures supervised by the state labour commissioner to be held in connection with determining collective bargaining units, calling of strikes and negotiating for union shop agreements. The act further outlaws jurisdictional strikes and secondary boycotts.

As an industrial development incentive, development credit corporations were authorized in 1955, the main purpose of which is to permit banks and insurance companies to provide funds for loan to businesses contemplating locating or expanding in Kansas when such loans are not available through regular banking channels.

The legislature repealed a 20-year-old ton-mile tax on trucks, effective Jan. 1, 1956, and imposed in lieu thereof increased licence and registration fees and other tax adjustments to ensure no loss of revenue to the state. Repeal of the ton-mile law was

expected to greatly facilitate interstate co-operation and reciprocity agreements with other states.

Education.—In Sept. 1955 there were about 410,620 primary and secondary pupils enrolled in Kansas schools. There were 21 four-year colleges and 22 two-year colleges which had a combined enrolment of 10,000 students. The combined enrolment of the four state colleges and university was 20,482. The populations of the other state institutions are as follows: school for the blind, 103; school for the deaf, 240.

Social Insurance and Assistance, Public Welfare and Related Programs.—The populations of the state's institutions in Aug. 1955 were as follows: state training schools, 1,917; hospitals for tuberculars, 320; child homes, 104; industrial school for girls, 82; industrial farm for boys, 65; hospitals for insane, 4,420; state penitentiary, 1,555; reformatory for boys, 417; industrial school for boys, 130.

As of June 1955 there were 63,246 persons receiving public assistance: old-age assistance, 35,722 persons with an average monthly payment of \$56.88; aid to dependent children, 17,009 at an average of \$26.37; general assistance, 5,972, average \$75.99; aid to blind, 724, average \$54.56; aid to disabled, 3,819, average \$54.56.

Communications.—As of June 30, 1955, the total length of primary and secondary roads in the state of Kansas was 137,000 mi., of which 528 mi. were state-maintained. There were 528 mi. of urban state highways. The remainder of the highways were controlled by the respective municipalities. Highway maintenance and construction contracts in 1954 to \$41,082,280. Highway building and maintenance contracts let during first six months of 1955 amounted to \$23,503,518.

Kansas had 8,732 mi. of railroads and there were (according to

Table I.—Principal Crops of Kansas

Crop	Indicated 1955	1954	Average 1944-54
Wheat, bu.	132,864,000	176,208,000	204,000
Corn, bu.	43,464,000	39,558,000	67,200
Sorghum grain, bu.	59,200,000	45,038,000	29,900
Oats, bu.	31,836,000	36,238,000	24,000
Barley, bu.	12,530,000	9,868,000	5,000
Soybeans, bu.	3,600,000	2,448,000	3,900
Hay, tons	3,462,000	3,185,000	2,900
Potatoes, bu.	380,000	259,000	800
Apples, bu.	220,000	206,000	300
Grapes, tons	500	500	500

Source: U.S. Department of Agriculture.

classifications) 70 public airports, 96 limited airports and 7 military bases. Cities owned 94 airports in Kansas.

Banking and Finance.—Total state expenditures authorized for the fiscal year amounted to \$238,800,000, a slight increase over estimated expenditures of \$237,000,000 for fiscal 1955. The amount of sales

Table II.—Principal Manufacturing Industries in Kansas

	All employees June 1955*	All employees 1953	Wages 1953	Value added 1953
Transportation equipment	45,500	54,095	\$247,323,000	\$335,400,000
Food and kindred products	24,100	23,435	84,432,000	172,900,000
Machinery (including electrical)	9,400	7,900	7,900	7,900
Printing and publishing	7,900	10,924	45,311,000	137,100,000
Chemicals and allied products	7,900	6,200	5,618	24,729,000
Fabricated metal products	6,200	5,900	4,486	18,170,000
Stone, clay and glass products	5,900	4,900	5,028	23,776,000
Petroleum and coal products	4,900			

*Employment Security Division, State Labor Department.

Source: U.S. Department of Commerce, *Annual Survey of Manufactures*, 1953.

(2%) and compensating tax collected for the fiscal year 1955 was \$641,014. The total income tax for the fiscal year 1955 was \$16,641,014. There were (1954) 170 national banks, 432 state banks. Total deposits of all Kansas banks reached a total of \$2,054,459,982. Total deposits increased \$88,000,000 or 4%.

Agriculture.—The cumulative 12-month total of cash income from marketings for the period ending in April rose to \$980,927,000, 1% above the 1954 total, because cash farm income in April displayed an increase from the

Table III.—Mineral Production of Kansas

(Short tons, except as noted)				
1953				
Mineral	Quantity	Value	Quantity	Value
Cement (bbl.)	8,346,000	\$ 21,429,000	8,812,000	\$20,900,000
Clays	671,000	750,000	666,000	700,000
Coal	1,715,000	7,101,000	2,029,000	7,900,000
Lead	3,000	877,000	6,000	1,900,000
Natural gas (000 cu.ft.)	420,607,000	36,172,000	412,544,000	34,200,000
Natural gasoline (000 gal.)	?	?	115,206	7,200,000
Petroleum (bbl.)	114,566,000	308,180,000	114,807,000	293,900,000
Petroleum gases (000 gal.)	?	?	77,406	3,100,000
Salt	905,000	7,481,000	912,000	6,800,000
Sand and gravel	8,728,000	5,668,000	8,380,000	5,000,000
Stone	8,769,000	11,304,000	8,831,000	12,000,000
Zinc	16,000	3,568,000	25,000	8,400,000
Other minerals . . . . .	...	10,713,000	...	...
Total		\$413,243,000		\$403,000,000

*Value included with other minerals.

of the preceding year for the ninth consecutive month. The aggregate figure, 4% above the total for the like 12-month period a year ago, was the highest since Oct. 1953.

The number of cattle and calves on Kansas farms increased total 4,341,000 on Jan. 1, 1955. The number of hogs and pigs increased 16% to 898,000 head. All sheep and lambs decreased 7%. The

chickens on farms remained constant. Horses and mules continued to me with an 18% decrease from Jan. 1, 1954.

ash receipts from farm marketings during the first four months of were \$299,575,000, up 10.5% from the corresponding period of

Manufacturing and Industry.—Nonfarm employment in June 1955 stood 49,000 with 125,300 employed directly in manufacturing. There were approximately 3,200 manufacturing and processing plants. The total value d by the manufacturer was approximately \$1,000,724,000.

(F. H.L.)
General Production.—Table III shows the tonnage and value of the ral commodities produced in Kansas in 1952 and 1953 (preliminary) e value exceeded \$100,000. In 1953 Kansas was fifth among the s in petroleum and gas output and was ninth in value of its min- output, with 2.87% of the U.S. total.

hmir: see INDIA; PAKISTAN.

Kefauver, Estes (1903—), U.S. senator, was born on July 26 in Madisonville, Tenn. He stud- at the University of Tennessee, Knoxville (B.A., 1924), and the Yale university law school (LL.B., 1927), was admitted he Tennessee bar and practised at Chattanooga before his ointment in 1939 as Tennessee state commissioner of finance axation. A few months later he was elected to fill an un- red term in the U.S. house of representatives. He was re- ed several times and served until 1949, when he took office .S. senator from Tennessee. In the senate Kefauver gained onal attention during 1951 as chairman of the upper house's e investigation committee, whose televised hearings drew audiences of viewers. The committee's reports provided eiled evidence of political-criminal alliances reaching into icipal, state and even federal offices.

efauver was a prominent candidate for the Democratic e nomination at the 1952 convention at Chicago, Ill., e he led on the first and second ballots before yielding to i E. Stevenson. Re-elected to the senate in Nov. 1954 for econd term, Kefauver again became a potential Democratic eidential nominee for 1956. On both domestic and foreign s he was one of the most vocal Democratic critics of the hower administration.

uring 1955, as chairman of a senate subcommittee on ju- e delinquency, Kefauver conducted hearings around the try on the relationship between juvenile delinquency and e commercial traffic in pornographic materials. In September



HE A LITTLE OLD FOR THAT?" a 1955 cartoon by Fischetti of . Service, Inc.

he spent several weeks in the U.S.S.R. during the course of a world tour.

Kellogg Foundation: see SOCIETIES AND ASSOCIATIONS, U.S.

Kelly, Grace (Patricia) (1929—), U.S. actress, was born at Philadelphia, Pa., Nov. 12, 1929, the daughter of a wealthy builder and the niece of George Kelly, dramatist, and of Walter C. Kelly, vaudeville star. From 1947 to 1949 she studied at the American Academy of Dramatic Arts in New York city, meanwhile acting in television productions. She made her first Broadway appearance in Johan August Strindberg's *The Father* in 1949 and her motion-picture debut two years later, in *Fourteen Hours*. Movie stardom followed the next year when she costarred with Gary Cooper in *High Noon*. Later featured roles of Miss Kelly included those in *Mogambo* (1953), *Dial M for Murder* (1954), *Rear Window* (1954), *The Country Girl* (1954), *Green Fire* (1954) and *The Bridges at Toko-ri* (1955). For her performance in *The Country Girl* she was named winner of the 1954 Academy of Motion Pictures Arts and Sciences award as the best starring actress of that year. The award was announced March 30, 1955.

Kentucky. An east south-central state of the United States, admitted to the union on June 1, 1792, Kentucky is popularly called the "Blue Grass state." Area: 40,395 sq.mi., of which 531 sq.mi. are water. The population by the 1950 official census was 2,944,806. The foreign-born population was 16,068, of whom 11,022 were in the cities. The capital, Frankfort, had a population of 11,916. The three largest cities were Louisville (369,129), Covington (64,452) and Lexington (55,534). The U.S. bureau of the census estimated the population of Kentucky as 2,948,000 on July 1, 1955.

History.—The chief events of the year to Nov. 1955, related to school support, desegregation, the high court's ruling that Bell county was totally dry, A. W. Barkley's defeat of J. S. Cooper for the United States senate, and the success of A. B. Chandler over B. T. Combs in the race for the Democratic gubernatorial nomination, followed by his election to that office.

The state officers in 1955 were: governor, Lawrence W. Wetherby; lieutenant governor, Emerson Beauchamp; secretary of state, Charles K. O'Connell; auditor, T. Herbert Tinsley; attorney general, J. D. Buckman, Jr.; treasurer, Pearl Frances Runyan; superintendent of public instruction, Wendell P. Butler; commissioner of agriculture, Ben S. Adams; and clerk, court of appeals, Acree Austin.

Education.—Public schools in 1954-55 included 3,729 elementary schools, 135 high schools and 277 combined elementary and high schools. Total public-school pupils, grades 1-12, numbered 598,729, and full-time teachers, exclusive of principals, supervisors, helping teachers, etc., numbered 19,368. The state per capita fund was \$26,212,500 and the equalization fund was \$8,573,000. Fifty-eight public Negro high schools, grades 8-12, had 9,394 pupils enrolled. The per capita average daily attendance pupil cost for 1954-55 was \$147.53 for current expenses. In 1954-55 the average annual salary of all 20,799 classroom teachers, principals, supervisors and vocational teachers was \$2,600.33. The state's per capita contribution had declined steadily since 1950. In 1951-52 it was \$54.34; the next year \$52.99; in 1953-54 it was \$51.13; and in 1954-55 it was \$49.06. The equalization fund, because of a decrease of \$6,000,000 in the assessment of real property and the increase of 12,675 children 6 to 18 to a total of 711,434, permitted only 67.3% of the foundation program legalized by the 1954 legislature.

Social Insurance and Assistance, Public Welfare and Related Programs.—During fiscal 1955 the department of economic security paid out \$41,229,796 to an average weekly 36,373 beneficiaries, including 2,850 veterans and 938 federal employees. Old-age assistance to the amount of \$23,533,421 went to a monthly average of 55,757 persons. Aid to dependent children amounted to \$13,940,425 to an average of 18,634 families with 49,153 children. Aid to the needy blind amounted to \$1,274,290 for a monthly average of 2,868. On Aug. 31, 1955, the state's tuberculosis hospitals held 743 patients.

The population of the correctional institutions on June 30, 1955, was: reformatory, 2,472; penitentiary, 962; women's prison, 67; houses of reform, boys 350, girls, 149.

Communication.—As of June 30, 1955, the Kentucky department of highways had under maintenance 18,027 mi. of road. One public toll and

two private toll bridges over the Ohio river then served traffic. Road fund receipts for the fiscal year amounted to \$73,637,396; expenditures amounted to \$68,955,399. On the same date the state had registered 718,574 passenger cars, 107,611 commercial trucks, 76,673 farm trucks and 4,357 motorcycles. Airport facilities in 1955 represented an investment of about \$110,000,000. Nineteen railroad companies on Dec. 31, 1953, owned 3,713.12 mi. of line; six switching companies increased the mileage to 3,824.26.

Banking and Finance.—National banks in Kentucky, on June 30, 1955, numbered 89 and had total assets of \$757,199,000. On the same date state banks and trust companies numbered 282 and had resources amounting to \$1,211,811,536.25. The state's total income set a new high of about \$233,639,566.61 for the fiscal year of 1955, according to preliminary returns. General fund revenue amounted to about \$95,130,187. Switching to pay-as-you-go on July 1, 1954, for personal income taxes explains most of the increase. The record collections left a balance of about \$30,000 after the \$84,600,000 allowed in the budget for recurring expenses, \$7,000,000 for capital outlay at state institutions, \$3,000,000 for the governor's emergency fund and \$500,000 for miscellaneous appro-

Table I.—Principal Crops of Kentucky

	Indicated 1955	1954	Average, 1944-53
Corn, bu.	82,574,000	66,433,000	75,945,000
All wheat, bu.	4,020,000	5,508,000	5,068,000
Oats, bu.	4,900,000	5,688,000	2,365,000
Barley, bu.	2,944,000	3,162,000	1,565,000
Soybeans (for beans), bu.	2,470,000	2,048,000	1,768,000
Alfalfa, tons	2,381,000	1,953,000	2,262,000
Hay, tons	1,732,000	1,445,000	2,496,000
Potatoes, bu.	428,000	353,000	788,000
Potatoes, sweet, bu.	376,547,000	502,972,000	442,376,000
Tobacco, all types, lb.	30,000	381,000	315,000
Apples, commercial crop, bu. . . . .	...	380,000	461,000
Peaches, bu. . . . .	...	101,000	94,000
Pears, bu. . . . .	...	...	...

Source: U.S. Department of Agriculture.

priations. Of all expenditures, roads, welfare and education in that order took about 85 cents in every dollar.

Agriculture.—The number of agricultural placements in the fiscal year 1955 was 69,031 in comparison with 35,057 in the previous year, evidence of better work as well as hard times. Table I gives the preliminary statistics for 1955 production.

Manufactures and Commerce.—Expansion of industry in Kentucky in 1955 ranked second to the banner year of 1951. In the first six months

Table II.—Principal Industries of Kentucky

	All employees 1953	Salaries and wages 1953 (in 000s)	Value added by manu- facture 1953 (in 000s)	Value added by manu- facture 1952 (in 000s)
Food and kindred products	22,543	\$83,981	\$287,552	\$270,006
Tobacco manufactures	9,547	31,192	146,776	119,044
Textile mill products . . . . .	...	...	...	12,876
Apparel and related products	17,255	37,693	56,436	55,101
Lumber and products (except furniture)	10,620	22,627	37,450	42,810
Furniture and fixtures	6,022	19,744	28,304	29,426
Printing and publishing . . . . .	...	...	...	41,185
Chemicals and allied products	9,524	44,442	137,719	127,020
Primary metal industries	7,035	32,521	66,849	49,863
Fabricated metal products	10,577	42,195	73,563	66,972
Machinery (except electrical)	15,645	67,631	127,783	99,820
Electrical machinery	11,145	36,694	55,844	44,831
Administrative and auxiliary	1,342	7,808	...	...

*Withheld because the estimate did not meet publication standards, either on the basis of the associated standard error of estimate or on the basis of a consistency review.

Source: U.S. Department of Commerce, *Annual Survey of Manufactures, 1953*.

of the year new plans and expansions numbered 68, the estimated new jobs 8,915, the estimated new payroll \$33,431,250 and total plant investments \$124,677,000. On the whole, there was a considerable increase in number of workers from the slump of 1954. The most notable increases were 30.3% in primary metals, 18.9% in machinery and metal products and 8.9% in clothing and textiles. Total employees in June 1955 numbered 160,800. Yet, according to the *Blue Book of Southern Progress*,

Table III.—Mineral Production of Kentucky

(Short tons, except as noted)

Mineral	Quantity 1953	Value 1953	Quantity 1952	Value 1952
Clays	711,000	\$ 3,118,000	881,000	\$ 5,101,000
Coal	65,060,000	302,872,000	66,114,000	317,387,000
Fluorspar	47,000	2,100,000	48,000	1,863,000
Iron, pig . . . . .	...	...	...	545,000
Natural gas (000 cu. ft.)	71,405,000	15,638,000	73,427,000	15,934,000
Natural gasoline (000 gal.)	35,000	2,394,000	31,000	2,191,000
Petroleum (bbl.)	11,518,000	33,520,000	11,918,000	32,890,000
Petroleum gases (000 gal.)	176,000	4,993,000	156,000	3,963,000
Sand and gravel	3,052,000	2,900,000	3,334,000	2,656,000
Stone	7,430,000	9,268,000	8,818,000	10,817,000
Zinc	489	112,000	3,000	1,089,000
Other minerals . . . . .	...	4,827,000	...	4,555,000
Total . . . . .	...	\$381,742,000	...	\$398,446,000

*Values for processed materials are not included in the totals.

job placements for fiscal 1955 in nonfarm industry numbered 60,139, an increase of 73.9% over 1954. Placements in manufacturing numbered 18,951: in construction, 5,656; in trade, 9,780; in service, 7,864; in private household, 12,691; and other, 5,197.

In June 1955 about 124,800 people were employed in wholesale and retail trade, a slight decrease from June 1954. In the same period workers in the retail trade declined from 96,800 to 95,400 but they increased in the wholesale trade from 28,300 to 29,400. (W. W. Js.)

Mineral Production.—Table III shows the tonnage and value of mineral commodities produced in Kentucky in 1952 and 1953 (preliminary) whose value exceeded \$100,000. In 1953 Kentucky was among the states in output of coal and fluorspar and ranked tenth in value of mineral output, with 2.66% of the U.S. total.

Khrushchev, Nikita S. (1894—), Soviet politician. He was born at Kalinovka, Kursk province, April 17, the son of a coal miner. He joined the Russian Communist party in 1918 and by 1925 held a party appointment at Yuzovka (Stalino) and later at Kiev. In 1929 he was sent to study for two years at the Industrial academy in Moscow, and in 1932 was a secretary of the Moscow city committee of the party. In 1934 he was elected to the central committee of the All-Union Communist party and the following year succeeded L. M. Kaganovich as first secretary of the Moscow regional and city committee. At the beginning of 1938 he was sent to Kharkov as secretary general of the Ukrainian Communist party, with the task of eradicating all Nationalist Ukrainian tendencies. He was so successful that on March 23, 1939, Stalin promoted him full member of the Politburo. During the German occupation of the Ukraine he co-ordinated, as lieutenant general, the guerrilla movement there. After the return of the Soviet army in 1943 he also became chairman of the Ukrainian committee of people's commissars in Kiev. In 1949 he was made responsible for enlarging the collective farms (*kolkhozy*) by amalgamation. Shortly after Stalin's death (March 5, 1953) Khrushchev succeeded G. M. Malenkov as the party's first secretary and he turned his attention to the declining agricultural production. In Feb. 1954 he proposed an entirely new remedy, namely that the main source of additional supplies of grain should be new state farms to be set up in Kazakhstan and western Siberia. In Sept.-Oct. 1954 Khrushchev began a series of foreign visits when he led a delegation to Peking, with N. A. Bulganin as a member. In May 1955 he visited Belgrade, in July he was present at the meeting of the Big Four heads of state at Geneva. In November-December he visited India, Burma and Afghanistan, always in company with Bulganin.

Kimpton, Lawrence Alpheus (1910—), chemist. He was born in Chicago, was born on Oct. 7 in Kansas City, Mo., where he attended public schools. He graduated from Stanford university, Stanford, Calif., in 1931 and took his Ph.D. degree at Cornell university, Ithaca, N.Y., in 1935. That year he was appointed teacher at Deep Springs school and in 1936 was named assistant and director. In the autumn of 1942 Kimpton became dean of the college of liberal arts and professor of mathematics and philosophy at the University of Kansas City. He joined the metallurgical laboratory, atomic bomb project, at The University of Chicago, as associate chief administrative officer in 1943, shortly thereafter became chief. In 1944 he became dean of professor of philosophy and education at The University of Chicago, and on July 1, 1946, was elected vice-president and dean of faculties. He accepted an appointment as dean of students at Stanford university in 1947, returning to The University of Chicago in 1950 as vice-president in charge of development position he held when elected chancellor on April 12, 1951.

In 1954 Kimpton began the second phase of his administrative program, including a campaign for \$32,700,000 to be used over the next ten years, and a series of important appointments to the faculty. Conservation of the university neighbourhood was pressed with the Chicago Land Clearance commission acquiring property for demolition. Relocation of the bachelor's degree reorganization of the undergraduate curriculum was in its first year of operation, with an increase of 40% in the enrollment of the class. (W. V. Js.)

wanis International: see SOCIETIES AND ASSOCIATIONS, S.

ights of Columbus: see SOCIETIES AND ASSOCIATIONS, U.S.

Knowland, William Fife (1908–), U.S. senator, was born on June 26 at Alameda, Calif. After taking his bachelor's degree at the University of California, Berkeley, in 1929, he entered the newspaper business, becoming assistant publisher of the *Oakland* (Calif.) *Tribune* in 1933. He was a member of the California state assembly from 1933 to 1935 and of the state senate from 1935 to 1939; in 1941–42 he was chairman of the executive committee of the Republican national committee. In 1945 Gov. Earl Warren of California appointed him to the U.S. senate to fill the unexpired term of Hiram W. Johnson. He was elected on the Republican ticket in 1946 for the full term 1947–53 and was re-elected in 1952 for the term 1953–59. He became perhaps the foremost U.S. champion of Chiang Kai-shek and the Chinese Nationalists. On Jan. 2, 1953, Knowland was elected Republican policy committee chairman of the U.S. senate. On Aug. 4, 1953, after the death of Robert A. Taft, he became majority leader of the senate.

Knowland's strong views on foreign policy led him into disagreement with the administration and Secretary of State John Dulles as, for example, on April 14, 1954, when he criticized Dulles' plan for a southeast Asia security alliance as "weak" and "unrealistic" without the participation of both Nationalist China and South Korea. On July 1, 1954, he declared flatly that if Red China were granted admission to the United Nations he would resign his majority leadership and devote full time to bringing about U.S. withdrawal from the UN.

Following the Democratic victory in the congressional elections of Nov. 1954 Knowland became senate minority leader in the 84th congress when it convened Jan. 5, 1955. He continued to criticize the Eisenhower administration's foreign policy on various issues, warning against the potential dangers of U.S. participation in the Geneva conference of the heads of the Big Four Powers and against direct talks with Communist China. On the other hand, he supported the administration's domestic legislative program almost without reservation.

Korea is a peninsula extending southward from Manchuria and the U.S.S.R., 525 mi. long and from 125 to 200 mi. wide. It is bounded north by the Yalu and Tumen rivers, south by the Straits of Korea, west by the Yellow sea and east by the Sea of Japan. Area: 85,266 sq.mi. Total pop.: (1944 census) 25,120,174; (1955 est.) 28,600,000. Religions: Buddhism, Confucianism, shamanism and a unique eclectic religion, Chondokyo. In 1939 there were about 500,000 Korean Christians.

The country is divided into two parts. In the south is the Republic of Korea, area about 36,152 sq.mi. Pop. (1955 est.) 16,000,000. Chief cities (pop., 1955 est.): Seoul (cap.) 1,300,000 (1,640,000 in 1949); Pusan 840,000 (473,600 in 1949); Taegu (1949 est.) 313,700. President of the republic in 1955, Syngman Rhee.

In the north is the Democratic People's Republic of Korea, area about 49,114 sq.mi. Pop. (1955 est.) 8,000,000. Chief city, Pyongyang, pop. (1949 est.) 450,000. Prime minister in 1955, Marshal Kim Il Sung.

History.—It became apparent in 1954 and 1955 that the communist command in North Korea was violating the provisions of the Korean armistice agreement. The UN command repeatedly protested these violations, among which were those relating to the illegal build-up of combat forces, particularly air forces. Meanwhile the Republic of Korea protested the continued

presence of Polish and Czech members on the Neutral Nations' Supervisory commission in its territory on the grounds that the communists had obstructed the commission's activities in the north and thereby had forfeited their right to have inspections in the south. Beginning in Aug. 1955 mass demonstrations and riots protesting the presence and activities of the Poles and Czechs took place in many cities in the Republic of Korea. Following agreement between the communist and UN commands on Aug. 29, the number of members of each of the stationary inspection teams of the supervisory commission was reduced by one-half and the number of ports of entry and the total number of stationary inspection teams for the commission was reduced from ten to six. However, Korean demonstrations against the presence of the Czech and Polish members continued.

The Republic of Korea announced in Aug. 1955 that agreement had been reached with the U.S. government concerning a 1955–56 assistance program. The program totalled \$628,000,000, of which \$280,000,000 would be in economic aid, \$180,000,000 in direct military aid and \$168,000,000 in mutual defense support.

In Sept. 1955 a reorganized opposition party, the Democratic party, was formed. Pyun Yung Tai, who had been minister of foreign affairs since April 1951 and prime minister during part of 1954, resigned in 1955. Cho Chung Hwan was designated acting minister of foreign affairs as of Aug. 1, 1955. (See also UNITED NATIONS.)

Education.—In 1954 there were 3,954 elementary schools in the Republic of Korea with 2,342,065 pupils and 36,353 teachers; 621 middle schools with 324,114 pupils and 6,785 teachers; 398 high schools with 160,266 pupils and 4,401 teachers; 48 colleges with 40,520 pupils and 3,685 teachers; and 18 normal schools with 12,190 pupils and 305 teachers. In 1952, 65% of the population of the Republic of Korea was believed to be literate. The North Korean regime claimed in 1955 to have 4,800 elementary and junior high schools, 72 technical and other vocational schools and 16 colleges and universities.

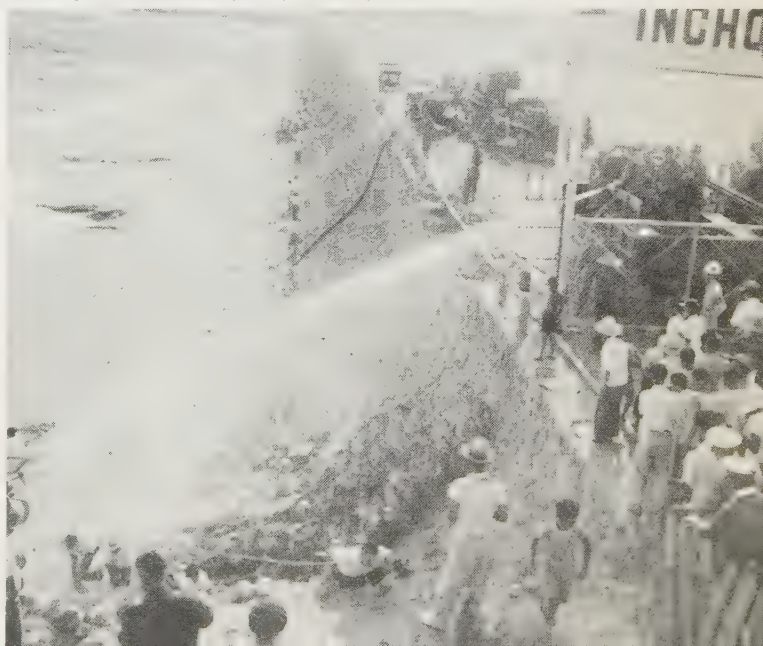
Finance.—The budget of the Republic of Korea for the 15 months ending June 30, 1955, amounted to receipts of 175,355,000,000 hwan and expenditures of 297,717,000,000 hwan. (The 1954–55 budget ran for 15 months because of a changed fiscal year.)

The official exchange rate, which had been 180 hwan to \$1 since Dec. 1953, was changed to 500 hwan to \$1 in Aug. 1955. The free-market rate at the end of June 1955 was 760 hwan to U.S. \$1. By the end of July 1955 the currency in circulation totalled 44,217,000,000 hwan. The retail price index (1947=100) in the Republic of Korea rose to a peak of 16,480 in May 1955.

The balance sheet of the Bank of Korea, the central bank of the Republic of Korea, showed assets and liabilities of 143,438,636,000 hwan at the end of June 1955.

Trade.—The Republic of Korea's imports, excluding U.S.-UN-financed imports, totalled \$93,900,000 in 1954, and exports \$24,300,000. In the first four months of 1955 imports totalled \$22,400,000 and exports \$4,600,000. During the 1954–55 fiscal year U.S.- and UN-sponsored economic

U.S. GUARDS SPRAYING KOREAN DEMONSTRATORS attempting to storm the compound housing members of the neutral nations truce teams on the causeway to Wolmi Island, Kor., Aug. 10, 1955



aid programs amounted to \$280,000,000 and \$27,400,000, respectively. Japan, the U.S. and Hong Kong were the major trading partners.

North Korea's trade continued to be chiefly with communist China and the Soviet Union. Communist China claimed to have undertaken to contribute about 8,000,000,000 Yuan (about \$320,000,000) and the Soviet Union 1,000,000,000 roubles (about \$250,000,000) in economic assistance for four-year and three-year periods, respectively, beginning in 1954.

Transportation and Communications.—As of June 1955 there were 517 locomotives, 11,912 freight cars and 971 passenger cars in the Republic of Korea. The railroads handled 1,896,000,000 ton-kilometres of freight and 3,978,000,000 passenger-kilometres during the year ending June 30, 1955. There were 2,823 km. of railroad track and 39.6 km. of streetcar track in operation in South Korea in Aug. 1954; an estimated 1,000 km. of railroad track were located in North Korea.

There are about 21,000 mi. of roads in Korea. In March 1954 the Republic of Korea had 7,256 trucks, 1,909 buses and 3,964 automobiles. Korean National Airlines, Northwest Airlines and Civil Air Transport, a Nationalist China air line, provided domestic and international air service for the Republic of Korea in 1955. In 1955 Korea had a merchant fleet of 54 vessels with a gross tonnage of 94,434 tons. In the year ending June 30, 1955, these vessels carried 720,000 tons of cargo.

Agriculture, Fishing and Forestry.—Agricultural production in the Republic of Korea in 1954-55 included, in metric tons: rice, 2,143,000 and other grains, 783,000. In 1954 the Republic of Korea had 763,000 cattle; 269 milk cows; 16,000 horses; 600 sheep; 27,000 goats; 168,000 rabbits; 938,000 pigs; 5,500,000 chickens; and 345,000 ducks. Marine landings in the year ending April 30, 1955, totalled 234,400 metric tons. Lumber production in the Republic of Korea in 1953 totalled 301,000 cu.m.; firewood production 148,215 metric tons; and charcoal production 15,337 tons.

Manufacturing.—Industrial production in the Republic of Korea in the year ending April 30, 1955, included: cotton yarn 54,600,000 lb.; cotton cloth 77,200,000 yd.; woollen textiles 780,800 yd.; rubber shoes 19,000,000 pairs; paper 72,216 metric tons; cement 60,250 tons; bicycles 32,720; coke 1,091 tons; salt 174,191 metric tons; cigarettes 11,900 metric tons; and cut tobacco 4,578 metric tons. Electric power production in the year ending June 30, 1955, totalled 941,000,000 kw.hr.

The North Korean regime announced that it had embarked upon a three-year economic plan (Three-Year People's Economic Rehabilitation and Construction plan) in Jan. 1954. The announcement indicated that by the end of 1956 North Korea hoped to be producing 4,000,000 metric tons of coal annually, as compared with 700,000 tons in 1953. Rehabilitation of a 600,000-kw. hydroelectric plant was expected to be completed in 1956. In Aug. 1954 the North Korean regime claimed that since the beginning of the program 290 new factories had been established, electric power production had increased 3.4 times, coal production 6 times, cotton cloth 2 times and silk cloth 4 times. The five-year People's Economic plan was reported to be scheduled to begin in 1957.

Mining.—Most of the major mineral resources of Korea are in the northern area held by the communists, with important iron-ore, copper, lead, zinc, pyrites, coal and magnesite deposits. Mineral production in the Republic of Korea in the year ending April 30, 1955, included (in metric tons): copper ore 8,323; tungsten 1,776; amorphous graphite 47,059; kaolin 10,222; fluorspar 11,146; anthracite coal 990,776; gold 1.7; silver 2.0; iron ore 25,686; manganese 1,902; talc 7,557; lead ore 599; and nickel ore 140.

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Kusch, Polykarp (1911-), U.S. physicist and Nobel prize winner, was born at Blankenburg, Ger., on Jan. 26, and emigrated with his family to the United States in 1912, becoming a naturalized citizen ten years later. He graduated from Case Institute of Technology, Cleveland, O., in 1931 and took his master's degree (1933) and Ph.D. (1936) from the University of Illinois, Urbana. He taught physics successively at Illinois (1931-36), the University of Minnesota, Minneapolis (1936-37), and at Columbia university, where he remained except during World War II when he was engaged in special research on the military applications of vacuum tubes. He was appointed full professor at Columbia in 1949, specializing in nuclear and molecular physics.

With Willis E. Lamb (q.v.), Kusch on Nov. 2, 1955, was named corecipient of the 1955 Nobel prize in physics for his research into new and more accurate methods of atomic calculations—specifically, according to the citation, "precision determination of the magnetic moment of the electron."

Kuwait: see ARABIA.

Labor, U.S. Department of: see GOVERNMENT DEPART-

MENTS AND BUREAUS, U.S.

Labour: see AGRICULTURE; CHILD LABOUR; EMPLOYMENT; INTERNATIONAL LABOUR ORGANIZATION; LABOUR UNIONS; NATIONAL LABOR RELATIONS BOARD; STRIKES; UNITED STATES WAGES AND HOURS. See also under various states.

Labour Party, Great Britain: see POLITICAL PARTIES; BRITISH; SOCIALISM.

Labour Unions. United States.—The merger of the country's two leading federations of trade unions, after a split of 20 years, under the combined name of American Federation of Labor and the Congress of Industrial Organizations, was the most prominent event in U.S. labor affairs during the year. The merger in Dec. 1955 provided each union affiliated with either the A.F. of L. or C.I.O. retain its charter and, by virtue of the merger, became part of a new organization.

Under the merger, the supreme governing body of the A.F. of L. and C.I.O. is the biennial convention. The voting strength of the delegates to these conventions is determined by the paid per capita membership of their respective unions. In addition, state and local central bodies are entitled to one vote each. Other executive and administrative organs of the A.F. of L. and C.I.O. are the executive council consisting of the president, secretary-treasurer and 27 vice-presidents, elected by the convention, and the general board which is composed of the members of the executive council and the president or other principal officer of each of the national or international affiliates. The general board meets at least once a year to determine policy questions referred to it by the executive council. The day-to-day policy and administrative decisions of the organization are determined by an executive committee consisting of the two executive officers and six vice-presidents.

George Meany was elected the first president and William



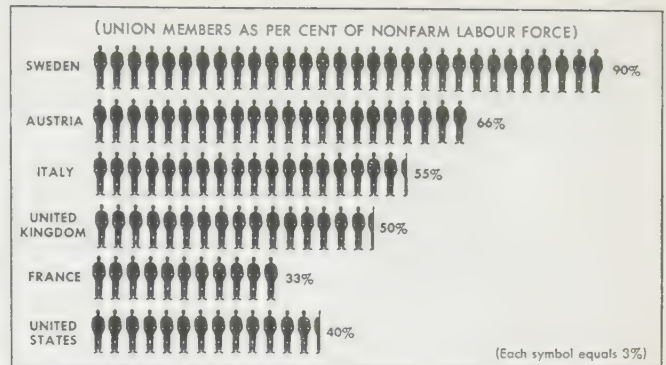
"HEARTS AND FLOWERS," a comment on the merger agreement reached in 1955 by the two large U.S. labour bodies by Fitzpatrick of the *St. Post-Dispatch*

nitzler the secretary-treasurer of the merged organization. They held similar positions in the A.F. of L. The other six members of the executive committee were drawn in equal numbers from unions which had been in the A.F. of L. and C.I.O. Seventeen of the 27 vice-presidents elected at the first convention were from the A.F. of L. Several independent unions, including the Brotherhood of Railroad Trainmen and the Brotherhood of Locomotive Firemen and Engineers, indicated that they were considering affiliation with the merged organization. But the United Mine Workers, the largest independent union, was reported as opposed to affiliation.

The combined membership of the A.F. of L. and C.I.O. before the merger took place was 16,100,000, 15,300,000 in the United States and 800,000 in Canada. These figures included 184,000 members of federal labour unions directly affiliated with the A.F. of L. and 15,000 members of local industrial unions affiliated with the C.I.O. Unaffiliated unions had an estimated membership of 1,700,000.

The year was marked by sharp increases in economic activity following the recession of 1954. By midyear civilian employment reached record heights, surpassing the 65,000,000 mark, and unemployment declined below 4% of the total labour force. The rising economic activity was reflected in labour-management contracts in most sectors of the economy. At the beginning of the year, four to seven cents hourly wage increases were most common in collective bargaining settlements. By summer, after negotiations were concluded in the automobile and steel industries, the typical hourly raises ranged between 7 and 12 cents. As in previous years, wage increases accounted for only part of the adjustments in labour-management agreements. Many of the new contracts contained increased pension, insurance, medical vacation, holiday and other fringe benefits. In the case of the major automobile producers, the total cost of the settlements was estimated at 20 cents per hour, only 8 cents of which was accounted for by the direct wage increase.

Major interest was centred around the introduction of supplementary unemployment compensation (popularly referred to as guaranteed annual wage) provided for in automobile, farm equipment, major can manufacturing companies and other industries. In the automobile industry the companies agreed to contribute to a fund five cents for every man-hour worked until a predetermined maximum was reached, averaging about \$400 per worker. The fund was to be used to pay laid-off employees supplements to state unemployment compensation, ranging from \$25 a week for a maximum period of 26 weeks. Payments



LABOUR UNION MEMBERSHIP, a comparison of the U.S. and selected European countries

were scheduled to begin in 1956. The combined state unemployment and supplementary benefits were to be 65% of the worker's pay (after taxes) for a 40-hour week during the initial 4 weeks to which the employee was entitled to unemployment compensation, and to 60% of his basic pay for 22 additional weeks. Steps were taken by both the A.F. of L. and C.I.O. to develop standards to be observed by unions to ensure honest administration of pension and welfare funds.

The number of work stoppages during the first nine months of 1955 was the second lowest in the last six years. Major strikes (involving more than 10,000 workers) affected a variety of industries and involved the Southern Bell system, a southern railroad, New England textile mills, a rubber company, west coast trucking, east coast longshoremen and nonferrous metal mining. The federal government confined its activities in these disputes to mediation. A number of state governors and other officials requested federal intervention on several occasions. The White House refused to intervene in any of these situations on the ground that they did not truly threaten national health and welfare. None of the above strikes were considered in that category.

The major federal labour legislation was an increase in the minimum wage required by the Fair Labor Standards act. The minimum hourly wage rate was increased by congress from 75 cents to \$1. The measure was a compromise between the president's recommendation of 90 cents and union urging of \$1.25. The new minimum wage was scheduled to become effective March 1, 1956. The U.S. department of labour estimated that about 2,000,000 workers, out of about 24,000,000 covered by the law, would be directly affected by the increased minimum wage.

In the sphere of political action, the Wisconsin legislature enacted a law designed to bar labour unions from making contributions for any political purpose. The law was modelled after the Federal Corrupt Practices act. In a test case of the federal law the United Automobile Workers (C.I.O.) was indicted on a charge of using union funds for radio and television time in support of a candidate for the U.S. senate. The U.A.W. contended that the expenditure was legal and that any provision barring it is unconstitutional. Labour leaders claimed that the indictment of the U.A.W. was politically inspired. They attacked the Republican record as being biased against unions. Most observers agreed that a major objective of the A.F. of L.-C.I.O. merger was the expansion of political activities by labour unions. (S. A. LN.)

Canada.—During 1955, notable progress was made toward a merger of the two national labour centres, the Trades and Labor Congress of Canada and the Canadian Congress of Labour. Closer co-operation had begun with the naming of a unity committee, consisting of four representatives of each congress. It began its meetings in Jan. 1954, and one of the first fruits was the drafting of a no-raiding agreement, as a step toward

A.F. of L., C.I.O. and Independent National and International Unions With Reported U.S. Membership in Excess of 100,000*

Union	Membership	Union	Membership
American Federation of Labor	16,824,000	Pulp and paper	120,000
Automobile	120,000	Railway carmen	152,000
Clerks	154,000	Railway and steamship clerks	272,000
Teamsters	140,000	Retail clerks	262,000
Food services	202,000	Street, electric railway	178,000
Miners	143,000	Teamsters	1,208,000
Painters	764,000	Other (82 unions)	2,157,000
Truckers	606,000	Congress of Industrial Organizations	4,878,000
Line haulers, operating	190,000	Automobile	1,169,000
Domestic, ladies'	426,000	Clothing	370,000
Mail carriers	424,000	Communication	297,000
Electric	401,000	Electrical	335,000
Truck carriers	133,000	Oil, chemical and atomic	173,000
Chemists	103,000	Retail and wholesale	126,000
Maintenance of way	808,000	Rubber	165,000
At.	193,000	Steelworkers	1,119,000
Electricians	237,000	Textile	276,000
Truckers	214,000	Other (21 unions)	848,000
Printing	224,000	Unaffiliated unions	1,687,000
Office clerks	102,000	Railroad trainmen	182,000
		Telephone unions alliance	110,000
		Other (56 unions)	1,395,000

United Mine Workers, the United Electrical Workers and the Packinghouse Workers report their membership data to the bureau of labour statistics. An estimate of their membership was included in the totals, but not released by the bureau of labour statistics. Membership of each of these unions was in excess of 100,000. Source: "Directory of National and International Labor Unions in the United States," Department of Labor, Bureau of Labor Statistics Bulletin No. 1185 (Washington, 1955).

unity. This agreement was approved at the 1954 conventions of the congresses, and was signed on Nov. 18, 1954.

Early in 1955 the committee drafted a set of recommendations and principles upon which a merger of the congresses might be based, and this was approved at the Trades and Labor congress convention at Windsor, Ont., in May 1955, as well as at the Canadian Congress of Labour convention at Toronto, Ont., in Oct. 1955. The next step was the drafting of a constitution for the new national labour body, which would be formed at a joint convention in 1956 and would be known as the Canadian Labour congress.

The annual legislative submissions of the labour groups were made to the federal government by the two national congresses, the Canadian and Catholic Confederation of Labour and the international railway brotherhoods in Nov. 1954. The briefs all dealt with substantially the same questions. The outstanding subject was unemployment, with which each group was deeply concerned. Each of the national congresses made proposals for action on various levels of government by which employment might be provided and consumer purchasing power increased. Other subjects on which recommendations were made included housing, unemployment insurance, national health insurance, immigration, taxation, family allowances and old-age pensions. Increased income-tax exemptions were requested, and provisions for the voluntary checkoff of union dues.

In May 1955 the congresses submitted briefs to the industrial relations committee of the house of commons on proposed amendments to the Unemployment Insurance act. One important new feature was the deletion of a section which would have made it impossible to collect unemployment insurance and payment under a guaranteed annual wage plan. Benefit rates were raised and some other improvements were made in the legislation.

The total membership of labour organizations in Canada at Jan. 1, 1954, was reported by the federal department of labour at 1,267,911, or 4% above the corresponding figure for 1953.

(N. S. D.)

International Movement.—On June 1, 1955, the International Confederation of Free Trade Unions had a total membership of 54,500,000 in 108 organizations in 75 countries. The fourth congress of the I.C.F.T.U. was held in Vienna in May 1955. Seventy-two organizations from 56 countries were represented by 189 delegates and observers. J. H. Oldenbroek was re-elected general secretary and Omar Bécú president of the I.C.F.T.U. The congress considered a wide range of topics, but was especially concerned about the violations of fundamental human liberties in different parts of the world. Racial discrimination in South Africa and elsewhere was condemned and full trade-union rights were demanded for workers in Morocco, Argentina and Venezuela.

Great Britain.—The affiliated membership of the British Trades Union congress reached the record level of 8,106,958 at the end of 1954, while total trade-union membership was 9,495,000, as compared with 9,459,000 at the end of 1954, an increase of 0.4%.

During 1955 three major disputes occurred, all involving a serious stoppage of work. In each case one of the principal factors causing the dispute was interunion conflict.

On March 25 and 26 London evening and national daily newspapers ceased publication following the strike of maintenance engineers and electricians employed by member firms of the Newspaper Proprietors' association. Work was not resumed until the afternoon of April 20. On May 23 a strike called by the National Amalgamated Stevedores and Dockers' union began in various ports. It was resolved on July 6. The Associated Society of Locomotive Engineers and Firemen informed the general

council of the T.U.C. on April 22 that the society would withdraw its members from work from midnight on May 1. Efforts were made to avert the stoppage and the strike was postponed but the deadlock was not broken and the strike eventually commenced on May 28. A settlement was achieved on June 14.

The general council of the T.U.C. played a vital part in settlement of all three disputes. Not since the general strike of 1926 had the T.U.C. exercised such a direct influence in industrial conflicts. In the light of the issue raised by the stoppage and of the experience gained in dealing with them the general council began an examination of its powers and functions in relation to industrial disputes. The council made clear that it would resist any attempt to impose legal restrictions on the right to strike, whether by means of compulsory ballots or compulsory arbitration, but it decided to seek powers from the annual congress to intervene at an earlier stage than existing law permitted in any dispute involving an affiliated member. Amendment to the rule was carried by the congress only after a vigorous debate and by a relatively narrow majority. The opposition to the general council came in the main from the Communist-dominated unions, the National Union of Railwaymen and a number of smaller unions which traditionally resented any attempt by the T.U.C. to limit their autonomy.

The development of the general council's authority progressed only as fast as the unions would permit. The advance made during 1955 was, however, significant and was thought by many trade-union leaders to precede a further extension of functions and powers of the council in the next few years.

A special meeting of representatives of the executive of those unions affiliated to the Labour party was held before the opening of the Trades Union congress, at Southport, to consider a request from the treasurer of the party to raise their affiliation fee from 6d. to 9d. a member. Though no final decision could be taken, such a step involving changes in rules, it was generally agreed that the unions would be prepared to assist the Labour party to overcome its financial difficulties in this way. The annual report of the Labour party for 1955 showed that 1,200 unions, with a total membership of 5,529,760, were affiliated at the end of 1954. Affiliated fees paid by these unions to the central funds of the Labour party amounted to £138,669 in 1954. In addition, the unions made other substantial financial contributions, both nationally and locally, to support the activities of the Labour party. Taking all factors into account the unions probably provided 40%–50% of the total income received by the Labour party. (See also EMPLOYMENT; INDUSTRIAL HEALTH; NATIONAL LABOR RELATIONS BOARD; STRIKES; WAGES AND HOURS.)

(B. C. F.)

Labrador: see NEWFOUNDLAND AND LABRADOR.

Labuan: see BRITISH BORNEO.

Lacrosse. During 1955 the University of Maryland, College Park, ten swept through an 11-game schedule unbeaten and untied to win the Wingate trophy, symbol of United States intercollegiate supremacy in the Indian game of lacrosse. The U.S. Naval academy, 1954 title winner, was runner-up. The Middies bowed to the Maryland team, 9–8, before 13,000 spectators at Annapolis, Md., on April 30, and then back marked their first in 19 games over a two-year period. Maryland also led the Cy Miller division and won the trophy as Navy, Yale and Princeton followed in that order in the ratings. Rutgers university and Hofstra college, Hempstead, N.Y., tied for the championship in the Laurie Cox division. The University of New Hampshire, Durham, captured the title in the Roy Taylor group. Kenyon college, Gambier, Ohio, won laurels in the Midwest association.

The following players were named to the All-America first team: goal—Clement Malin, Dartmouth; defense—John Raster, Maryland; John Simmons, Maryland; Carl Orent, Hofstra; midfield—Al Ulcickas, Navy; Robert Kelley, Rutgers; James Keating, Maryland; attack—Charles Wicker, Maryland; Percy Williams, Maryland; and John Griffiths, Rensselaer Polytechnic Institute.

The annual north-south contest between senior stars was held at the Homewood stadium in Baltimore, Md., on June 10, with the south winning, 12-11.

Percy Williams won the Jack Turnbull memorial award as outstanding college player while Jim Kappler of Maryland won the C. Markland Kelly trophy as top goalie in the state of Maryland. Mt. Washington of Baltimore carried off national club laurels. Sewanhaka high school repeated as Long Island champion and established a scholastic record by extending its all-winning streak through 74 games.

The 23rd annual tournament of the United States Women's Crossed association was held on the grounds of the Rye (N.Y.) high school May 28-30 and Philadelphia teams again were outstanding. Seven players from the Philadelphia group gained places on the all-United States first team. They were Betty King, Mrs. Alice Willetts, Jean Slaymaker, Ann Capolino, Jane Wald, Mary Fetter and Gayle Meacham. Others chosen were Marguerite Cunningham, Boston; Roberta Brennan, Boston; Elizabeth Swett, Boston; Lee Chadbourne, Baltimore; and Judy Martin, Baltimore. (T. V. H.)

Lamb, Willis E., Jr. (1913-), U.S. physicist and 1955 Nobel prize winner, was born July 12 at Los Angeles, Calif. He studied at the University of California, Berkeley, specializing first in chemistry, but changing to physics for his graduate work. After receiving his Ph.D. in 1938, he became a physics instructor and 10 years later full professor of physics at Columbia university, New York city, where he remained until he was appointed professor of physics in 1951 at Stanford university in California. In 1947 he published an article demonstrating that previous methods of measuring certain types of atomic energy were inaccurate. For this research, developed later into "discoveries regarding the hyperfine structure of the hydrogen spectrum," as mentioned in his Nobel citation made public Nov. 2, 1955, Lamb was named recipient of the 1955 Nobel prize in physics with Polykarp Kusch (q.v.).

Lamb: see MEAT.

Laos. A landlocked kingdom, a member of the French union, situated in the Indochinese peninsula, Laos is bounded north by China, northeast by the Democratic Republic of Vietnam, east by the National Republic of Vietnam and south by Cambodia. Area: 91,500 sq.mi. Pop. (1953 est.): 1,260,000. The Laotians are Thais and they speak a Thai dialect. Religion: Buddhist. Chief towns (pop., 1953 est.): Luang-Prabang (royal capital) 15,000; Vientiane (administrative capital) 20,000. King Sisavang Vong; premier in 1955, Katay Sasorith; high commissioner, Jean Risterucci.

History.—During 1955 the order of things was still troubled by the existence, in the two northeastern provinces, of the separatist communist state of Pathet Lao. There was fighting on the frontier during the summer, but on Oct. 10 a cease-fire was initiated by a conference in Bangkok. Loans from the French treasury and U.S. aid made it possible to install new equipment to repair the damage done in the war zones. The heir to the throne, Prince Savang, paid a visit to the Indian government. The Laotian unit of currency had its name changed from piastre to kip, without any effect on its purchasing power. (Hu. DE.)

Lard: see VEGETABLE OILS AND ANIMAL FATS.

Latin America: see ARGENTINA; BOLIVIA; BRAZIL; BRITISH GUAYANA; BRITISH HONDURAS; CHILE; COLOMBIA; COSTA RICA; ECUADOR; FRENCH UNION; GUATEMALA; HONDURAS; MEXICO; NICARAGUA; PANAMÁ; PARAGUAY; PERU; SALVADOR, EL; SURINAM; URUGUAY; VENEZUELA.

Latin-American Literature. Literary Events.—Prizes.

celebrations and commemorative events of 1955, too numerous to be recorded, attested once again to the self-consciousness of Latin America's literary life. The prizes for literature of the Unión de Universidades Latinoamericanas went to the Chilean Lautaro Yankas for *El Vado de la noche* and to the Guatemalan Monteforte Toledo for his volume *Los Muros increíbles*. In Argentina the Emecé award was shared by Beatriz Guido for her novel *La Casa del ángel* and María Angélica Bosco for her story *La Muerte baja en el ascensor*. The Brazilian Academy gave the Machado de Assis prize to Dinah Silveira de Queiroz, author of *Floradas na serra*. Other recipients of national literary prizes were the novelist Germán Beltrán (Colombia), Gabriel García Márquez (Colombia's Association of Writers), Carlos Sabat Ercasty (Uruguay), Manuel Felipe Rugeles (Venezuela), the dramatist Luis Castellanos (Venezuela), Salvador Tío and María Teresa Babín (Puerto Rico). The Instituto de Cultura Hispánica (Madrid) granted prizes of 150,000 pesetas to the Uruguayan poetess Juana de Ibarbourou and the Spanish novelist José Luis Castillo Puche, although the awards were openly criticized as arbitrary. UNESCO (the United Nations Educational, Scientific and Cultural organization) chose the novel *El Moro*, by José Manuel Marroquín, as the representative novel of Colombia. Stalin prizes brought their special type of kudos to the essayist Baldomero Sanín Cano and the poet Nicolás Guillén. The year marked the launching of several important literary journals: *Ciclón* (Havana), devoted to creative works and unpublished translations, *Cuadernos de Arte y Poesía* (Quito), now published independently of the Central university, and *Metáfora* (Mexico), newly formed out of the four "little magazines" *Dintel*, *Espiral*, *Fuentsanta* and *Hierba Vieja y raro* (Caracas) was initiated for bibliophiles and *Recent Books in Mexico* contained short essays and selected bibliographies.

Anniversary celebrations were held in 1955 for the Brazilian Mario de Andrade, the Colombian Marco Fidel Suárez and the Colombian Francisco de Paula Rendón, but the most active of these events was the centenary of Almafuerte, marked by the appearance of studies, biographies and articles in his native Argentina. A *libro jubilar* appeared in Mexico hailing Alfonso Reyes's half century of literary activity.

Poetry.—The growing international reputation of the Venezuelan Juan Liscano was attested by a bilingual (French and Spanish) edition of his selected works published in Paris by Pierre Seghers. Carlos Brandy's *Los Viejos muros* (Montevideo) treated with melancholy but not bitterness the traditional stuff of poetry: man's loneliness, the mysteries of the universe, the fugacity of love. Juvenal Ortiz Saralegui's *Poesía fiel* (Montevideo) showed the varying allegiances of the poet, from praises of Juan Ramón Jiménez to a "triptych to Garcilaso and his muse." The Cuban Cipriano Vitié collected in *Vísperas, 1938-1953* his entire production of humanitarian and everyday verse, fleeing rhetoric and lyrical alembications. Similarly, *Veinte años después* (Buenos Aires) offered a copious sampling of César Fernández Moreno's poetry. In the same town appeared Ramiro de Casabellas' *Doble fondo*, rich in euphony. The young Venezuelan José Ramón Medina received critical acclaim for his *Como la vida*.

Important poetic anthologies were Rodrigo Miro's *Cien años*

de poesía en Panamá, covering the best lyrics from Romanticism to the present, and "de intención histórica más que crítica," and Agustín del Saz's *Nueva poesía panameña* (Madrid, Instituto de Cultura Hispánica), presenting 36 poets. An important landmark was Fernando Alegría's *La poesía chilena*, published at Berkeley, Calif., a sound and objective examination of the solid foundations which assured Chile's greatness in the lyric from Ercilla and Oña to the present. Indeed, the forthcoming second volume, covering the rich contemporary output, would complete a splendid vision of the organic growth of Chilean poetry. Many poets of the Antilles and South America appeared in the new German edition of the *Antología de la poesía negra moderna* (Munich).

Prose.—Angel Speroni, in his novel *Las Arenas*, claimed (like Sartre) to "sink to his knees in his epoch" and presented a novel polemically national. After the fall of Argentina's dictator, Juan de Perón, Speroni's novel became an interesting document presenting the Perón regime as a struggle in all the arenas. The sixth novel of the Mexican Alberto Quiroz, *El Profesor Mentocatum*, dealt amusingly and even satirically with two pupils and their professor involved in a secret society. The Cuban Raúl Roa's *Viento sur* was an impassioned plea against dictators such as Machado and against the "sterile, hirsute, exasperating, and dirty wind that blows across the world," the gusts of injustice, whether at a national or a personal level. The Venezuelan Mariano Picón-Salás published a new novel, *Los Tratos de la noche*, just as a collection of his selected works was published by Edime in Madrid and Caracas. Another novel of sociopolitical tendency was *El Papa verde* of Miguel Angel Asturias, second of a trilogy on life in Central America. His titular protagonist was a Chicagoan whose fruit company exploited the orchard country of Guatemala. Asturias probed the effects of U.S. economic manoeuvrings on the Guatemalans, from the foremost politicians to the humblest peasants. Juan Carlos Onetti's *Los Adioses* told the sordid tale of a triangle which terminated in destruction and death. After the reader has been repelled by the sexuality and motivations of the characters, Onetti, like a Pirandello, confides that the reader has been reading hypotheses and not truths and must therefore revise the moral judgments he has been forming.

From Argentina came *Chaves*, a brief character study of an inarticulate and pitiful figure deprived of his only chance of salvation by the death of his wife and daughter. With this incapacitated central character Mallea pushed to the extreme his interest in inner monologue. A rich collection of 50 diversified sketches, *El Viento en el rostro*, appeared in Bogotá from the pen of Jesús Zarate Moreno. Two outstanding books of essays came from Spanish-Americans well known to the United States: the Mexican Ermilo Abreu Gómez conversed in *La Del alba sería* of people and daily events during his boyhood days in Lérica; José Antonio Portuondo of Cuba treated of intellectual courage in his *El Heroísmo intelectual*, consisting largely of studies in contemporary literature which had already appeared in print. Two Brazilian essayists followed the vein of national relationships when Alceu Amoroso Lima published his *A Realidade americana* and Gilberto Freyre his *Um Brasileiro em terras portuguesas*.

In the uneventful area of Latin-American theatre, Madrid honoured the Puerto Rican Francisco Arriví by publishing two plays: *Una Sombra menos* and *Club de solteros*. The first was a conventional human drama centred on a married woman loved by several men. The second was more extravagant, concerning a group of frustrated males who banded together against women and matrimony. The Premio Ateneo awarded to Luis Castellanos honoured his play *El Velo sobre el agua*. A dramatization of *Cumandá*, the romantic novel by the Ecuadorian Juan León

Mera, was presented at the Escuela de Ballet of the Casa Cultura Ecuatoriana.

Anthologies, Literary History.—Slow to become available and known was Salvador Bueno's important *Antología del cuento en Cuba*, representing 42 writers. His excellent prologue explained that the short story had become Cuba's outstanding prose genre. Emecé of Buenos Aires brought out the first volume (*Historia de la eternidad*) of the complete works of Jorge Luis Borges, containing essays running from Platonic and Platinian thought down to his own speculations. An attack on Borges and Martínez Estrada was contained in Jorge Abelardo Ramos' *Crisis y resurrección de la literatura argentina*, weighing the various national influences on Argentinian letters. Eduardo Crema's *Creación de una leyenda* was a brief analysis of Antonio Arráiz' *Dámaso Velásquez* as a typical national heroic oral epic. In literary history, Enrique Anderson Imbert continued his prolific studies, among them *Estudios sobre escritores de América* (Buenos Aires). Of equal importance were M. Henríquez-Ureña's *Breve historia del modernismo* and C. Aubrun's *Histoire des lettres hispano-américaines* (Paris). Worthy of notice, if less immediately relevant, was Stanley Williams' *Spanish Background of American Literature*, whose subject extended to Latin America and the southwest of the United States. (O. Br.; R. J. Cs.)

Latter Day Saints: see MORMONS.

Latvia. A Soviet Socialist republic, Latvia is bounded north by Estonia, east by the Russian S.F.S.R., southeast by Byelorussia, south by Lithuania and west by the Baltic Sea. Area: 24,600 sq.mi. Pop.: (1935 census) 1,950,502; (1954 est.) 2,100,000. Religions: Lutheran, Roman Catholic and Greek Orthodox. Chief towns (pop., 1935 census; 1954 est. in parentheses): Riga (cap.) 385,100 (640,000); Liepaja 57,100 (80,000); Daugavpils 45,200 (55,000). First secretary of the Latvian Communist party in 1955, Janis Kalnberzins; chairman of the presidium of the supreme soviet, Karlis Ozolins; chairman of the council of ministers, Vilis Lacis.

History.—The industrial production of the republic was reported to be 15.5% higher in 1954 than in 1953 and 74% higher than in 1950. Livestock on collective farms increased during the year as follows: milch cows 15%, pigs 13% and sheep 12%. There was still not enough fodder, but it was planned to produce 100,000 ha. of land under maize.

From June 14 to 16 an agricultural conference of Baltic republics was held in Riga and attended by N. S. Khrushchov, first secretary of the Communist party of the Soviet Union, and about 1,100 delegates from Estonia, Latvia and Lithuania.

On Feb. 27 a new supreme soviet of the Latvian S.S.R. was elected by 1,438,167 votes (99.97% of the electorate), of whom 1,437,221 (99.94%) voted for the bloc of communists and non-party men. Among the 200 deputies was Col. Gen. Aleksandr Gorbátov, the new commander of the Baltic military area. The new 27-member council of ministers included five Russians.

In March Archbishop Gustav Turs, head of the Latvian Lutheran Church, published an appeal against the preparation for atomic war.

In September a Finnish newspaper reported that Kaarlo Ulmanis, 78-year-old former president of Latvia, who had been deported to Russia in 1940, had been allowed to return to Latvia.

See A. Spekke, *Latvia and the Baltic Problem* (London, 1954). Also ESTONIA; LITHUANIA. (K. SM.)

Education.—Schools (1950): primary 1,598, pupils 232,000; secondary 96, pupils 30,000. The Riga university in 1939 had 7,281 students and a teaching staff of 446. In 1953 Latvia had ten institutions of higher education with a total of about 15,000 students.

Finance.—Budget: (1954 est.) balanced at 1,653,961,000 roubles (1955 est.) balanced at 1,656,421,000 roubles.

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The long-awaited ruling of the United States supreme court implementing the decision in the school segregation cases was handed down on May 31, 1955. The court sent the cases back to the lower courts with instructions "to require the defendants to make a prompt and reasonable start toward complying with its 1954 decision outlawing segregation of Negroes and whites in the public schools." The court placed the primary responsibility for solving the problem on school authorities.

The supreme court also extended the application of its anti-segregation decision to cover public parks, swimming pools and golf courses. It ruled against the separation of whites and Negroes in the use of such facilities.

In November, the Interstate Commerce commission ruled against discrimination in accommodations furnished by common carriers.

Congress enacted no spectacular legislation during the year. New laws of general interest included the raising of the minimum wage from 75 cents to \$1 an hour for workers under the age-hour law, the continuation of 52% corporate and existing estate tax rates, the extension of the reciprocal trade program on June 30, 1958, and continuance of the farm price support program. Congress also provided legislation making available to young men between the ages of 17 and 18½ a number of choices which they might fulfil their military obligations. (See SELECTIVE SERVICE, U.S.; UNITED STATES.)

John Marshall Harlan was appointed March 17, 1955, to fill the vacancy left by the death in Oct. 1954 of Associate Justice Robert Houghwout Jackson. (See SUPREME COURT, U.S.)

Only the more important legal developments of general interest are reported in this article.

Aliens and Citizenship.—In a series of cases, the supreme court settled some phases of the Immigration and Nationality act of 1952. Section 405 consists of two clauses. The first is a saving clause providing that nothing contained in the act shall be construed to affect the validity of any declaration of intention or other document or other proceeding which shall be valid at the time the act goes into effect. The second paragraph provides that any petition where naturalization heretofore filed may be pending at the time the act takes effect shall be determined in accordance with the requirements of the laws in effect at the time the petition was filed.

An alien named Menasche had filed his declaration of intention to become a United States citizen before the effective date of the 1952 act. In April 1955 he filed a petition for naturalization. The court held that he complied with all requirements of the Naturalization act of 1940, but had not been physically present in the United States for at least one-half of the period constituting five years. This last requirement had been added by 1952 legislation. The lower courts held that Menasche enjoyed a status, condition and right in process of acquisition reserved by section 405a. The court leaned heavily on the saving clause in the prior Nationality act and approved his petition. "The whole development of this general savings clause manifests a well-established Congressional policy of not stripping aliens of advantages gained under prior laws" (*U.S. v. Menasche*, 348 U.S. 528).

The saving clause, however, should not be pressed too far. Shomberg filed a naturalization petition two days before the effective date of the 1952 act. On June 22, 1953, he was arrested under a warrant initiating "proceedings under section 405a of the 1952 act subjecting aliens to deportation upon conviction of two crimes involving moral turpitude." Section 318

of the act provides that "No petition for naturalization shall be filed . . . if there is pending against the petitioner a deportation proceeding." Section 318 begins with the phrase "notwithstanding the provisions of Section 405B." The court said, "The congressional purpose must have been to have Section 318 supersede rights stemming from such [naturalization] petitions, for under any other interpretation . . . the 'notwithstanding' clause is rendered meaningless" (*Shomberg v. U.S.*, 348 U.S. 540).

For the second time the alien Accardi appeared before the supreme court with a writ of habeas corpus to escape deportation. The board of immigration appeals had decided against Accardi's petition for suspending his deportation, but it appeared that the attorney general had blacklisted him by including his name in a list of "unsavory characters." The list had been circulated among the board members. This was improper, and required a rehearing (*Accardi v. U.S.*, 349 U.S. 280).

Business Regulation.—The state of Oklahoma passed laws putting the optical business under drastic control of state authorities without interference from the federal government. Provisions of the state law barring any person who is not a licensed optometrist or ophthalmologist from fitting lenses to a face or duplicating lenses or replacing in a frame lenses or other optical appliances except on written prescription of an Oklahoma licensed optometrist or ophthalmologist do not violate the due process clause of the 14th amendment. Clauses in the law prohibiting the advertisement for sale of eyeglasses, lenses and other optical goods and forbidding operators of retail store space to rent or sublease such space to any person purporting to do eye examinations or visual care do not violate the due process clause of the 14th amendment. The supreme court held that other sweeping provisions were also legal.

"An ophthalmologist is a duly licensed medical officer who specializes in the care of the eyes," the court explained. "An optometrist examines eyes for refractive error, recognizes (but does not treat) diseases of the eye, and fills prescriptions for eyeglasses. The optician is an artisan qualified to grind lenses, fill prescriptions, and fit frames.

"We see no constitutional reason why a State may not treat all who deal with the human eye as members of a profession who should use no merchandising methods for obtaining customers."

The biggest antitrust case in history, involving E. I. du Pont de Nemours company and General Motors corporation, whose combined assets exceed \$5,000,000,000, was given new life when the supreme court agreed to review the record.

Civil Rights.—In an opinion by Chief Justice Earl Warren, the high court granted the petition of John P. Peters to expunge the aspersions made against his reputation by the loyalty review board. He had twice been cleared from disloyalty charges by the loyalty board of his employing agency, the United States public health service. In a "post audit" of the agency board proceedings, the loyalty review board made the gratuitous finding that there was a reasonable doubt as to Peters' loyalty. This finding was based on evidence which would never have been considered in a court of law. The information was supplied by informants whose identity was not disclosed to Peters. The identity of some of the informants was not even known to the board.

Peters petitioned the court to declare that his removal and debarment from federal employment were invalid. He said that the action taken by the loyalty review board was a violation of the executive order which created the board and also was a violation of the U.S. constitution in denying him the opportunity to confront and cross-examine his secret accusers.

The supreme court held that the loyalty review board had exceeded its powers and the court ordered the Civil Service commission to expunge from its records the loyalty review board's

finding that there was a reasonable doubt as to Peter's loyalty and any other matter that would bar him from federal employment. In a concurring opinion Justice William O. Douglas said,

"Dr. Peters was condemned by faceless informers, some of whom were not known even to the Board that condemned him. Some of these informers were not even under oath. None of them had to submit to cross-examination. None had to face Dr. Peters. So far as we or the Board know they may be psychopaths or venal people, like Titus Oates, who revel in being informers. They may bear old grudges. Under cross-examination their stories might disappear like bubbles. Their whispered confidences might turn out to be yarns conceived by twisted minds or by people who, though sincere, have poor faculties of observation and memory." (*Peters v. Hobby*, 99 L. Ed. 677.)

Civilians no longer need fear that the long arm of military law will follow them after their discharge from military service. The supreme court ordered Robert W. Toth freed from air force custody.

Five months after he was honourably discharged from the United States air force, Robert Toth had been arrested by military authorities and taken to Korea to stand trial before a court-martial on a charge of murder and conspiracy to commit murder while serving as an airman in Korea.

The section of the 1950 Uniform Code of Military Justice under which he was to be tried was declared unconstitutional by the high court. Justice Hugo L. Black said, "... Any expansion of court-martial jurisdiction like that in the 1950 Act necessarily encroaches on the jurisdiction of federal courts set up under Article 3 of the Constitution where persons on trial are surrounded with more constitutional safeguards than in military tribunals.

"... There is a great difference between trial by jury and trial by selected members of the military forces... whether right or wrong, the premise underlying the constitutional method for determining guilt or innocence in federal courts is that laymen are better than specialists to perform this task. This idea is inherent in the institution of trial by jury.

"... On many occasions, fully known to the Founders of this Country, jurors—plain people—have manfully stood up in defense of liberty against the importunities of judges and despite prevailing hysteria and prejudices. The acquittal of William Penn is an illustrious example.

"... It is conceded that it was wholly within the power of Congress to... provide for federal district court trials of discharged soldiers accused of offenses committed while in the armed services... Congress has not seen fit to subject them to trial in federal district courts... We hold that Congress cannot subject civilians like Toth to trial by court-martial. They, like other civilians, are entitled to have the benefit of safeguards afforded those tried in regular courts authorized by Article 3 of the Constitution." (*Toth v. U.S.*, 100 L. Ed. 4.)

Contempt of Congress.—The court reversed convictions for contempt of congress in three cases. The contempt charges were based on refusal to answer questions asked by the house committee on un-American activities. An officer of the United Electrical, Radio and Machine Workers of America who was called to the stand refused to answer questions about his associates in the union. He relied on the 1st and 5th amendments against self-incrimination. The defendant Quinn did not state his grounds for objection to the questions except that he declined to answer the questions by adopting the grounds of the two other defendants in the case. The court said that no ritualistic formula or talismanic phrase was necessary if the court understood what the defendant meant, which was obvious in this case. (*Quinn v. U.S.*, 349 U.S. 155.)

In the second contempt case, Emspak, another officer of the

United Electrical Workers union, answered all but 68 out of 239 questions put to him by a subcommittee of the un-American activities committee. The 68 questions concerned Emspak's associates and affiliations. Eight of these were later related to the Communist party. Emspak refused to answer relying "primarily on the 1st amendment, supplemented by the 5th." In reversing the conviction for contempt, the chief justice adopted the same reasoning as was applied in the Quinn case. The court also brushed aside the government's contention that Emspak had waived his privilege of raising the self-incrimination defense because he had evaded a clear answer on the subject. "Waiver of constitutional rights is not lightly to be inferred." (*Emspak v. U.S.*, 349 U.S. 190.)

Criminal Law.—The Michigan one-man grand jury ran into trouble before the supreme court which set aside contempt court rulings against two witnesses. One witness refused to answer questions asked by the judge on the grounds that he was not represented by counsel. The other witness was held in contempt for evidence which the judge believed was perjury. The supreme court held that the conviction for contempt violated the due process clause of the constitution. "No man can be tried by a judge in his own case and no man is permitted to try cases where he has an interest in the outcome." (*In re Murchison*, 349 U.S. 133.)

A device by which an all-white jury could be selected was held to be a violation of the due process clause in a Georgia murder case. The names of white veniremen were written on white slips of paper and the names of Negroes on yellow. Only four yellow slips were drawn. Three of them were excused for cause and the state exercised a peremptory challenge for the fourth. The defendant was convicted and the Georgia supreme court affirmed the conviction. Attempts to secure a new trial because of the manner in which the jury was selected failed until the supreme court of the U.S. remanded the case in view of the state's acknowledgement that as a matter of substantive law the petitioner had been deprived of his constitutional rights (*Williams v. Georgia*, 349 U.S. 375).

A former city policeman was convicted of criminal contempt of court for refusing to testify before a grand jury concerning an investigation he had taken part in when he was on the police force. He was asked whether he ever accepted bribes when he was a policeman but he refused to answer, setting aside the constitutional privilege against self-incrimination under state and federal constitutions.

It appeared that he was required by state law and a charter to waive his immunity or forfeit his job, so he signed an immunity waiver. In the investigation of police bribery activities, which took place long after he had quit his job, he was sentenced to a year in jail for contempt of court in refusing to answer questions. His conviction for contempt was affirmed by the supreme court which held that he was bound by his immunity waiver. Whether the waiver was valid or not was immaterial. If the waiver was valid he was simply in the position of anyone who waives immunity; if the waiver was invalid, the statutory immunity would have persisted and his testimony could not possibly be self-incriminatory (*Regan v. N.Y.*, 349 U.S. 58).

Divorce.—Entrepreneurs of the divorce business in the Virgin Islands were told by the supreme court that the Virgin Islands' divorce law was no good as far as the residence requirements were concerned. The clause in the law permitting "quickie" divorces on a six-weeks' residence was beyond the power conferred on the territorial government. The plaintiff in this case lived 42 days in the Virgin Islands and on the 43rd day filed suit for her divorce. The defendant obligingly entered his appearance and filed a "waiver and consent" to the hearing.

the cause as if by default. The district court dismissed the case for want of jurisdiction over the petitioner.

The Virgin Islands' Organic act, which specified the authority of the legislative to make laws, limited that power to laws pertaining to local applications only. The divorce law was in excess of the power conferred. It was designed for people living outside of the Virgin Islands and not concerned with the interests of the local population.

One of the legislative proponents of the law publicly admitted that only 2% of the divorces heard affected the residents of the Virgin Islands. Another said, "I have heard that there is anticipated a half a million dollars divorce business in this current year which will be distributed among lawyers, hotel bills, taxi cabs and other business ventures in the Community." *Granville-Smith v. Granville-Smith*, 349 U.S. 1.)

Indian Affairs.—In a five-to-three decision (Justices Douglas and Frankfurter with the chief justice dissenting) the supreme court denied the claim of an Alaskan Indian clan to compensation for the taking by the United States of certain timber from Alaskan lands allegedly belonging to the group.

The Tee-Hit-Tons, a clan of the Tlingit tribe, contended that their "tribal predecessors had continually claimed, occupied and used the land from time immemorial; that when Russia took Alaska, the Tlingits had a well-developed social order which included a concept of property ownership; that Russia while it possessed Alaska in no manner interfered with their claim to the land; that Congress has by subsequent acts confirmed and recognized petitioner's right to occupy the land permanently and therefore the sale of timber off such lands constitutes a taking pro-tanto of its asserted rights in the area."

Before rendering its decision, the court reviewed the cases involving Indian title not only in Alaska but in many states and many tribes, as well as a Philippine Islands case in which tribal custom and tribal recognition played a part.

However, in the opinion of the court Justice Stanley Reed declared:

"We have carefully examined these statutes and the pertinent legislative history and find nothing to indicate any intention of Congress to grant to the Indians any permanent rights in the lands of Alaska occupied by them by permission of Congress. . . . After conquest they were permitted to occupy portions of territory over which they had previously exercised sovereignty' as we use the term. This is not a property right but amounts to a right of occupancy which the sovereign grants and protects against intrusion by third parties but which right of occupancy may be terminated and such lands fully disposed of . . . without any legally enforceable obligation to compensate the Indians.

" . . . The American people have compassion for the descendants of those Indians who were deprived of their homes and hunting grounds by the drive of civilization. They seek to have the Indians share the benefits of our society as citizens of this nation. Generous provision has been willingly made to allow them to recover from wrongs, as a matter of grace, not because of legal liability.

" . . . The Court of Claims . . . had no evidence that the Russian handling of the Indian land problem differed from ours.

" . . . In the light of the history of Indian relations in this nation, no other course would meet the problem of the growth of the United States except to make Congressional contributions for Indian lands rather than to subject the government to the obligation to pay the value when taken with interest to the Indians of payment. Our conclusion does not uphold harshness as against tenderness toward the Indians, but it leaves with Congress, where it belongs, the policy of Indian gratuities for the termination of Indian occupancy of Government-owned land

rather than making compensation for its value a rigid constitutional principle."

The dissenting opinion stated that the first Organic act for Alaska reserved for future congressional determination the exact nature of Indian rights in these Alaskan lands and that inasmuch as congress had never taken such action the case should be remanded so that a decision could be made as to what actual rights the "title" conveyed (*Tee-Hit-Ton Indians v. U.S.*, 99 L. Ed. 249).

Selective Service.—A draft registrant claimed draft exemption as a conscientious objector. He was tried and found guilty of violating the Selective Service act, although it was an undisputed fact that he was a member of Jehovah's Witnesses, also that he was honest in claiming to be a conscientious objector. But, although he opposed "war in any form," he believed in the use of force in defending his ministry, and said, "I am already in the Army of Christ Jesus, serving as Jesus Christ's appointed commander." The majority of the court ruled that the defendant's willingness to fight and take part in religious conflict did not betray insincerity (*Sicurella v. U.S.*, 348 U.S. 385).

A conscientious objector contended that the failure of the department of justice to furnish him with a full résumé of all the adverse information in his case in the FBI files resulted in invalidating his 1A classification. The supreme court held that he was right, that the department's failure to furnish a résumé invalidated his 1A classification and his conviction for refusing to submit to induction (*Simmons v. U.S.*, 348 U.S. 397).

Another conscientious objector refused to report to the draft authorities after the hearing of his friend where exemption was disposed of adversely. He claimed that his 1A classification was invalid because the appeal board had failed to present him with a copy of the recommendations made by the department. The court held that he was right, although the statute did not provide such defense as was required by implication, that the defendant should receive a copy of the department's recommendation and be given a reasonable opportunity to reply (*Gonzales v. U.S.*, 99 L. Ed. 349).

Wages and Hours.—A sugar producing enterprise in Hawaii which had achieved a high degree of automation, was advised by the supreme court that its employees were covered by the agricultural exemption provisions of the Wages and Hours law. The plantation grew sugar cane and processed it into sugar and molasses. It owned and operated what Justice Tom C. Clark said might be called "the agricultural analogue of the modern industrial assembly line." It employed more than 1,000 persons, almost all at specialized tasks: soil preparation, fertilizing, planting, irrigation and harvesting. It had its own narrow-gauge railroad. It also had a processing plant with modern machinery. Some workers were entirely employed in the farm process; others had no agricultural employment but confined their work to mechanics, electricity and plumbing.

The supreme court held that railroad workers who hauled sugar cane from the fields to the processing plant and moved farm implements and field labourers from place to place were subject to the agricultural exemption. Employees who repaired mechanical equipment used in farming were also covered. Under the terms of the Fair Labor Standards act, employees in the sugar processing plant were not within the exemption, but they were specifically exempted from the overtime provisions of the act. (*Maneja v. Waialua Agricultural Company*, 349 U.S. 254.)

(M. DN.)

United Kingdom Legislation.—During 1955 less legislation of importance was undertaken than in any session since 1945, the general election being held in May, before there was time for the bulk of the legislation before parliament to have taken its course through both houses. The National Insurance act,



OPENING SESSION of the International Court of Justice, The Hague, Neth., Feb. 1955

1954, and the Children and Young Persons (Harmful Publications) act, 1955, were the most noteworthy of the bills to receive the royal assent before the dissolution in May. The former raised the rates of contribution to the national insurance scheme. The latter gave effect to widespread anxiety about a class of publication designed for children and young people and commonly known as "horror comics." The title of the act was "An Act to prevent the dissemination of certain pictorial publications harmful to children and young persons"; and section 1 stated that it applies to any book, magazine or other like work which is of a kind likely to fall into the hands of children or young persons and consists wholly or mainly of stories told in pictures (with or without the addition of written matter), being stories portraying (1) the commission of crimes; or (2) acts of violence or cruelty; or (3) incidents of a horrible or repulsive nature; in such a way that the work as a whole would tend to corrupt a child or young person into whose hands it might fall.

Section 2 rendered liable to imprisonment for a term not exceeding four months, or to a fine not exceeding £100, or to both, "a person who prints, publishes, sells or lets on hire a work to which this act applies, or has any such work in his possession for the purpose of selling or letting it on hire," subject to the defense that he had not examined the work and had no reasonable cause to suspect that it was one to which the act applied. Section 3 empowered a justice to issue a search warrant if satisfied by written information substantiated on oath that any person had in his possession or under his control copies of a work to which the act applied or plates for the purpose of reproducing such a work.

The County Courts act enacted since the opening of the new parliament in June had two main effects: (1) to increase the jurisdiction of county courts; and (2) to provide a right of appeal against findings of fact in county courts in the more important cases. As for the increase of jurisdiction, a financial limit of £400 in actions of contract or tort, or for money recoverable by statute, replaced a limit of £100 which could be raised to £200 if none of the parties objected. This was £100 more than the figure suggested by the committee on the practice and procedure of the supreme court, and it reflected in part the fall in the value of money since the previous limit was fixed in 1938, but also the increased confidence felt in the county court as a tribunal; and it embodied an effort to ensure that the costs of recovering and defending the smaller claims

before reserved for the high court should be proportionate to the issues involved, by means of the less complicated and expensive machinery of the county court. There were proportional extensions of the jurisdiction in other types of proceedings and the most controversial aspect was the extent to which parties bringing actions in the high court that were within the jurisdiction of the county court should be penalized in costs for so doing. Section 1(2) provided that where a party suing in the high court recovered less than £300, he should, with certain exceptions, recover costs only on the county court scale, and if he recovered less than £75 he should not be entitled to any costs of the action. The act also authorized the appointment of up to 20 additional judges to deal with the extended jurisdiction, and extended the powers of registrars.

Commonwealth Legislation.—*Canada.*—The Diplomatic Immunities (Commonwealth Countries) act, 1954 conferred on Commonwealth high commissioners, their official and domestic staffs, and their families, the same immunity from suit and legal process as foreign ambassadors, thus bringing Canada into line with other Commonwealth countries, which, except for Ceylon and Pakistan, had made similar provision. The Export and Import Permits act continued controls over exports and imports, especially in regard to strategic materials.

Australia.—Legislation was in progress, under the title of the South East Asia Collective Defence Treaty act, for the purpose of ratifying the Manila treaty. A measure of constitutional importance was the Australian Antarctic Territory act to provide for an adequate system of law in the Australian Antarctic territory. Previously it had been difficult to state with any precision what laws obtained. Henceforth, the laws from time to time in force in the Australian capital territory were to be applicable, though acts of the Commonwealth parliament were not to apply unless expressly stated to do so.

The Stevedoring Industry bill aroused bitter political controversy. First, it authorized the minister of labour and national service to appoint a committee of inquiry to examine the organization and operation of the waterfront industry. Secondly, it sought to vary the procedure by which men entered the stevedoring industry for employment on the waterfront—i.e., through the Waterside Workers federation.

The Nationality and Citizenship bill sought to simplify and expedite naturalization procedures; there had been more than 1,000,000 immigrants since the end of World War II. The Courts Martial Appeals bill was similar to the U.K. legislation constituting the Courts Martial Appeals court, though in A

lia the court, composed of civilian judges, is essentially part the same system as the courts-martial themselves.

In Queensland the Workers Compensation Amendment acts increased benefits, provided compensation for severe facial injuries, and enabled an injured worker to recover damages at common law and to receive compensation until the court made an award of damages, the compensation to be a first charge against the damages awarded. The Landlord and Tenant Acts Amendment act was passed to protect tenants being exploited by payment of rent charges and from being evicted from premises without an order of the court, by widening the definition of a lease. The Law Reform (Legitimacy of Children of Voidable Marriages) act provided that, where a voidable marriage had been annulled, any child who would have been legitimate had the marriage been dissolved (as distinct from annulled) should be deemed to be legitimate.

The chief feature of contemporary Australian legislation was the gradual freeing of rent controls. In western Australia the Landlord and Tenancies Emergency Provisions Act Amendment prevented control of rents and security from eviction from coming to an end in 1954 and was to remain in force until the end of 1955.

In New South Wales the Landlord and Tenant (Amendment) act freed all new construction of dwellings from rent control and from the control over evictions imposed by the Landlord and Tenant act; it provided that premises previously in existence but not hitherto let were also excluded from control.

The Landlord and Tenant (Control of Rents) Amendment act in South Australia provided that: "(1) business premises within this state are free of control both of rents and evictions; (2) where there is a written lease of a dwellinghouse for a period of two years or more, there is to be freedom of control over both rents and evictions." In Victoria and Tasmania similar legislation was introduced.

The Inquiry Agents Licensing act passed in western Australia dealt with persons who undertake to obtain evidence for reparation for the purposes of divorce or married women's protection cases. Of wider general interest was the Crimes (Amendment) act, which abolished the death penalty for murder and treason, though not for treason, passed in New South Wales.

South Africa.—The main interest of legislative developments in South Africa still turned on giving effect to the government's policy as to the proper relationship between Europeans and non-Europeans. The main effect of the South-West Africa Native Affairs Administration act was to transfer to the minister of native affairs full control over native affairs in this territory. The government spokesmen had to claim: (1) that they had no intention of depriving the territory of native labour for the benefit of the union; (2) that the measure would not enlarge the rights of the union government over land or mineral rights in native areas; and (3) that it had been proposed on the initiative of the representatives of South-West Africa themselves. This measure was criticized as "piecemeal integration" of the territory with the union.

The latest phase in the political battle by which the government was seeking the necessary majority to give effect to the policy of *apartheid* was embodied in the senate bill, which provided three major changes in the constitution of the senate: (1) the alteration of the ratio of seats in the assembly to those in the senate from three to one to two to one; (2) the election of members of the senate by direct vote instead of transferable vote; (3) the abolition of equal representation of the provinces in the senate and the substitution of a system of moral representation of the voters throughout the union.

New Zealand.—The Child Welfare Amendment act (no. 2) supplemented with the Indecent Publications Amendment act and the

Police Offences Amendment act (dealing with the sale of contraceptives to children under 16), reflected public anxiety about the moral education and welfare of the young. The Social Security Amendment act enacted certain increases in benefit consequent upon the Court of Arbitration's award and increased orphans' benefit.

India.—The Hindu Marriage bill was a somewhat revolutionary measure, the main objects of which were: (1) to fix the minimum age of marriage for girls at 15 and for boys at 18; (2) to prohibit polygamy, the wives of polygamous Hindu marriages solemnized before the commencement of the bill being given the choice of divorce; (3) to make new provisions for divorce, judicial separation and alimony. The Constitution (Fourth Amendment) bill (in article 31) further defined the state's power to require and requisition private property.

Pakistan.—Some important constitutional legislation included the Validation of Laws bill, designed to validate 35 out of 44 acts passed at a time when the federal court had held that there was no lawful legislature; the Representation of States and Tribal Areas bill, providing for such representation in the constituent assembly; and the Establishment of West Pakistan bill, including in that province East Bengal and certain other territories. The latter provided for the allocation of seats as between the different communities in each provincial legislature, the Moslems being predominant in both.

Ceylon.—The Hospital Lotteries bill set up a state lottery for the benefit of the hospital services, and the Imports and Exports Control bill made permanent provision for certain economic controls previously set up under defense regulations.

Federation of Rhodesia and Nyasaland.—Two measures for the benefit of children, the Children's Protection and Adoption Amendment act and the Births and Deaths Registration Amendment act, were passed. Of greater importance was the Federal Supreme Court act which set up a federal supreme court despite the fact that Southern Rhodesia has a Roman Dutch system of law, whereas Northern Rhodesia and Nyasaland have English law modified by local statutes. The English law of evidence as at July 1, 1955, was to apply throughout the federation. The Defence act, in part a consolidating measure, was based on legislation in force in Southern and Northern Rhodesia and Nyasaland and on the U.K. Army and Air Force acts. It made six months' peacetime training obligatory on resident Europeans between the ages of 18 and 30, leaving Africans free to volunteer for service as regular soldiers only.

United Kingdom Case Law.—In *Richard Thomas & Baldwins Ltd. v. Cummings* (1955 2 Weekly Law Reports 293) employers were held not to be liable for injuries caused to a workman in helping adjust a machine which should have been fenced if in motion and use, where the machine had been halted for purposes of repair. In *Martell v. Consett Iron Co.* (1955 2 W.L.R. 463) the court of appeal held that the law of maintenance did not prevent an association for the protection of the rights of owners and occupiers of fisheries from supporting an action by members of the association claiming that their fishery was being polluted by effluents from the defendants' ironworks. In *Carmarthenshire County Council v. Lewis* (1955 2 W.L.R. 517) the house of lords held the council to be responsible for an accident caused by a child at a nursery school conducted by the council. The child was left unattended in an emergency and strayed onto a highway, where the plaintiff's husband met his death in trying to avoid hitting him with his truck. In *Morelle Ltd. v. Wakeling* (1955 2 W.L.R. 672) the court of appeal held that transfer of leasehold interests in land to a foreign corporation automatically forfeited those interests to the crown and that the crown was liable on the covenants to the lessees. In *Prince Ernest of Hanover v. Attorney-General* (1955 3

W.L.R. 613) Justice Vaisey refused a declaration that the plaintiff was a British subject by virtue of a statute of 1705 for the naturalization of Princess Sophia "and the issue of her body, and all persons lineally descending from her, born or hereafter to be born." This decision was reversed unanimously by the court of appeal (1955 3 *W.L.R.*) and the crown was granted leave to appeal to the house of lords. In *Attorney-General for New South Wales v. Perpetual Trustee Co.* (1955 2 *W.L.R.* 707) the privy council held that the government of New South Wales, unlike the employer of a domestic servant, could not sue for the loss of the services of a police constable caused by the tortious act of a wrongdoer. In *Bonsor v. Musicians Union* (1955 3 *W.L.R.*) the house of lords, overruling the court of appeal in *Kelly v. National Society of Operative Printers and Assistants* (1915 31 *Times Law Report* 632), held that a trade union, though not an incorporated body, was capable of entering into contracts and of being sued as a legal entity, distinct from its individual members.

The court of criminal appeal ruled in *R. v. Dent* (1955 3 *W.L.R.* 297) that a promise as to future conduct not intended to be kept was not by itself a false pretense. (W. T. WE.)

(See also AGRICULTURE; BANKING; CIVIL AERONAUTICS ADMINISTRATION; CIVIL SERVICE; CONSUMER CREDIT; EDUCATION; INTERNATIONAL LAW; NATIONAL LABOR RELATIONS BOARD; PUBLIC UTILITIES; TAXATION.)

Lawn Bowling. The annual national tournament of the American Lawn Bowling association was, for the first time, held on nongrass courts, having been played on "marl" courts at Orlando, Fla., Feb. 28–March 5, 1955.

Trebles (Three-Man Teams).—The Rettie Memorial trophy was won by Alex L. Ripley (skip), John Chisholm and Isaac Balmain of the New York Lawn Bowling club. Winners of the Chicago cup were Weston Krupp (skip), Stewart Tulloch and Hugh Burgess of St. Petersburg, Fla. The Wisconsin cup went to Frank C. Wilson (skip), John W. Stewart and J. E. Smith of the London, Ont., Elmwood club.

Doubles.—The California trophy also went to Frank C. Wilson and J. E. Smith of London, Ont. The Lakeside trophy was taken by R. W. Sendker and Jack Stewart from the St. Petersburg, Fla., Lawn Bowling club. The Western New York trophy was carried off by James Candelet and Robert Smart of the Smithfield Ave. Lawn Bowling club, Pawtucket, R.I.

Singles.—Harry Hope of the St. Petersburg, Fla., Lawn Bowling club won the National Open Singles trophy, while the Metropolitan trophy was taken by Frank C. Wilson of the Elmwood club, London, Ont.

The annual meeting of the A.L.B.A.'s national council was held at Orlando prior to the national tournament, when it was decided that the 1956 event should be at Hartford, Conn., Aug. 6–11.

In Canada, for the first time in history, an all-Canadian Championships tournament was played at Hamilton, Ont., Aug. 29–31, with champions in rinks, doubles and singles participating from each Canadian province under round-robin play. The 16th International Match between six selected rinks each from the Ontario association and the A.L.B.A. eastern division was held on Aug. 6, on the green of the Royal Canadian Yacht club at its island home in Lake Ontario, off the city of Toronto. The Canadians won 129–124. (L. PR.)

Lawn Tennis: see TENNIS.

Laxness, Halldór Kiljan (1902–), Icelandic writer, was born at Reykjavik. April 23. He was awarded the 1955 Nobel prize for literature for

"his vivid epic writing, which has renewed the great narrative art of Iceland." He wrote his first book, a romantic peasant novel, at the age of 17, but his style was still quite impersonal. His youth was spent in a restless searching, a roving life in postwar Europe which led to a monastery in Luxembourg and baptism in the Roman Catholic Church. He remained abroad, in France and America, and during this time the religious commandment to love one's neighbour took on political significance for him when he made the acquaintance of Communism, whose ideas formed a recurrent pattern in his subsequent work. In 1930 he settled down on his native island, where, in quick succession, he completed the mature and important works which laid the foundation of his position as Iceland's leading author: *Salka Valka*, which describes, in vigorous and realistic strokes, life in an Icelandic fishing village with a woman's tragedy as the main theme; *Free Men*, a moving epic about the Icelandic small holder's struggle against nature and the community for his right to exist as a free human being; *The History of Iceland*, which, in graphic scenes, deals with a dark phase of the island's history under Danish rule in the 18th century; *Gerpla*, his most recent work up to 1955, is set in the Viking age and may be regarded as an ironic pastiche on the Icelandic sagas. A regenerator of language, Laxness restored his Icelandic mother tongue as a sensitive instrument for great story telling. (A. L. BR.)

Lead. Data on world smelter production and on the lead industry in the United States, shown in Tables I and II, are based on reports by the U.S. bureau of mines. World output of lead in 1954 increased slightly from that of 1953.

United States.—Lead production in the United States was less in 1954 than in 1953, and supplies continued to be more than ample for demand.

In 1955, subsequent to the strikes at refineries in July, pro-

Table I.—World Smelter Production of Lead
(Thousands of short tons)

	1948	1949	1950	1951	1952	1953	1954
Argentina . . .	22.5	19.9	20.9	26.2	21.8	14.3	21.2
Australia . . .	178.6	168.1	179.8	185.6	175.4	193.2	222.1
Belgium . . .	72.8	87.4	68.4	80.3	87.6	84.2	71.7
Canada . . .	160.1	146.2	170.4	162.7	183.4	166.4	166.4
France . . .	42.2	60.0	70.7	54.0	56.8	60.4	60.4
Germany . . .	54.4	71.2	86.6	102.3	122.0	143.0	143.0
Italy . . .	29.5	29.0	41.3	40.2	37.8	41.9	41.9
Japan . . .	7.6	8.5	11.0	11.8	16.7	19.5	21.2
Mexico . . .	206.2	233.7	254.4	241.5	261.7	237.0	237.0
Peru . . .	37.8	39.7	34.9	48.8	53.6	65.0	65.0
Spain . . .	27.9	36.4	44.7	49.3	51.3	56.5	60.4
U.S.S.R. . . .	83.9	99.9	123.9	141.5*	170.9	202.9	222.1
U.S. . . .	400.2	475.9	505.0	414.6	472.5	467.7	488.8
Yugoslavia . .	54.2	62.6	63.1	66.2	74.1	78.0	78.0
Total . . .	1,504	1,648	1,810	1,770	1,940	2,010	2,010

duction was resumed about the middle of August, which brought the total for the first eight months to 305,410 short tons. This was 5% less than production in the first eight months of 1954. Production of recoverable lead in the eight-month period

Table II.—Data of Lead Industry in the U.S.
(Thousands of short tons)

	1948	1949	1950	1951	1952	1953	1954
Mine output . .	390.5	409.9	430.8	388.2	390.2	341.9	341.9
Refinery output .	406.7	477.3	508.3	417.7	472.8	472.1	472.1
Domestic ores . .	339.4	404.4	418.8	342.6	383.4	328.0	328.0
Foreign ores . .	67.3	72.9	89.5	75.1	89.5	139.9	139.9
Imports . . .	348.0	400.5	441.8	257.9	628.1	552.3	552.3
Exports . . .	0.4	1.0	2.7	1.3	1.8	0.8	0.8
Secondary . . .	500.1	412.2	482.3	518.1	471.3	486.7	486.7
Consumption . .	1,133.9	957.7	1,238.0	1,184.8	1,130.8	1,201.6	1,201.6
Stocks, year-end							
Producers . . .	146.8	201.5	137.7	82.0	87.8	65.0	65.0
Consumers . . .	119.2	97.3	139.9	102.8	122.5	113.8	113.8

*Preliminary.

1955 totalled 223,499 short tons and imports were about 285,000 tons.

Canada.—Production of refined lead in the first half of 1955 totalled 78,265 short tons.

Mexico.—Output of lead (metal content) in the first half

55 totalled 111,195 short tons. In March 1955, the Angangued, silver and zinc mine in Michoacan resumed operations after two years' idleness. (See also MINERAL AND METAL PRODUCTION AND PRICES.) (F. E. H.; B. B. M.)

League of Women Voters of the United States: see SOCIETIES AND ASSOCIATIONS, U.S.

Lebanon. Lebanon is an Arab republic bounded west by the Mediterranean, north and east by Syria and south and southeast by Israel. Area: 4,015 sq.mi. Pop. (1954 est.): 83,000 (Lebanese nationals only). Language: Arabic 90%; French, Armenian, Greek, etc. also spoken. Religion: Christian (more than half are Maronites, in communion with the pope); Moslem 44%. Chief towns (pop. 1953 est.): Beirut (p.) 400,000; Tripoli 140,000; Saida 60,000; Zahle 30,000. President of the republic, Camille Shamun. Prime ministers in 1955: Sami Solh and (from Sept. 19) Rashid Karamah.

History.—In Jan. 1955 the Turkish prime minister, Adnan Menderes, visited Beirut and invited Lebanon to join the Turco-Iraqi pact. He stressed that Israel was excluded and that he hoped to conclude trade agreements with all Arab states. Lebanon, however, refused to contemplate independent action outside the Arab league and offered its mediation between Egypt and Iraq. But when Egypt later invited Lebanon to join the new Arab Security treaty and the proposed Egyptian-Syrian agreement, the Lebanese government only gave assurances that it would conclude no separate peace with Israel. It stated that it preferred to remain neutral between the Egyptians and the Syrians. Nevertheless, after the official visit of the Lebanese president, Camille Shamur, to Turkey in April, the Saudi Arabian government threatened reprisals if Lebanon continued to try to draw Syria and Jordan into the Turco-Iraqi treaty.

In August there was a country-wide strike in protest against French action in Morocco.

In September the prime minister, Sami Solh, resigned following a cabinet crisis over his domestic policy. He was succeeded by Rashid Karamah.

In August the International Bank for Reconstruction and Development sanctioned a loan of \$27,000,000 for the Litani river project; but later Lebanon rejected Eric Johnston's plans for joint Syrian, Jordan, Lebanese and Israeli exploitation of the river water. In September the government decided that modifications to meet its demand for the reservation of Lebanese power within the country must be referred to the Arab league. See A. H. Hourani, *Syria and Lebanon: a Political Essay* (London, 1954; O. M. T.).

Education.—(1952) Government schools: primary 1,017, pupils 92,764; secondary 3, pupils 250; vocational 8, pupils 1,200; 1 teachers' training college, students 29. Private schools, all grades: 818, pupils 55,000; foreign schools 230, pupils 30,000. Institutions of higher education 6, including 3 universities with 3,537 students in 1953 (about 850 students in remaining institutions).

Finance and Banking.—Monetary unit: Lebanese pound, with a free exchange rate of L.L. 3.23 to the U.S. \$1. Budget (1954 est.): balanced at \$123,400,000. Currency circulation (Feb. 1955) L.L. 247,000,000; in 1954, L.L. 223,000,000. Bank deposits (Dec. 1954) L.L. 366,000,000. (June 1954, L.L. 334,000,000). Gold and foreign exchange (July 1954) \$75,380,000, (July 1955, \$83,410,000).

Foreign Trade.—(1954) Imports L.L. 484,400,000; exports L.L. 105,000,000. Main sources of imports: Syria 22%; U.K. 18%; other continental E.P.U. (European Payments union countries) 19%; U.S. and Canada 15%; France 8%; main destinations of exports: Syria 14%; U.S. and Canada 6%; U.K. 4%; France 4%; other continental E.P.U. 1%; Saudi Arabia (11% in 1953); Egypt (7% in 1953). Main exports (1954): citrus fruit, apples and bananas 15.8%; pulses 9.7%; onions 9%; textiles (1953) 9%.

Transport and Communications.—Roads (1949) 2,464 km. Motor vehicles in use (Dec. 1953): cars 16,658, commercial vehicles 4,186. Railways: (1954) Syria-Lebanon routes 774 km., of which 191 km. owned by the Lebanese government. Telephones (Jan. 1954): 24,368. Radio receivers (1954): 52,021.

Agriculture.—Main crops (metric tons, 1954): wheat 60,000; lentils 10,000; olive oil 6,000; grapes 80,000; figs 20,000; onions (exports) 28,000; bananas (exports) 6,275, (production, 1952) 17,000; (1953), oranges, etc. 65,000; lemons, etc. 35,000; (1952), broad beans 7,000;

chick-peas 2,000; dry beans 5,000; raisins (1951) 1,000. Livestock: (1954 est.) cattle 25,000; sheep 20,000; horses, mules and asses 40,000; goats 500,000.

Industry.—Production (metric tons, 1953): cotton yarn 3,000; cotton fabrics 1,700; rayon fabrics 2,200,000 metres; woollen fabrics 350,000 metres; electricity 164,000,000 kw.hr.; cement (1954) 325,800 metric tons.

Leeward Islands. This British colony is composed of four presidencies, a group of islands forming the northern part of the Lesser Antilles in the Caribbean. Their areas, populations and capital cities are:

Presidency	Area (sq.mi.)	Population (1946 census)	Population (1954 est.)	Capital (pop., 1954 est.)
Antigua	170*	41,757	50,908	St. John's† 12,500
St. Kitts-Nevis-Anguilla	153‡	46,243	53,598	Basseterre 14,000
Montserrat	32	14,333	14,145	Plymouth 2,500
British Virgin Islands	67	6,505	7,630	Road Town 1,000
	422	108,838	126,281	

*Incl. Barbuda (62 sq.mi.), Redonda (0.5 sq.mi.), dependencies. †Seat of governor. ‡Properly St. Christopher. §Incl. Sombrero, dependency.

Population, mainly Negro. Language: English. Religion: Christian. Governor in 1955, Sir Kenneth Blackburne; administrators, Lieut. Col. A. Lovelace (Antigua), H. Burrowes (St. Kitts); commissioners, C. Ross (Montserrat), Lieut. Col. Hon. H. A. C. Howard (Virgin Islands).

History.—Princess Margaret visited Antigua and St. Kitts in Feb. 1955.

In Antigua drought conditions persisted to some extent until midyear and sugar output totalled only 19,725 tons. In St. Kitts-Nevis production rose to 49,356 tons. Nevertheless, in Antigua a record sea-island cotton crop was reaped totalling 1,208,814 lb. clean lint, and about 462,500 lb. clean lint were produced in Nevis. The cotton crop in Montserrat fell to 254,600 lb., weather and other conditions precluding the picking of a second crop. Exports of cattle from the Virgin Islands increased during 1955 but exports of small stock decreased.

It was announced late in 1954 that the federation of the Lee-



L. J. ALFONSO, police captain, Antigua, leading cheers as Princess Margaret Rose of Great Britain was welcomed to a children's rally on the island Feb. 14, 1955

ward Islands constituted in 1871 would be brought to an end (probably in 1956) and that the ministerial system of government would be introduced in Antigua and St. Kitts-Nevis-Anguilla. General elections were held in Montserrat in March, all five constituencies returning Labour members.

Hurricane "Alice" struck Anguilla in January, causing much damage to shipping and housing. There was a steady stream of emigrants to the United Kingdom during 1955. (P. D. Md.)

Education.—Schools (1953); pupils in parentheses:

	Primary	Secondary
Antigua	37 (10,574)	5 (2,496)
St. Kitts-Nevis-Anguilla	33 (10,339)	4 (805)
Montserrat	14* (3,296)	1* (144)
Virgin Islands	13* (1,826)	1* (119)

*1952.

A teachers' training college for women at Antigua (33 students in 1953) and the University college of the West Indies, Jamaica, serve all the Leeward Islands.

Finance and Trade.—Monetary unit: British West Indian dollar, valued in 1955 at 58.33 cents U.S.

	Budget (1953 actual)		Foreign trade 1954
	Revenue	Expenditure	
Antigua	£1,173,000	£1,173,000	Imports
St. Kitts-Nevis-Anguilla	£904,000	£925,000	£3,260,000
Montserrat	£177,097	£175,507	Exports
Virgin Islands	£118,000	£119,000	£2,600,000

Antigua, Montserrat and the Virgin Is. received in 1953 from the U.K. government grants-in-aid of administration, which are included under revenue.

Principal exports (1954): sugar (Antigua) 11,100 long tons, (St. Kitts) 47,000 long tons (production, all islands 73,815 long tons); sea island cotton 1,170,000 lb. Other products: molasses, tomatoes, salt, limes and fruits. Main destination of exports: U.K.; main source of imports: U.K. and other Commonwealth countries.

Legislation: see LAW; TAXATION; UNITED STATES. See also articles on individual nations and U.S. states.

Lemons: see FRUIT.

Leukemia: see BLOOD, DISEASES OF THE.

Liberia. Liberia lies on the southwest coast of Africa and is bounded by Sierra Leone (British) and the French overseas territories of the Ivory Coast and Guinea. It is one of the continent's five independent countries and its only republic. It has an area of approximately 43,000 sq.mi. and a population estimated at about 1,250,000 in 1954. The capital and largest city, Monrovia (pop. 45,000 estimated in 1955), has a modern port and an international airport about 50 mi. away.

English is the official language, but most of the tribes continue to speak their own languages and dialects of which there are about 25. Although paganism still exists, many of the tribesmen are Christians as a result of the extensive missionary efforts. Islam is reputedly making inroads, particularly in the north.

President in 1955: William V. S. Tubman.

History.—In May 1955 Pres. William V. S. Tubman, as the candidate for the True Whig party, was re-elected for a third term by a majority of 99.5% of the vote; his opponent was Edwin Barclay, a former president, who ran as a candidate of a newly organized Independent True Whig party. The opposition to President Tubman was critical of his "open door" policy with regard to foreign investments and his internal "unification" policy. On June 22 an unsuccessful attempt on the president's life was made at an official reception and, subsequently, leaders of the Independent True Whig party, but not Barclay, were arrested. Barclay unsuccessfully contested the re-election of President Tubman by an appeal to the legislature, which met in extraordinary session.

In Jan. 1955 the government obtained a \$15,000,000 loan from the Export-Import Bank of Washington, D.C., for continued development of its highway network.

In addition to the Liberian government's economic development plan, foreign investors continued to show interest in Liberia and development work by several significant concession-

aires started during 1955. Although private investment in United States firms remained paramount, private Swedish, German and Swiss investments were also made. (A. J. Dr.)

Education.—On Dec. 31, 1953, Liberia had 484 schools, of which 24 were government elementary schools, 150 mission elementary schools, philanthropic and private schools, 14 schools maintained by Firestone Plantations company, 5 government and 10 mission high schools. There were also two colleges and one university. School enrolment totalled about 43,000 in 1954.

Finance.—The monetary unit is the U.S. dollar supplemented by Liberian fractional coins. Actual revenue in 1954 was \$11,923,585; expenditure, \$14,006,150. The 1955 budget estimated expenditure at \$12,796,400. The public debt, external and internal, totalled \$6,342,483 on Dec. 31, 1954.

Trade and Communications.—Exports in 1954 totalled \$26,378,100; imports, \$22,723,500. Leading exports were rubber (71%), iron ore (17%), palm kernels (4%) and cacao (2%). Leading customers were the U.S. (84%), the Netherlands (7%), the U.K. (3%) and western Germany (3%); leading suppliers, the U.S. (67%), the U.K. (10%), the Netherlands (7%) and western Germany (7%).

There are 39 mi. of private railway and about 720 mi. of roads. Jan. 1, 1955, there were 1,418 automobiles and 1,349 trucks and Jan. 1, 1954, 487 telephones, all in Monrovia. According to *Lloyd's Register of Shipping*, 245 vessels (100 tons and more) aggregating 2,381,000 gross tons were registered under the Liberian flag on June 30, 1954.

Production.—Agricultural exports in 1954 included rubber 80,947 lb.; palm kernels 24,725,300 lb.; cacao 1,164,200 lb.; coffee 601,400 lb. piassava 3,639,100 lb. In that year 1,238,521 long tons of iron ore were exported. (J. W. Mw.)

Libraries. In the most spectacular library event of the year in the United States, 98 bookmobiles set out to carry library service to the rural areas of Kentucky. This campaign climaxed an 18-month campaign to raise funds for trucks and to collect books, characterized by generous offers of volunteer help and donations of 600,000 volumes. Begun with such enthusiasm, the project promised some library service to 40% of Kentuckians who had been without libraries.

Elsewhere librarians gathered political allies in traditional attempts to secure state and federal appropriations for extending public library service to unserved areas. On the third day of the 84th congress, Sen. Lister Hill of Alabama again presented his Library Services bill, with the joint sponsorship of 12 other senators. Shortly thereafter 27 representatives introduced identical bills in the house.

The bill aimed to make \$7,500,000 of federal funds available yearly for five years to state library extension agencies on a basic and matched grant basis for extending public library service to unserved or inadequately served rural areas. It featured a new definition of a rural area as being an incorporated or unincorporated place of 10,000 or less population. Any state extension agency could qualify for a grant upon the submission of an acceptable plan to the U.S. commissioner of education if it had not currently reduced its own extension budget. Hearings before the house labour and education committee resulted in a 20 to 9 vote to report out of committee H.R. 2840 sponsored by Rep. Edith Green of Oregon. This was the first time a library services bill had reached the floor of congress since 1950 when the house rejected a similar bill by three votes.

Adult education forces organized to act on the reports and discussions of 1954. The American Library association received a grant of \$200,000 from the Fund for Adult Education to pilot long-term education programs in libraries. State library agencies in Kansas, Maryland, Michigan and Tennessee were awarded two-year grants from the fund to help them develop long-term adult education programs based on analysis of community needs. The Brooklyn Public library, Brooklyn, N.Y., received an \$80,000 grant from the Carnegie corporation to conduct a five-year program for the improvement of adult reading.

Acquisitions of Materials.—The microfilm duplication of the Vatican library holdings for the library of St. Louis university, St. Louis, Mo., proceeded and the university began a campaign for \$4,500,000 to erect a new library building to house the collection. Another microphotographic effort at the Uni-

of Rochester, N.Y., aimed to make a comprehensive micro-collection of Canadiana.

collections of the private and official papers of noted Americans continued to make news. The papers of four generations of the Adams family at Quincy, Mass., were placed at the disposal of scholars to be edited and published and microfilmed in research libraries. Ground was broken for the Harry S. Truman library to house the papers of the former president. The papers of Franklin D. Roosevelt as governor of New York were turned over to the New York State library which in return microfilm copies placed them on permanent loan at the Roosevelt library at Hyde Park, N.Y. Among the notable additions to the collections of the Library of Congress were 27,000 papers of Clara Barton. The University of California at Berkeley added to its leading Mark Twain collection the recently discovered Anita Moffit papers.

Libraries throughout the country reported the acquisition of important single items and of whole collections. The purchase by the University of Kansas, Lawrence, of several thousand books on economics and sociology and by the University of Miami, Coral Gables, Fla., of the 20,000-volume library of the Society of Western Engineers from the John Crerar library, Chicago, Ill., were not only important additions to those libraries but also illustrated the narrowed collecting policies of Crerar. Other reported acquisitions worthy of mention were: the Sigurd Romberg collection of 4,000 vocal scores, University of California, Berkeley; the Charles Driscoll collection of 1,200 books on piracy, Wichita (Kan.) City library; 130,000 photographs of Spanish and British documents about Florida, University of Florida, Gainesville; 11,000 Spanish plays, Northwestern University, Evanston, Ill.; the Felix H. Kuntz collection on Louisiana, Tulane university, New Orleans, La.; and the Chauncey H. Griffith typographical collection, University of Kentucky, Lexington.

Attention was turned to the collections of liberal arts collections by an award of \$30,000 made by the United States Steel Foundation to the Association of College and Research Libraries. Subgrants to college libraries to strengthen their collections. The Old Dominion foundation donated 1,600 of the 54-volume set of *Great Books of the Western World* to be awarded by A.L.A. to qualified libraries.

Appointments.—America's largest public library acquired a new head during the year. Appointed director of the New York Public library was Edward Freehafer (succeeded as chief, reference department, by Rutherford D. Rogers). Raymond C. Quist was appointed director at Cleveland, O. Other new appointments were: Ernest I. Miller, Cincinnati and Hamilton counties, Ohio; James D. Meeks, Dallas, Tex.; C. Lamar Willis, Richmond, Va.; and Robert D. Franklin, Toledo, O.

Kenneth M. Setton became the director of the University of Pennsylvania (Philadelphia) libraries. Other university libraries reporting new heads were: Baylor, Waco, Tex., Roscoe Rouse; Louisiana State, Baton Rouge, Sidney B. Smith; North Carolina State, Grand Forks, J. R. Ashton; Pittsburgh, Pa., Lorena A. Koch; Richmond, Va., Ray Frantz; Southern Illinois, Carbondale, Ralph McCoy; and Vermont, Burlington, Morrison C. Giland. Foster Mohrhardt became librarian of the U.S. department of agriculture. James T. Dunn went to the Minnesota Historical Society library.

Luiz Borba Alvaes de Moraes assumed directorship of the United Nations library.

Awards and Citations.—Award winners indicate the qualifications and achievements valued in American librarianship in 1955.

\$500 Lippincott award for distinguished service went to William Greenaway, director, Philadelphia (Pa.) Free library, for his achievements in reorganizing, building the staff and



MODERN BRICK AND GLASS library opened in Cincinnati, O., in 1955

improving the services of his institution. The Melvil Dewey medal for creative professional achievement was awarded to Maurice F. Tauber, Melvil Dewey professor at the Columbia university school of library service, with special citation to his book on *Technical Services in Libraries* and to his editorship of *College and Research Libraries*. The Kentucky library extension division won the \$100 Letter Library award for humanitarian achievement for its bookmobile project. Helen Margaret Harris, librarian of the Lawson McGhee library, Knoxville, Tenn., received the \$100 Letter Librarian award for the warm, outgoing and courageous manner in which she had served the profession in a wide variety of library positions and in important library association activities.

Restricted awards were as follows: \$500 Grolier society award, Mrs. Charlemae Rollins, children's librarian, Chicago (Ill.) Public library, who, according to her citation, "has led thousands of children to read good books" and "has inspired and encouraged many authors to write better books for children"; the Margaret Mann citation for outstanding achievement in cataloging, Seymour Lubetzky, consultant on bibliographic and cataloging policy, Library of Congress, for his revision of cataloging rules; the Oberley Memorial fund award, biennially for the best bibliography of agriculture and related sciences, Arthur and Elizabeth Roe, Pennsylvania State university, University Park, for their *Distillation Literature, Index and Abstracts 1946-52*; the \$1,000 E. P. Dutton-John Macrae award, for advanced study in the field of library work for children and young people, Mrs. Barbara Davis Widem for her proposal to study at the graduate library school, The University of Chicago, focusing research on the role of the children's library consultant in the state library agency; Trustee citations, Ralph D. Remley, Montgomery county library board, Rockville, Md., with special reference to his share in framing the Maryland county library law and his work on library personnel classification, and Mrs. George Rodney Wallace, Fitchburg, Mass., library board, with special mention of her leadership in giving Fitchburg a nationally famous youth library.

The Newbery medal for the outstanding children's book of the year went to Meindert DeJong for *The Wheel on the School*. Marcia Brown received the Caldecott medal awarded to the best illustrated children's book for her *Cinderella*. The Association of Young People's Librarians received the annual Norman Bassett foundation award of \$1,000.

Intellectual Freedom.—Attention turned to censorship in school libraries when a national television program, "See It Now," produced by Edward R. Murrow, shed light on the circumstances surrounding the withdrawal of books from school

libraries in Los Angeles, Calif., and revealed the pressures put on school librarians. At the Philadelphia conference the Association of School Librarians adopted a statement of a "School Library Bill of Rights." The school librarians expressed their concern with the development of responsible citizens in the great American tradition and asserted their responsibility for providing materials for enriching the curriculum, stimulating intellectual growth, supplying background information, shedding light on controversial issues and interpreting the diverse cultural backgrounds of Americans, all without prejudice and according to high principles. The A.L.A. council endorsed the stand.

The Committee on Intellectual Freedom received a grant from the Fund for the Republic to permit it to widen its scope in battling the still considerable forces attacking libraries' freedom of book selection.

Postal authorities replied to complaints from research libraries about the censoring, delaying and withholding of foreign purchases that they were operating under the authority of the 1940 Foreign Agents Registration act and invited research libraries to apply for the privilege of exemption from the censorship of foreign propaganda.

Library Education.—American libraries and library schools were selected by the U.S. department of state to carry out a project in international education. Twenty-seven experienced foreign librarians were brought to the United States for a five-month program of study and observation lasting from February to July. The program, planned jointly by the international educational exchange service of the department of state and the International Relations board of the A.L.A., included a week of orientation in Washington, D.C., a three-week seminar at a library school, a three-month internship in a selected library and a month for touring American libraries. Fifteen public librarians, mostly from European countries, participated in the preliminary seminar at the library school of Simmons college, Boston, Mass. Twelve university librarians from India participated in the seminar at the graduate library school, The University of Chicago. The Indian librarians were the first educational beneficiaries of the India Wheat Loan act and their program of studies was being carefully studied by the department of state.

On the domestic scene the library schools continued their efforts to supply qualified candidates for the positions opening in rapidly expanding libraries. Although there was a slight increase of enrolment in the schools, the best efforts of the educators still were not able to meet the demands for librarians, in some schools the requests for candidates running as high as 15 times the number of graduates available. This continuing crucial situation had resulted in some increase in average beginning salaries for librarians, but had not brought forth any radical new plans of library education, training or job classification.

Some significant developments occurred in the programs of instruction in library schools. Western Reserve university, Cleveland, O., announced the establishment of a centre for documentation research with a manifold program of conducting research, offering contract service to organizations, publicizing developments, offering workshops and conducting classes and seminars.

(See also AMERICAN LIBRARY ASSOCIATION; SOCIETIES AND ASSOCIATIONS, U.S.) (H. W. WR.)

International.—The event of 1955 was the International Congress of Libraries and Documentation Centres, which, with a number of allied meetings held at the same period, brought together more than 1,200 librarians and documentalists in Brussels, Belg., during the second and third weeks of September. The congress gave a positive impetus to the co-ordination

of the specialized work of the various international bodies, urged that there should be constant consultation at all levels between public and other kinds of libraries and passed a resolution emphasizing the responsibility of public authorities to organize national library services systematically. In bibliography, the congress recommended that the United Nations and its specialized agencies should assume leadership in the co-ordination of subject bibliography within their respective sub-fields.

The third International Congress of Libraries was organized by the International Federation of Library Associations. Among the subjects treated were: the international exchange of publications, with special reference to the proposal of the United Nations Educational, Scientific and Cultural Organization (UNESCO) to organize in 1956 a meeting of experts to consider the possible revision of the Brussels convention of 1886; the special problems of large national and research libraries; public library questions, including work with reading the use of audiovisual materials and libraries for children, hospitals and the blind.

The 22nd International Conference on Documentation, organized by the International Federation for Documentation, discussed among other things the exchange of information, professional training and the influence of documentation on productivity. Revision of the universal decimal classification was continued. The development was urged of specialized courses for training in documentation methods in all countries.

A new association, the International Association of Agricultural Librarians and Documentalists, was constituted and medical librarians decided to form their own association on similar lines.

The fourth International Congress of Music Libraries studied the training and status of music librarians and a number of special problems connected with libraries of recorded music and the music libraries of broadcasting organizations.

At the conclusion of this series of meetings at Brussels a meeting was held of the bibliographical group of the documentation committee of the International Organization for Standardization.

The program of UNESCO for the period 1955-56 developed and extended the work of previous years. The system of "associated projects," by which a small number of important public libraries and library schools doing pioneer work in their fields received support from UNESCO, was enlarged to include national and academic libraries and bibliographical and exchange centres. This system was designed to collect and make generally available the results of significant experimental work which UNESCO might be able to assist by small grants or advice; among more important institutions already in the scheme in 1955 were the Delhi (Ind.) Public library and the International Youth library at Munich, Ger.

The International Advisory Committee on Bibliography, at a meeting in UNESCO house, Paris, Fr., on June 13-17, discussed major questions of policy relating to the whole of UNESCO's future bibliographical programs. It recommended increased co-operation to member states in the establishment of national bibliographical services, the co-ordination of national services and the provision where practicable of regional ones and the holding in 1957-1958 of a seminar to study national library organization and work. Reaffirming its conviction that UNESCO should commission and publish bibliographies itself only when no other means existed, the committee put forward criteria to guide UNESCO in its choice of publications or organizations to be supported. The steadily developing system of granting contracts or conventions wherever possible to compilers or associations for subject bibliographies would leave only such work as involved

cial factors of international or regional co-operation, together with bibliographical publications necessary for UNESCO's own work, to be done by UNESCO. The committee also suggested methods of improving the international character of specialized bibliographies published with UNESCO support and recommended the preparation of a special study on the principles and techniques governing the preparation of international specialized bibliographies.

UNESCO organized a seminar on public library development in Asia at the Delhi Public library, Oct. 6–26, to which representatives of 19 countries and territories in Asia and the Pacific were invited.

Important changes were made in the arrangements for the international exchange of publications. From January, national exchange centres in 16 countries took over from UNESCO the "main responsibility" for supplying information on international exchanges within the countries concerned, and further countries were to be added as soon as their national centres were ready to undertake this work. Moreover, the World Health Organization (WHO) in Geneva, Switz., relieved UNESCO of the task of providing a central information service on exchanges for medical libraries. Toward the end of the year preparations were being made in co-operation with the Organization of American States for a conference to be held at Havana, Cuba, in 1956 on problems of international exchange in Latin America and between that region and other parts of the world.

With a view to the ultimate establishment of bibliographical machinery for the location of educational documentation in all countries, UNESCO carried out a survey of national centres of educational documentation, including pedagogical museums as well as libraries. It concluded an agreement with Egypt for the establishment with UNESCO's assistance of an archaeological documentation centre in Cairo. UNESCO and WHO jointly entered a contract to the Council for International Organizations of Medical Sciences for the preparation of a bibliography of international medical congresses. In both natural and social sciences, particular attention was devoted by UNESCO to questions of terminology and translation. The first volume (*National Standards*) appeared of Eugen Wüster's *Bibliography of Monolingual Scientific and Technical Glossaries* (Paris, UNESCO). (F. L. K.)

The study of the revision of cataloguing practices was carried a step further by the formation by the International Federation of Library Associations of an international committee to study the standardization of cataloguing rules. Committees had already been at work for some years in Austria, the German Democratic Republic, the German Federal Republic, Japan, Poland and elsewhere—as well as in the United States—and the *UNESCO Bulletin for Libraries* published accounts of the work of these bodies from time to time during 1955. A preliminary report was in preparation by the I.F.L.A. committee for issue at the end of the year.

Libya. A federal kingdom in North Africa, Libya is bounded north by the Mediterranean, west by Tunisia and Algeria, south by French West Africa and French Equatorial Africa and east by Egypt and Sudan. Area: 679,358 sq.mi. Pop. (54 census): 1,091,830, Berbers, with Arab admixture. Language: Arabic. Religion: mainly Moslem. Capitals (pop., 1950): Tripoli 144,616; Benghazi 59,087. King, Idris I. Prime Minister in 1955, Mustafa ben Halim.

History.—Ahmed Muhiddin el-Senussi, a 20-year-old nephew of Queen Fatima, who on Oct. 5, 1954, shot dead Ibrahim Ned el-Shalhi, minister for palace affairs, was tried and hanged on Feb. 7, 1955, at the Benghazi central prison. It was Shalhi who arranged Idris' marriage with Aliya Abdel-Lamun, daughter of a Libyan chief, long domiciled in

Egypt. Idris had married Fatima in 1935. A son born to them died in infancy. When in Dec. 1950 Idris became king of Libya he was childless. In 1953 he appointed heir presumptive his younger brother, Amir Mohammed Rida el-Mahdi el-Senussi, until such time as a son should be born to him. On June 5, 1955, in Cairo, Idris married Aliya. In September both his wives, Fatima and Aliya, told the king within days of each other that they were to be mothers. Mohammed Rida died at Tripoli on July 29, aged 65.

A Franco-Libyan treaty of friendship was signed at Tripoli on Aug. 10. Under the treaty France retained aircraft landing rights in the Fezzan at Ghatt, Ghadamès and Sebha, as well as transit facilities for its ground forces, but the French garrisons totalling 400 men were to be withdrawn by the end of the year.

On Sept. 24, in Cairo, the Soviet and Libyan ambassadors to Egypt signed a protocol in view of establishing diplomatic relations between the two countries of ambassadorial rank.

Education.—Schools (1954–55). *Tripolitania*: primary 196, pupils 34,142, teachers 1,172; secondary 4, pupils 1,756, teachers 135; vocational 2, pupils 348, teachers 38; teachers' training colleges 2, students 798, teachers 35. *Cyrenaica*: primary 94, pupils 20,232, teachers 573; secondary 3, pupils 427, teachers 49; vocational 3, pupils 134, teachers 26; teachers' training colleges 2, students 71, teachers 14. *Fezzan*: primary 27, pupils 2,008, teachers 57.

Finance.—Monetary unit: Libyan pound, at par with sterling, divided into 100 piastres. Budget (1954–55; 1955–56 est. in parentheses): balanced at £6,214,545 (£9,816,405). Currency circulation (1954): £4,375,000. Bank deposits (1954 est.) £7,000,000.

Foreign Trade.—(1953; 1954 in parentheses): imports £13,207,030 (£11,250,671); exports £3,482,870 (£3,856,791). Main imports: foodstuffs and tobacco £2,792,463 (£3,246,168), textiles, petroleum products, agricultural machinery, motor vehicles. Main exports: esparto £455,723 (£610,383), scrap metal, peanuts, tunny, livestock, wool.

Liechtenstein. Liechtenstein is an independent principality lying between Switzerland and Austria, united with Switzerland by customs union. Area: 61 sq.mi. Pop.: (Dec. 1950 census) 13,735; (1954 est.) 14,000. Language: German. Religion: Roman Catholic. Capital, Vaduz, pop. (Dec. 1950) 2,735. Sovereign prince, Franz-Josef II; minister president in 1955, Alexander Frick.

History.—Prince Aloys von und zu Liechtenstein, father of the present ruler, died at Vaduz on March 16, 1955. Born on June 17, 1869, he married on April 20, 1903, Archduchess Elizabeth-Amelia, a niece of Emperor Francis-Joseph.

Education.—Schools (1954–55): primary 14, pupils 1,918, teachers 55; secondary 4, pupils 408, teachers 29.

Finance.—Included since Jan. 1924 in the Swiss customs union, Liechtenstein uses Swiss currency. In 1955 the franc was valued at 23.3 cents U.S. Budget (1954 actual; 1955 est. in parentheses): revenue 5,515,374.80 Fr. (6,878,450 Fr.); expenditure 5,612,662.88 Fr. (7,749,740 Fr.). Public debt (Dec. 31, 1954): 9,472,920.75 Fr.

Agriculture.—Chief products: corn, potatoes, fruit, wine, vegetables. Livestock (1955): cattle 5,548; sheep 804; horses 295; pigs 3,635; goats 770; chickens 33,002.

Industry.—Cotton weaving and spinning, artificial teeth, pottery, hardware, machinery, sausage cases.

Life Insurance: see INSURANCE.

Life Statistics: see BIRTH STATISTICS; CENSUS DATA, U.S.; DEATH STATISTICS; INFANT MORTALITY; SUICIDE STATISTICS.

Limes: see FRUIT.

Linen and Flax. There was a slight increase in world flax acreage and flax production in 1954, reversing a long decline. The over-all increase was about 3% over 1953, although there was a sharp decline in both Northern Ireland and the Republic of Ireland. Belgium continued to be the principal source of flax for other markets, exporting in 1954 a total of 68,137,000 kg. or 16% more than in 1953.

Following the wide fluctuations of previous years, prices of flax and linen were more stable and, in fact, were firming up.

Table I, prepared from data supplied by the ministry of commerce of Northern Ireland, reflects this situation.

Table I.—Index of Flax and Linen Prices,
Northern Ireland

Year	Index of average price of flax imported into Northern Ireland	Index of average price of linen goods exported from Northern Ireland
1948	100.0	100.0
1949	88.8	100.1
1950	100.0	94.2
1951	148.0	114.1
1952	113.0	122.5
1953	96.3	103.7
1954	99.6	102.9

It should be noted however, that labour costs entering into linen production had risen continuously.

United States.—Flax production in the United States continued to be almost entirely for seed (oil) purposes and there was no linen manufacture except for some relatively minor weaving of imported linen yarn.

Imports of all types of linen goods into the United States in 1954 totalled \$31,779,000. Of this, the United Kingdom, principally Northern Ireland, accounted for more than two-thirds. It should be noted that a substantial portion of the handkerchiefs and embroidered linens received from Madeira, the Philippines and other countries were hemmed and embroidered on Irish linen.

The U.S. is the most important market for Irish linen, taking an average of almost 40% of Irish linen exports. In specific items such as damask tablecloths, piece goods and handkerchiefs, the U.S. takes more than 60% of the total value of Irish linen exports.

Belgium ranked second in supplying the United States market, although most of its volume was concentrated in the woven dress and piece-goods category. After a careful study of the position of Belgian linen in the U.S. market, the Belgian linen trade concluded that the advertising and promotional activities of the Irish Linen guild, which had been carried on for several years, were a major reason for the pre-eminent reputation of Irish linen in the United States. Accordingly they announced in 1955 the inauguration of a similar campaign on behalf of Belgian linen.

It was also announced that a concerted effort would be made to improve and maintain quality standards of Belgian linen exported to the United States.

Of particular significance in the United States market during 1955 was the increased activity of Japanese textile manufacturers, not only in flax and ramie products, but also in other fabrics competitive with linen.

Linen consumption in the United States in 1954, although less than in 1951, equalled that of 1953. It was expected that the 1955 volume would be at least as great as that of 1954. Linen for apparel uses was increasing; household linens maintained their position, while damask table linens were recovering after a period of decline; handkerchiefs declined.

During 1955 there was a small beginning in experimental blending of linen with other fibres.

(J. R.L.)

Table II.—U.S. Imports of Linen Goods, 1954, and Supplying Countries
(in \$000)

Type	U.K.	Belgium	France	Japan	Ireland	Switzerland	Western Germany	Other countries	Total
Flax yarns and threads	1,160	96	87	—	—	—	—	62	1,405
Artists' canvases	7	7	—	—	—	—	—	2	16
Padding and interlining	99	129	—	—	—	—	—	7	235
Cambrics and sheers	3,089	71	—	—	9	—	—	33	3,202
Woven fabrics	9,353	5,336	—	33	74	99	235	521*	15,651
Towels and towelling	1,077	604	—	42	—	—	—	256†	1,979
Sheets and pillowcases	126	—	4	—	—	—	—	23	153
Table damask	1,849	48	—	12	—	—	—	59	1,968
Other tablecloths	331	395	—	84	—	—	77	46	933
Napkins	827	85	—	39	—	—	29	39	1,019
Linen articles and embroidered fabrics	1	—	—	13	—	—	—	354‡	368
Handkerchiefs	1,296	—	143	20	—	374	—	3,017§	4,850
Total	19,215	6,771	234	243	83	473	341	4,419	31,779

*Mostly in Mexico. †Mostly Poland. ‡Mostly Madeira. §Mostly Madeira and the Philippines.

Lions Clubs, International Association of: see SOCIETIES AND ASSOCIATIONS, U.S.

Liquors, Alcoholic. The distilled beverage industry of the United States experienced during the year 1955 a further aggravation of two problems which had been developing over a number of years.

Sales and distribution of illegal whisky and other spirits have been increasing to the detriment of the legal trade. While the number of illegal stills seized by the authorities during 1955 was officially given at about 12,500, an increase of nearly 100% over 1954, competent observers believed that more than double this number were actually in operation. The belief within the industry was that an efficient remedy for the situation could be obtained by a reduction in the excise tax which stood at \$10.50 per proof gallon. Automatic reduction of

Table I.—U.S. Production of Distilled Spirits
(in proof gallons)

Fiscal year ending June 30	Whisky	Neutral spirits	Other (gin, rum, brandy, etc.)	Total
Average 1948-50	132,650,931	86,271,768	20,712,265	239,634,964
1951	205,702,460	173,025,280	22,725,056	401,452,796
1952	103,543,953	98,370,161	19,951,667	221,865,781
1953	66,765,449	47,358,809	20,341,494	134,465,752
1954	102,541,246	60,366,997	22,088,784	184,997,027
1955	103,927,044	53,277,317	24,985,920	182,190,281

Source: Federal Alcohol and Tobacco Tax Division, U.S. Treasury Department.

Table II.—Inventories of Distilled Spirits in Internal Revenue
Bonded Warehouses

As of June 30	Whisky	Neutral spirits	Other (gin, rum, brandy, etc.)	Total
Three-year average				
1948-50	589,488,709	53,947,786	16,776,470	660,212,965
1951	751,233,178	134,816,711	15,056,299	901,106,188
1952	767,557,977	151,959,204	17,639,152	937,156,333
1953	730,919,161	133,504,123	17,390,180	881,813,464
1954	720,698,733	126,546,591	17,082,843	864,328,167
1955	715,860,858	110,160,340	15,474,805	841,496,003

Source: Data of the Federal Alcohol and Tobacco Tax Division, U.S. Treasury Department.

tax to \$9, under an existing law, was cancelled by congress in April 1955, and an extension of the higher tax was voted in April 1956.

The other problem situation was that large quantities of U.S. whisky produced during the years of 1948 to 1950 would be "forced out of bond" during 1956 and the years following through the requirement of the law that the tax on U.S. whisky reaching the age of 8 years must be paid irrespective of whether or not any of it has been sold. Many units of the industry, especially smaller ones, found themselves unable to raise the capital required for such payments.

By 1955 all but 2 of the 48 states (Mississippi and Oklahoma) had legalized the sale of distilled spirits. Certain of

46 legal-sale states, however, permit individual localities to prohibit liquor sale where voters of the community elect. Thus, about 16.2% of the U.S. population lives in areas.

In 1955 the 206 distilling plants, 55 rectifying plants, 1,500 wholesaling plants, and nearly 200,000 retail outlets in the U.S. provided employment for an estimated 100,000 persons with annual

Table III.—Domestic Bottlings of Spirits—by Type
(in wine gallons)

Fiscal year ending June 30	Grand total	Whisky	Brandy	Gin	Cordials and liqueurs	Vodka	Rum	Miscellaneous
1948-50	162,926,823	143,839,779	1,778,807	12,093,482	4,062,053	*	465,372	687,330
1951	195,364,357	167,508,763	2,832,056	17,494,804	5,411,974	995,696	680,775	440,289
1952	160,026,326	136,087,197	2,671,782	13,320,158	5,353,603	1,541,008	620,259	432,319
1953	175,190,496	144,150,785	3,035,514	18,061,708	6,058,278	2,722,843	725,003	436,365
1954†	173,210,522	141,256,240	3,028,149	18,782,326	5,799,810	3,173,545	692,828	477,624
1955	172,639,613	138,999,660	3,409,392	18,794,731	5,752,229	4,563,704	666,448	453,449

* Previous to 1951, vodka was included with miscellaneous.

† Revised.

Source: Data of the Federal Alcohol and Tobacco Tax Division, U.S. Treasury Department.

is estimated at about \$1,900,000,000.

During fiscal 1955 the federal government realized more than \$1,800,000,000 in spirits revenues. In addition, state and local governments collected more than \$560,000,000 from the manufacture and sale of distilled spirits.

During fiscal 1955, 182,190,281 gal. of distilled spirits were produced in beverage distilleries, a decrease of 1.5% from the output in fiscal 1954. Included were 103,900,000 gal. of whisky and 53,300,000 gal. of neutral spirits, marking an increase of 1% in whisky production and a drop of 11.7% in neutral spirits output from 1954.

Total domestic bottled output in fiscal 1955 amounted to 138,999,660 gal., of which whiskies accounted for 138,999,660 gal. This was a drop in total spirits bottlings of 0.3% from fiscal 1954, and a drop in whisky bottlings of 1.6%. Bottled output of vodka, gin, and rum rose between 42% and 92%. The output of vodka rose even more sharply, the 4,600,000 gal. bottled in fiscal 1955 being 43.8% greater than in fiscal 1954 and more than four times the output in 1951, the first year in which the item was reported separately from other types of spirits.

Consumer preferences had undergone a marked change insofar as types of whisky were concerned. In the early years after Prohibition in 1933, straight and bonded whiskies accounted for 60% to 70% of all whiskies bottled. This trend later reversed itself, and during the three-year period preceding the Korean war, blends and straights represented only about 16.5% of all whisky bottled. By 1955, however, blends and straights had gained so much that they constituted 41% of whisky bottlings while the blends alone declined to 59%.

During fiscal 1955 total bottled imports amounted to 23,106,060 gal., marking a slight increase (0.5%) over fiscal 1954. Scotch and Canadian whiskies accounted for 88.2% of total bottled imports, they constituted the bulk of United States rum consumption. During fiscal 1955, 1,584,817 gal. were imported, of which 1,554,440 gal. came from Puerto Rico. Brandy, cordials, liqueurs and gins accounted for an additional 1,138,502 gal.

Table IV.—Bottled Imports
(in gallons)

Fiscal year ending June 30	Grand total	Whisky				Other whisky	Other spirits*
		Total	Scotch	Canadian			
1948-50	13,602,792	11,675,026	7,205,830	4,445,002	24,194	1,927,766	
1951	19,877,646	16,769,635	10,376,713	6,355,674	37,248	3,108,011	
1952	19,307,744	16,587,064	9,384,580	7,189,851	12,633	2,720,680	
1953	20,140,693	17,269,117	9,380,281	7,884,133	4,703	2,871,576	
1954	22,995,534	20,109,045	11,187,691	8,918,295	3,059	2,886,489	
1955	23,102,060	20,378,741	11,642,128	8,729,356	7,257	2,723,319	

* Includes rum, gin, brandy, cordials and liqueurs.
Source: Data of the Distilled Spirits Institute.

In addition to the bottled imports, there were 1,184,027 gal. of bulk distilled spirits, including 311,526 gal. of whisky, 500,000 gal. of rum and 372,341 gal. of brandy, imported for bottling in the United States.

The per capita consumption of spirits in the United States during the calendar year 1954 was 1.18 wine gallons. (See also *ALCOHOL AND BEER; INTOXICATION, ALCOHOLIC; WINES.*)

(A. J. LI.)

Literary Prizes.

The following is a selected list of literary prizes awarded during the year 1955 and the latter months of 1954.

United States.—ACADEMY OF AMERICAN POETS.—Lamont Poetry selection, to Donald Hall for *Exiles and Marriages*.

AMERICAN ACADEMY OF ARTS AND LETTERS AND NATIONAL INSTITUTE.

—William D. Howells' medal to Eudora Welty for her novel *The Ponder Heart*. Gold medal to Edmund Wilson. Award of merit to Jorge Guillén. Prix de Rome fellowship to Ralph Ellison.

AMERICAN PHILOSOPHICAL SOCIETY.—Phillips prize of \$2,000 to Edmund Cahn for *Supreme Court and Supreme Law*.

AMERICAN POLITICAL SCIENCE ASSOCIATION.—Woodrow Wilson Foundation award of \$1,000 for the best book on government and democracy to Jacobus tenBroek, Edward N. Barnhart and Floyd W. Matson for *Prejudice, War and the Constitution*.

ANISFIELD-WOLF AWARDS.—Two awards of \$2,000 each for books in the field of race relations, administered by the *Saturday Review*, to Oden Meeker for *Report on Africa* and Lyle Saunders for *Cultural Difference and Medical Care*.

ATLANTIC MONTHLY-LITTLE BROWN NOVEL CONTEST.—\$5,000 for a novel *The Last Hurrah* by Edwin O'Connor.

BANCROFT PRIZES.—\$2,000 each annually for the two best books on American history, American diplomacy or American international relations, to Leonard D. White for *The Jacksonians*, and Paul Horgan for *Great River, the Rio Grande in North American History*.

BOLLINGEN PRIZE IN POETRY.—\$1,000 shared by Louise Bogan for *Collected Poems, 1922-53* and Leonie Adams for *Poems: A Selection*.

JOHN BURROUGHS MEDAL.—To Wallace Byron Grange, for *Those of the Forest*.

CATHOLIC BOOK CLUB.—Campion award to honour long-standing and eminent service in the cause of Catholic letters, to Jacques Maritain.

CHRISTOPHER AWARDS.—Bronze medallions, awarded semiannually, to Frances Gray Patton for *Good Morning, Miss Dove*; Phyllis McGinley for *The Love Letters of Phyllis McGinley*; to Karl Stern for *The Third Revolution*; to Barbara Ward for *Faith and Freedom*; to Anne Morrow Lindbergh for *Gift from the Sea*; to Carlos Romulo for *Crusade in Asia*; to John A. Schindler for *How to Live 365 Days a Year*; and to Marion T. Sheehan for *The Spiritual Woman; Trustee of the Future*.

COMMONWEALTH CLUB OF CALIFORNIA.—Gold medal to Everett Carter for *Howells and the Age of Realism* (nonfiction) and Louise A. Stinetor for *Beyond the Hungry Country* (fiction). Silver medals to Wallace Stegner, for *Beyond the 100th Meridian*; Paul I. Wellman for *Glory, God and Gold*; and C. S. Forester for *The Nightmare*.

FOLGER LIBRARY PRIZE.—To Conyers Read for *Mr. Secretary Cecil and Queen Elizabeth*.

FRIENDS OF AMERICAN WRITERS.—\$1,000 annual award to a midwestern writer, to Harriette Arnow for *The Dollmaker*.

GUGGENHEIM FELLOWSHIPS.—Among those awarded fellowships were Saul Bellow, Hortense Calisher and Jean Evans, for creative writing.

HARPER'S EUGENE F. SAXTON FELLOWSHIPS.—To George Harold McMurry, for the completion of a novel; to John Edward Kaltenbach, for the completion of a novel about Moses; to Perry D. Westbrook, for the completion of a historical novel based on the life of James Swan; to Robert Elvin Hazel for the completion of a novel *Going to the Fair*; to Mrs. Lois Crisler for the completion of a book of personal experiences covering a year and a half of life in the arctic circle; and to Richard M. Huber to complete a history of the idea of success in America.

HUNTINGTON HARTFORD FOUNDATION AWARDS.—\$500 and an invitation to live six months at the foundation estate, to Ralph Vaughn Williams, composer; Max Eastman, author; and Andrew Wyeth, painter.

SIDNEY HILLMAN FOUNDATION PRIZE AWARD.—To Henry Steel Commager for *Freedom, Loyalty, Dissent*.

HOUGHTON MIFFLIN LITERARY FELLOWSHIP.—To Eugene Burdick for *Michael Freesmith*.

INSTITUTE OF EARLY AMERICAN HISTORY AND CULTURE AWARD.—\$500 to Gerald Stourzh for *Benjamin Franklin and American Foreign Policy*.

JEWISH BOOK COUNCIL AWARDS.—Harry and Ethel Daroff Memorial Fiction award of \$250 to Louis Zara for *Blessed Is the Land*. Harry Kovner Memorial awards of \$100 each to Alter Esselin for a book of Yiddish poetry and to Gabriel Prell for a book of Hebrew poetry.

MEDIEVAL ACADEMY OF AMERICA.—Haskins medal to George H. Forsyth, Jr., for *The Church of St. Martin at Angers*.

HARRIET MONROE POETRY AWARD.—To Richard Eberhardt.

MYSTERY WRITERS OF AMERICA AWARD.—Honorary "Edgars" busts of Edgar Allan Poe, awarded for mystery writing: for best mystery novel, to Raymond Chandler for *The Long Goodbye*; best first mystery novel, to Jean Potts for *Go, Lovely Rose*; best short story to Stanley Ellin for *The House Party*; best fact-crime to Charles Boswell and Lewis Thompson for *The Girl with the Scarlet Brand*; and best criticism, to Drexel Drake of the *Chicago Tribune*.

NATIONAL BOOK AWARDS.—Gold medals awarded by the entire book industry: for distinguished fiction, to William Faulkner for *A Fable*; for nonfiction, to Joseph Wood Krutch for *The Measure of Man*; for poetry, to Wallace Stevens for *Collected Poems*; special citation, to e. e. cummings for *Poems: 1923-54*.

NATIONAL BROTHERHOOD AWARD.—To Pearl Buck, for *My Several Worlds*.

NATIONAL INSTITUTE OF ARTS AND LETTERS.—\$1,000 grants to six nonmember authors, to Richard Eberhardt, Robert Horan, Chester Kallman, William Krasner, Milton Lott and Morton Dauwen Zabel.

NEW YORK DRAMA CRITICS CIRCLE AWARD.—For best play, to Tennessee Williams for *Cat on a Hot Tin Roof*; best foreign play, to Agatha Christie for *Witness for the Prosecution*; best musical, to Gian-Carlo Menotti, for *The Saint of Bleeker Street*.

PHI BETA KAPPA.—\$1,000 Christian Gauss prize for a book of literary scholarship or criticism to Meyer Howard Abrams for *The Mirror and the Lamp: Romantic Theory and the Critical Tradition*.

POETRY MAGAZINE AWARDS.—Levinson prize to Thom Gunn; Blumenthal prize to William Carlos Williams; Tietjens prize to James Wright; Harriett Monroe prize to John Ciardi; Bess Hokin prize to Philip Booth; Union League prize to Anne Ridler; and Vachel Lindsay prize to V. R. Lang.

POETRY SOCIETY OF AMERICA AWARDS.—Gold medals to Leonora Speyer, John Malcolm Brinnin; silver medal to George N. Shuster. Annual award of \$100 to Constance Carrier; second prize of \$50 to Edna L. S. Barker. Arthur Davison Ficke Memorial award of \$200 to Ulrich Toubetzky; Emily S. Hamblen Memorial award of \$100 to David V. Erdman; Reynolds Lyric award of \$200 to Lois Smith Hiers; Edna St. Vincent Millay Memorial award of \$100 to Phyllis McGinley; William Rose Benet Memorial award of \$100 to Delmar T. Israel; Ridgely Torrence Memorial award of \$100 to Archibald MacLeish; Poetry Chap-Book award of \$100 to Elder Olson; Shelley Memorial award to Robert Fitzgerald. Also Borestone Mountain Poetry awards: \$1,250 to Robinson Jeffers; \$625 each to David Morton and Eric Barker.

TAMMINGTON INSTITUTE BOOK AWARD.—\$500 for best American biography, to Gay Wilson Allen for *The Solitary Singer*.

TEXAS INSTITUTE OF LETTERS AWARDS.—Carl P. Rollins award of \$1,000 for best Texas book of the year, to Paul Horgan for *Great River, the Rio Grande in North American History*; Summerfield G. Roberts award of \$1,000 for the best book about the Republic of Texas, to Llerena Friend for *Sam Houston, the Great Designer*; McMurray Personal Bookshop award for best first novel, to William Owens for *Walking on Borrowed Land*; for biography to Ernest Campbell Mossner, co-editor of *New Letters of David Hume*; A. Harris Poetry award to William Burford for *Man Now*.

UNIVERSITY OF KENTUCKY PRESS FELLOWSHIP.—\$5,000 grant to Marie Campbell for study of folk culture of Kentucky.

WESTERN WRITERS OF AMERICA AWARDS.—Silver Spurs for best novel, to Wayne D. Overholser for *The Violent Land*; best western historical novel to John Prescott for *Journey by the River*; best western nonfiction, to David Lavender for *Bent's Fort*; best western short story, to Thomas Thompson for *Blood on the Sun*.

YALE SERIES OF YOUNGER POETS AWARD.—To John L. Ashberry for *Some Trees*.

ZONDERVAN INTERNATIONAL CHRISTIAN FICTION CONTEST.—\$5,000 to Rev. Lon Woodrum for *Eternity in Their Heart*.

NOBEL PRIZE FOR LITERATURE.—(See article NOBEL PRIZES.)

PULITZER PRIZES.—(See article PULITZER PRIZES.)

U.S. Children's Books.—JANE ADDAMS CHILDREN'S BOOK AWARD.—For a book which embodies the spirit of world understanding and friendship, to Elizabeth Yates for *Rainbow Round the World*, a story of UNICEF.

BOYS' CLUBS OF AMERICA JUNIOR BOOK AWARDS.—To Natalie Savage Carlson for *Alphonse, That Bearded One*; William Corbin for *High Road Home*; Walter D. Edmonds for *Hound Dog Moses and the Promised Land*; Graham Greene for *The Little Horse Bus*; Ivo Duka and Helena Kolda for *The Secret of the Two Feathers*; Clyde Robert Bulla for *Squanto, Friend of the White Man*; special certificate of award to Random House for the Allabout Books series.

CALDECOTT MEDAL.—For the year's most distinguished American picture book for children, to Marcia Brown for *Cinderella*.

CHICAGO CHILDREN'S READING ROUND TABLE AWARD.—For distinguished service in the field of children's reading, to Adah F. Whitcomb.

CHILD STUDY ASSOCIATION OF AMERICA CHILDREN'S BOOK AWARD.—To Jonreed Lauritzen for *The Ordeal of the Young Hunter* and William Corbin for *High Road Home*.

COMMONWEALTH CLUB OF CALIFORNIA.—Silver medal for best juvenile, to Leonard Wibberley for *Epics of Everest*.

DODD MEAD-BOYS' LIFE AWARD.—\$2,000 plus royalty, to W. G. Crisp for *White Gold in the Cassiar*.

DODD MEAD-COMPACT AWARD.—To Beverly Butler for *Song of the Voyageur*.

HELEN DEAN FISH AWARD.—\$500 for best first book, to Dorothy Marino for *Little Angela and Her Puppy*.

CHARLES W. FOLLETT AWARD.—\$3,000 to Tom (Alfred T.) Cluff for *Minutemen of the Sea*.

JEWISH BOOK COUNCIL.—Isaac Siegel Memorial award of \$250 to Nora Benjamin Kubie for *King Solomon's Navy*.

NEWBURY MEDAL.—For the year's most distinguished contribution to American literature for children, to Meindert DeJong for *The Wheel on the School*.

NEW YORK HERALD-TRIBUNE CHILDREN'S SPRING BOOK FESTIVAL AWARDS.—Three prizes of \$200 each: for a picture book, to John Langstaff and Feodor Rojankovsky for *Frog Went A-Courtin'*; for middle-age group, to Belle Dorman Rugh for *Crystal Mountain*; and for older children, to Virginia S. Eifert for *The Buffalo Trace*.

OHIOANA AWARD.—For best juvenile, to William E. Scheele for *Prehistoric Animals*.

SECONDARY EDUCATION BOARD AWARDS.—For ten best adult titles suitable for precollege readers, Pierre Boulle for *The Bridge Over the River Kwai*; Elmer Davis for *But We Were Born Free*; Sir John Hunt for *The Conquest of Everest*; R. B. Robertson for *Of Whales and Men*; Lord David Cecil for *Melbourne*; Paul Brickhill for *Reach for the Sky*; E. B. White for *The Second Tree from the Corner*; Heinrich Harrer for *Seven Years in Tibet*; Jacqueline Cochran for *The Stars at Noon*; and Grantland Rice for *The Tumult and the Shouting*.

TEXAS INSTITUTE OF ARTS AND LETTERS.—Cokesbury Book Store award for best Texas juvenile, to Irmengarde Eberle for *Lone Star Flight*.

WESTERN WRITERS OF AMERICA.—Juvenile award to Stephen Payne for *Young Hero of the Range*.

WILLIAM ALLEN WHITE AWARD.—To Jean Bailey for *Cherokee Bill: Oklahoma Pacer*.

Canada.—GOVERNOR GENERAL'S AWARDS.—Fiction, to Igor Gouzenko for *Fall of a Titan*; academic nonfiction, to A. R. M. Lower for *The Most Famous Stream*; creative nonfiction, to Hugh MacLennan, *Thirty and Three*; poetry, to P. K. Page for *The Metal and the Flow*; juvenile, to Marjorie W. Campbell for *The Nor'westers*.

LEACOCK MEDAL FOR HUMOUR.—To Robertson Davies for *Leviathan*.

LORNE PIERCE MEDAL OF THE ROYAL SOCIETY OF CANADA.—For contribution to the development of Canadian literature, to Bruce Hudson.

PRESIDENT'S MEDALS.—Short story, to P. D. Hughes for *Catherine*; *Winter Wheat* (*Maclean's Magazine*); single poem, to James Beane for *The Horn* (*Queen's Quarterly*); scholarly article, to Emil K. Fackenthal for *Kant and Radical Evil* (*University of Toronto Quarterly*); general article, to Bill Stephenson for *There'll Never Be Another Model T.* (*Maclean's Magazine*).

TYRRELL MEDAL OF THE ROYAL SOCIETY OF CANADA.—For excellence in historical writing, to Col. C. P. Stacey.

UNIVERSITY OF BRITISH COLUMBIA MEDAL.—For popular biography, to Robert Tyre for *Saddlebag Surgeon*.

Great Britain.—Among awards made in 1955 were: JAMES TAIT BLACK MEMORIAL PRIZES (about £250 each) to Keith Feiling for *Waverley* (fiction); the CARNegie MEDAL (awarded by the Library Association) to an outstanding book for children) to Ronald Welch for *Knight Crusade*; the ROSE MARY CRAWSHAY PRIZE (£100, for a critical or historical work on English literature by a woman) to Evelyn M. Simpson for *John Donne* (in progress); the FOYLE PRIZE for poetry (£250) to John Betjeman for *A Few Late Chrysanthemums*; W. H. HEINEMANN FOUNDATION AWARD for literature (up to £200) to Robert Gittings for *John Keats: The Living Year*; the SOMEY MAUGHAM AWARD (about £250, to a British writer under 30, to be used mainly for foreign travel) to Kingsley Amis for *Lucky Jim*; the JO LLEWELYN RHYS MEMORIAL PRIZE to John Wiles for *The Moon to the Moon*; the SUNDAY TIMES £1,000 prize to Richard Church for *Over the Bridge*; and the QUEEN'S GOLD MEDAL for poetry to Ruth Pitter.

France.—Among the many prizes awarded during 1955 the following should be mentioned: the GRAND PRIX LITTÉRAIRE DE LA VILLE DE PARIS to Jean Guehenha for his work as a whole; the PRIX DE LA SOCIÉTÉ GENS DE LETTRES to Jean Bonnerot for the *Correspondance de Saint-Beuve* and to J. C. Pichon for his novel *Les Clefs de la prison*; the PRIX LITTÉRAIRE PRINCE RAINIER DE MONACO to Louise de Vilmorin for her work as a whole; the GRAND PRIX NATIONAL DES LETTRES to J. Schlumberger for his work as a whole; the PRIX DE ROMAN POPULAIRE to Georges Godefroy for his novel *Les Naufrageurs*; the PRIX CRITIQUES to Alain Robbe-Grillet for his novel *Le Voyeur*; the PRIX ECRIVAINS DE LA MER ET DE L'OUTREMER to François Boujean for his work as a whole; the PRIX DE LA CHRONIQUE PARISIENNE to P. Macaigne, contributor to *Figaro*.

Several of the most outstanding prizes were announced late in the year: the PRIX GONCOURT was awarded to Roger Ikor for his book *Les Émigrés*, the second volume of a larger novel called *Les Fils d'Avrom*; the PRIX RENAUDOT to Georges Gomy for his novel *Le Moissonneur d'épaves*; and the PRIX FEMINA to André Dhôtel for his novel *Le Pays où n'arrive jamais*.

Literature: see AMERICAN LITERATURE; BOOK PUBLISHING AND BOOK SALES; CANADIAN LITERATURE; ENGLISH LITERATURE; FRENCH LITERATURE; GERMAN LITERATURE; ITALIAN LITERATURE; JEWISH LITERATURE; LATIN-AMERICAN LITERATURE; LITERARY PRIZES; NOBEL PRIZES; PULITZER PRIZES; RUSSIAN LITERATURE; SPANISH LITERATURE.

Lithuania. A Soviet Socialist republic, Lithuania is bounded north by Latvia, east and southeast by Byelorussia, south by Poland and the Russian Kalinin oblast (province) and west by the Baltic sea. Area: 31,200 sq.mi. Pop. (1954 est.): 3,000,000. Language (1954 est.): Lithuanian 73%; Russian and other Soviet 17%; Polish 10%. Religion (1954 est.): Roman Catholic 81%; Protestant 2.5%; Orthodox 2.5%; other and no religion 14%. Chief towns (pop., 1939 est.): Vilnius 47,200; Kaunas 152,400; Klaipėda 47,200; Šiauliai 31,300. First secretary of the Lithuanian Communist party in 1955, Antanas Snieckus; chairman of the presidium of the supreme soviet, Justas Paleckis; chairman of the council of ministers, Mėcislovas Gedvilas.

History.—During 1954 the total value of the republic's industrial production rose by 21% and was more than double output in 1950. The area of sown land had also increased, while the number of livestock on the collective farms rose as follows: cattle 10.3% (milk cows 15.2%), sheep 21.8%, pigs 3.4%. There were still many unsolved problems; e.g., the inadequate fodder crop. In 1955 there were 1,795 collective farms and machine and tractor stations.

The republic in 1955 had 166 hospitals as compared with 22 before World War II.

In October plans were adopted for a hydroelectric power station at Petrasunai, 8 mi. from Kaunas, on the Niemen river. A new supreme soviet of the Lithuanian S.S.R. was elected on Oct. 27. In the council of ministers there were at least four Russians, the most important being Aleksey Chistyakov, deputy premier, and Aleksandr Yefremov, minister of state control; the procurator-general of the republic, Gheorghy Bakharov, was also Russian.

In March Mgr. Kazys Paltarokas, Canon Juozas Stankevicius of Kaunas and Canon Piatras Mazialis of Telsiai published a declaration against the preparation of atomic war. According to Moscow radio Mgr. Paltarokas, 80-year-old ordinary of Radviliskis, on Sept. 11 consecrated two new bishops, Canon Mazialis and Fr. Julionas Stefanavicius. It was understood that the two had in fact been nominated bishops some time earlier in Rome.

In June Vilnius (Wilno) university, founded in 1579 by King John Bathory, was renamed Vincas Mickiavicius-Kapsukas University in honour of the Lithuanian Communist leader (1883-1935). (See also ESTONIA; LATVIA.) (K. SM.)

Education.—Schools (1955): primary 3,200, pupils 430,000; secondary 1,200, pupils 35,000; vocational 230, pupils 215,000; institutions of higher education 14, students about 15,000.

Finance.—Budget: (1954 est.) balanced at 1,740,762,000 roubles; (1955 est.) balanced at 1,644,514,000 roubles.

Livestock. Livestock and poultry on U.S. farms at the beginning of 1955 were 3% more numerous than a year earlier, but 7% below the record level of Jan. 1, 1944. Meat animals were up 3%; poultry up 1%; milk cattle down 1%; workstock down 9%. The livestock inventory (five species) declined in value to \$10,880,762,000 as compared with \$11,236,600,000 in 1954 and \$12,552,198,000 average for 1944-53. Poultry also declined in value.

The record number of cattle and calves on farms Jan. 1, 1955, represented the sixth successive annual increase from 76,800,000 head on Jan. 1, 1949. It included a record high 1954 calf crop of 12,210,000 head, 3% larger than in 1953. Commercial slaughter was nearly 40,000,000 head of cattle as compared with 30,000,000 in 1954 and only 35,000,000 head in 1953.

Prices, though relatively stable, sagged; the choice and prime grades, in particular, were lower with a top of less than \$24 hundredweight in the autumn as compared with nearly \$30 hundredweight in 1954. Prices for feeder and stocker types were firm, the spread with fat cattle narrowed and profits from the feeding were reduced.

The 55,002,000 hogs on U.S. farms at the beginning of the year, as compared with 48,560,000 head a year earlier, included 12,000 sows and gilts six months and more of age. They farmed 60,543,000 head of spring pigs, 9% more than the 55,667,000 head of 1954; the average spring pig crop for 1944-53 was 57,100,000 head. The indicated fall pig crop of 1955 was 40,500,000 head, 10% larger than that of 1954. Abundant marketings put pressure on hog prices; from a January high of about \$17 per hundredweight to producers, as compared with about \$25 a year earlier, there was a spring decline, an early summer rise to 40 per hundredweight, then a further decline to the lowest price levels since 1942, and a top of less than \$13 per hundredweight. Because of a sharp decline in the price of corn, the corn price ratio continued somewhat favourable and a further expansion of the spring crop of pigs for 1956 appeared likely.

The 30,931,000 head of all sheep (mostly stock sheep) on U.S. farms at the beginning of 1955 were 1% fewer than in 1954 and below the average 36,685,000 head for 1944-53. This was

the third successive year of decline, but an increase of 9% in the number of ewe lambs retained suggested the beginning of flock rebuilding, encouraged perhaps by the official decision that the Commodity Credit corporation would dispose of its wool inventory in an orderly fashion and that the 1955 and 1956

Table 1.—Livestock on U.S. Farms

Animals	(In 000 head)		
	Jan. 1, 1955	Jan. 1, 1954	Average, 1944-53
Horses	3,106	3,401	6,480
Mules	1,445	1,599	2,542
Cattle (including calves)	95,433	94,787	82,917
Milk cows	24,408	24,675	25,135
Sheep	30,931	31,218	36,685
Hogs	55,002	48,560	61,166
Chickens	447,310	442,813	474,852
Turkeys	5,448	5,315	5,804

wool clip prices would be supported, by payments, at approximately 62 cents per pound.

Horses and mules continued their long, long decline. Poultry were somewhat more numerous on farms on Jan. 1 than a year earlier; however, farm production of poultry in 1955 was reduced to about 524,000,000 head, 15% fewer than in 1954. The 5,448,000 turkeys on farms represented a slight increase over 1954; the hatching season was late and only 63,294,000 poult were produced as compared with 68,267,000 in 1954. Turkey prices were higher, averaging 31.5 cents per pound to producers in October as compared with 27.1 cents per pound a year earlier.

Efforts to improve world livestock production were numerous and widespread during 1955. There was particular emphasis on importation of breeding stock and selective crossing of breeds to obtain hybrid vigour and special characteristics in beef cattle, meat hogs and milk cows. There was also more efficient use

CHAMPION HEREFORD BULL, Edg-Clif Resolute Heir, sold for \$10,200 at an auction at Potosi, Mo., in 1955. The bull was grand champion of the Missouri state fair in 1954



of outstanding individuals through the use of artificial insemination and storage banks of frozen semen. Health and rate of growth were improved by feeding antibiotics and stilbestrol.

World wool production was estimated at 4,475,000,000 lb.

Table II.—Number of Livestock in Specified Areas
(In 000 head at beginning of year)

Areas	Cattle		Hogs		Sheep	
	1955	1954	1955	1954	1955	1954
North America . . .	132,300	130,500	74,000	66,600	38,700	38,800
Europe	105,000	104,000	93,200	87,300	118,300	118,300
Asia	319,100	317,500	99,700	99,600	165,200	163,100
South America . . .	144,300	140,800	46,100	42,800	126,600	125,900
Africa	96,600	95,300	3,800	3,800	125,400	123,500
Oceania	22,000	21,700	2,100	2,100	167,000	164,900
Estimated world total.	877,300	866,800	348,900	332,200	883,200	824,500

grease basis, as compared with 4,390,000,000 lb. in 1954, Australia producing, it was anticipated, 1,315,000,000 lb. as against 1,280,000,000 lb. in the previous year.

Horse numbers increased slightly in eastern Europe and the U.S.S.R., but declined in most other areas; the indicated world total was 74,500,000 head as compared with 75,200,000 head in 1954 and 95,500,000 prewar.

By-products of livestock husbandry or slaughter generally declined in value in 1955, hides from about 15 cents per pound to 11 cents, and wool by 10% to 20% on domestic and world markets. (See also AGRICULTURE; MEAT; WOOL.) (J. K. R.)

Livestock Shows: see SHOWS.

Local Government: see MUNICIPAL GOVERNMENT.

Lodge, Henry Cabot, Jr. (1902—), U.S. delegate to the United Nations, was born on July 5 at Nahant, Mass., the grandson of Sen. Henry Cabot Lodge who led the opposition to U.S. entry into the League of Nations. He was graduated from Harvard university in 1924 and worked first with the *Boston Evening Transcript* and later with the *New York Herald Tribune* until 1932. He was a representative to the Massachusetts general court from 1933 to 1936 and in the latter year was elected U.S. senator from Massachusetts on the Republican ticket. Re-elected in 1942, he resigned in Feb. 1944 to go on active duty with the U.S. army, and saw combat in North Africa and Italy. He was again elected to the senate in 1946.

In Nov. 1951 Lodge was picked by a group of Republican leaders to lead the Eisenhower-for-President drive. He directed the strategy that resulted in Dwight D. Eisenhower's nomination at the Republican national convention in July 1952. Lodge himself was defeated in the election for the senate, but Pres. Eisenhower named him as U.S. representative to the United Nations, to succeed Warren R. Austin, and he took office on Jan. 23, 1953.

Lodge's principal tasks in the UN during 1953 and 1954 were to counter soviet propaganda and attempts to split the western powers, and to combat the continued efforts of the soviet bloc to secure admission of Red China to the UN. Much of his time during 1955 was spent on efforts to secure release of 11 U.S. airmen imprisoned by China as "spies," to persuade the U.S.S.R. to participate in a world atomic energy pool for peaceful purposes, and to present the U.S. view on disarmament before the UN subcommittee on disarmament, meeting at New York city.

London. London is the capital of the United Kingdom of Great Britain and Northern Ireland and centre of the Commonwealth of Nations. The term "London" is used here to describe three areas: (i) the City, the ancient heart of London, which for some purposes functions as a county; (ii) the administrative county, comprising the City and the county proper (which consists of 28 metropolitan boroughs); and (iii) Greater

London, embracing the City, the county proper and the suburbs as far as the borders of the Metropolitan police authority, including Middlesex and parts of Essex, Kent, Surrey and Hertfordshire. *City.* Area 1.05 sq.mi.; night pop. (1951 census) 5,268. Lord Mayors in 1955: Sir H. Seymour Howard and (from Nov. 8) C. L. Ackroyd. *County.* Area (including City) 116 sq.mi.; pop. (1951) 3,348,336. Lord lieutenant, Field Marshal Viscount Alanbrooke; chairman of London County council, N. Prichard. *Greater London.* Area about 722 sq.mi.; pop. (1951) 8,346,137.

No progress was made or real improvement promised during 1955 in designing or replanning the streets to take the increased traffic. Traffic reached a climax during the railway strike in May and June when every car that could be made to work, twice the usual number of heavy trucks, flowed into central London. The metropolitan police were driven to emergency action. Parking was forbidden absolutely in parts of central London; parking areas were set up just outside the centre and in parks; mobile radio-controlled traffic patrols dealt with general congestion. After the strike some of these measures in modified form were continued—for example, Londoners grew used to seeing a double row of parked cars on the outer drives of Hyde park where they contributed nothing to the view but helped to ease congestion in the surrounding streets. The strike was nationally but was felt to be a special scourge in London because of the long distances that people travelled daily to their work.

London was also more grievously affected than any other city by the newspaper strike in March and April. The three evening newspapers and all the morning press disappeared for 26 days. London had few alternatives to fall back on though the demand for dailies published in the provinces was high and a few ephemeral newsheets appeared on the streets.

The suburban skyline in south London was changed by the building of a television aerial tower more than 600 ft. high to serve the new transmitter being built by the B.B.C. in the grounds of the Crystal palace. There appeared not far away from it at Croydon, a smaller but more significant aerial, the first commercial television transmitter in Britain. The independent television service which opened on Sept. 22 served the London area only.

Two suburban theatres became TV studios and proposals were made to convert the St. James's theatre into offices and the Adelphi into a shop. The Stoll (the only alternative open house to Covent Garden) was to be demolished. The London County council used its powers as town planning authority to forbid changes in the use of the St. James's and the Adelphi and to insist that if the Stoll were rebuilt the premises would have to contain a theatre. (G. Fyfe)

Los Angeles. Los Angeles (comprising Los Angeles and Orange counties), the third-ranking metropolitan area in the United States, continued to grow in population and commerce in 1955. The populations of the county and metropolitan area were estimated by the chamber of commerce as of April 1 respectively as 2,160,000, 5,000,000 and 5,340,000. These represented 12-month increases respectively of 1.6%, 3.6% and 4.2%.

Although Los Angeles is known as the nation's major centre of aeroplane manufacturing, with about 25% of the industrial employment, a study by the Security-First National bank indicated that the metropolitan area had exceptional economic diversification and "balance." With 3.94% of the nonagricultural wage and salary workers in the nation, it was found to account for commensurate proportions, ranging from 3.06% to 5.09% of the national payrolls in standard employment categories. Aeroplane manufacturing accounted for only 8.3% of total employment.

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A study of industrial development since 1950 showed the following gains: ordnance and accessories (representing largely missiles and electronic equipment), 4,133.3%; aircraft parts, 186%; electrical machinery, equipment and supplies, 11.1%; instruments and related products, 123.9%; nonelectrical machinery, 77.7%; motor vehicles and equipment, 59.3%; fabricated metal products, 56.7%.

Total civilian employment reached an all-time high in August 1955, 2,299,400, 6% above a year before. Aircraft employment reached a post-World War II peak of about 191,200, 6.3% above the year before.

Capital investments in new industrial enterprises and expansion of existing ones totalled \$126,703,000 for the first eight months of the year, compared with \$138,081,000 for the same 8-month period.

Building construction, both residential and commercial, through August totalled \$925,001,000 in Los Angeles county, a 10% increase over the same 1954 period.

Cargo tonnage through the port of Los Angeles in the fiscal year ending in June dropped from 26,513,998 to 24,819,837, largely because of international factors which altered the routing of oil shipments; tonnage in other categories increased. The port's municipally operated foreign trade zone, one of five in the country where goods in transit could be stored in bonded duty free, was closed after six years' operation entailing a loss of \$440,000.

Smog—periodic atmospheric pollution—became a matter of major community concern. Authorities said it was worse than in 1954, despite expanding control efforts, because of the city's rapid growth. It was traced primarily to automobile exhausts, industry and home incinerators. Two warning systems, one anticipatory and one remedial, were instituted, involving limitation of pollution-producing activities in various degrees, to avert hazardous concentrations of contamination.

From the smog problem stemmed the community's major environmental *cause célèbre* of the year—the proposed replacement of home incineration with rubbish collection. A scandal breaking on the private trash collection industry developed, involving allegations of bribery and corruption which were still under litigation as the year neared its end.

The elimination of the last officially espoused racial segregation in the city administration, through the integration of Negroes and whites in the city's fire-fighting units, was started in 1954 and more than a year's controversy. (G. Hr.)

Louisiana. One of the west south central states of the United States, admitted to the union in 1812 as the 18th state, Louisiana is popularly known as the "Pelican state," "Creole state" or "Bayou state." Area 48,523 sq.mi., of which 45,162 sq.mi. is land. Pop. (1950 census): 2,683,516, of which 1,796,548 or 67% were white and 886,968 nonwhite; 1,196 or 54.8% urban and 1,211,820 or 45.2% rural. The estimated population on July 1, 1955, was 2,902,000. Capital (p. 1950), Baton Rouge, 125,629. Other important cities (with pop.): New Orleans 570,445, Shreveport 127,206, Lake Charles 41,272, Monroe 38,572, Alexandria 34,913, Lafayette 34,141.

History.—The legislature met twice in 1955. A proposed constitutional amendment authorizing a \$50,000,000 bond issue for improved highways was rejected at the Nov. 1954 election, which left the highway department without adequate funds for the 1954-56 biennium. To remedy this situation, the governor called a 12-day special session on Jan. 3, 1955, which appropriated \$30,000,000 from the surplus revenues for improvement of all roads up to June 30, 1955, and an additional \$20,000,000

from the anticipated tidelands royalties to match federal grants for arterial highways during the fiscal year 1955-56.

At the Nov. 1954 election the voters approved a constitutional amendment providing for 30-day fiscal sessions in odd-numbered years, midway between the regular 60-day biennial sessions. The first such fiscal session convened on May 9, 1955. Its purpose was to review the biennial budgets for the various state departments and agencies, and to make necessary adjustments; but many of the departments requested large additional appropriations from the available or anticipated surplus revenue during the remainder of the 1954-56 biennium. Bills calling for appropriations of more than \$200,000,000 were introduced, while the available surplus revenue was estimated at only about \$50,000,000. With an election approaching, the legislature was inclined to pass a majority of the bills, and to leave it to the governor—who was ineligible to succeed himself—to veto enough of them to reduce the total appropriations to the sum estimated to be available from the surplus revenues. The legislature passed 167 bills, carrying appropriations of about \$120,000,000. The governor approved 142 bills for a total of \$54,000,000 and vetoed 25 others for a total of \$66,000,000. Of the appropriations approved \$20,000,000 were for education and \$15,000,000 for highways.

An intensive program of widening and resurfacing the older paved highways, to make them safer for modern traffic, was in progress in 1955, and more than 100 mi. of new pavement was completed. Construction of a new highway bridge over the Mississippi at New Orleans was begun, and plans and surveys were completed for the state's first privately owned toll road, designed to shorten by 50 mi. the distance between New Orleans and points in southwestern Louisiana, and to cost an estimated \$100,000,000.

The federal supreme court issued its decree, ordering integration of the races in the public schools as speedily as possible, while the fiscal session of the legislature was in progress; and the legislature reaffirmed its plan to maintain segregation, but to provide equal educational facilities for the two races. The dispute over ownership of the tidelands in the Gulf of Mexico hinged upon the question of the state's "historic boundaries," Louisiana claiming three leagues (about 10½ mi.) and the federal government contending that the boundary extended only 3 mi. from the shore line.

State officers in 1955 were: Robert F. Kennon, governor; C. E. Barham, lieutenant governor; Wade O. Martin, Jr., secretary of state; A. P. Tugwell, treasurer; Allison Kolb, auditor; Fred S. LeBlanc, attorney general; Shelby M. Jackson, superintendent of education; Ellen Bryan Moore, register of land office; Dave Pearce, commissioner of agriculture and immigration.

Education.—In the 1954-55 session the 800 public schools for whites enrolled 250,294 elementary and 93,875 high school pupils and employed 13,555 teachers; the 841 public schools for Negroes enrolled 169,468 elementary and 39,501 high school pupils and employed 6,532 teachers. The 205 private schools for whites enrolled 67,408 elementary and 13,902 high school pupils and employed 2,435 teachers; the 82 private schools for Negroes enrolled 20,424 elementary and 2,527 high school pupils and employed 523 teachers. The 7 state-approved nursery schools and kindergartens enrolled 151 pupils and employed 16 teachers and assistants. The state operated 25 public trade schools in 1954-55. There were 7 state-supported colleges and universities for whites and 2 for Negroes, 11 private and endowed colleges and universities for whites and 3 for Negroes.

The total state budget for public education at all levels for the fiscal year 1954-55 was about \$144,000,000, of which \$18,000,000 consisted of bond issues authorized for new buildings and improvements at all the state-supported colleges and universities.

Social Insurance and Assistance, Public Welfare and Related Programs.—Total benefit payments under the Louisiana unemployment compensation law were \$18,626,016 for the fiscal year 1954-55, compared with \$15,188,442 for the fiscal year 1953-54. Louisiana expended nearly \$108,000,000, in grants and operating costs, on public welfare in the fiscal year 1954-55, which was about the same as for the fiscal year 1953-54.

In 1955 the state maintained eight charity hospitals; three hospitals for mental patients; three tuberculosis sanatoriums; a school for white blind, a school for white deaf and a school for Negro blind and deaf;

a training school for spastic children; and a training school for the feeble-minded.

The state maintained a large prison farm for 3,000 adult offenders, separate training schools for about 200 delinquent white boys and girls and a training institute for about 200 delinquent Negro boys.

Table I.—Louisiana Public Welfare Programs, 1954–55

Type of assistance	Average number on rolls	Cost for the fiscal year
Old-age pensions	119,718	\$73,108,756
Needy blind	2,543	1,192,057
Dependent children	70,352	13,680,959
Disability assistance	14,211	6,188,759
General assistance	7,968	3,426,974
Foster children	2,142	1,411,663
Totals	216,934	\$99,009,168
Administrative expenses		8,941,798
Total cost of program		\$107,950,966

Source: Louisiana Department of Public Welfare Reports.

Total state expenditures for maintenance, expansion and improvement of charitable and correctional institutions were about \$45,000,000 for the fiscal year 1954–55.

Communications.—An exhaustive survey completed in 1955 as the basis for a long-range highway improvement program revealed that Louisiana had 47,472 mi. of rural highways and urban streets. Of this total 15,069 mi. constituted the state-maintained highway system, 5,000 mi. of which was paved with concrete or blacktop and the remainder gravelled. Total state expenditures for public highways, exclusive of federal grants-in-aid, were about \$60,000,000 for the fiscal year 1954–55, compared with \$50,000,000 for the fiscal year 1953–54. There were about 4,400 mi. of railways and 4,800 mi. of navigable waterways. About 100 land airports and 10 seaplane bases were in operation in 1955. There were 678,338 telephones in service on Sept. 1, 1955. The three Louisiana ports for ocean-going vessels handled a total tonnage of 69,417,303 in 1954, compared with 70,211,400 in 1953.

Banking and Finance.—On Jan. 1, 1955, Louisiana had 40 national banks, with total deposits of \$1,647,560,000 and resources of \$1,756,186,000; and 132 state banks, with total deposits of \$769,489,299 and resources of \$822,057,267. There were 63 savings and loan associations, with total assets of \$373,475,136 on June 30, 1955; 294 small loan

Table II.—Principal Crops of Louisiana

Crop	Indicated 1955	1954	Average, 1944–53
Cotton (bales)	575,000	572,000	591,000
Cottonseed (tons)	235,000	236,000	239,000
Corn (bu.)	17,545,000	12,957,000	15,230,000
Rice (100-lb. bags)	12,528,000	14,996,000	10,968,000
Sugar cane (short tons)	5,865,000	6,200,000	5,407,000
Sweet potatoes (bu.)	9,800,000	8,835,000	9,319,000
Irish potatoes (bu.)	499,000	927,000	1,418,000
Hay (tons)	393,000	324,000	381,000
Oats (bu.)	4,964,000	3,744,000	2,334,000
Pecans (lb.)	15,500,000	10,500,000	13,725,000
Peaches (bu.) . . . . .	...	70,000	149,000
Pears (bu.) . . . . .	...	79,000	148,000
Citrus fruits (boxes)	215,000	175,000	257,000

Source: U.S. Department of Agriculture.

companies, with total assets of more than \$40,000,000; and 110 credit unions, with total assets of more than \$6,000,000. Total state income for the fiscal year 1954–55 was nearly \$400,000,000, exclusive of federal grants-in-aid; and most of it was appropriated for current expenses. State bonded debt on July 1, 1955, was approximately \$225,000,000.

Agriculture.—The total value of agricultural and truck crops was estimated at \$270,000,000 in 1955, compared with \$283,103,000 in 1954; total acreage harvested was 2,750,000, compared with 2,800,000 in 1954. Total income from crops, livestock and poultry and their products was estimated at \$400,000,000 in 1955, compared with \$421,251,000 in 1954; from government payments \$11,000,000, compared with \$11,306,000 in 1954. A late spring freeze destroyed peaches and pears and severely damaged some of the early truck crops; and prices for most farm products were slightly lower in 1955 than in 1954.

Table III.—Principal Industries of Louisiana

	All employees, 1953	Salaries and wages, 1953 (in 000s)	Value added by manufacture, 1953 (in 000s)	Value added by manufacture, 1952 (in 000s)
Food and kindred products	27,662	\$79,685	\$193,112	\$177,200
Textile mill products	2,312	6,029	8,713	8,326
Lumber and products (except furniture)	24,174	51,620	84,627	*
Paper and allied products	16,345	70,915	165,020	*
Chemicals and allied products	16,249	75,665	270,210	238,269
Petroleum and coal products	13,666	72,671	200,161	211,670
Stone, clay and glass products	4,315	16,358	35,954	*
Fabricated metal products	3,780	13,833	26,253	*
Machinery (except electrical)	3,909	14,497	18,144	*
Transportation equipment	9,186	35,054	44,670	*
Administrative and auxiliary	1,741	7,280	...	...

*Withheld because the estimate did not meet publication standards, either on the basis of the associated standard error of estimate or on the basis of a consistency review.

Source: U.S. Department of Commerce, Annual Survey of Manufactures, 1953.

Manufacturing.—About 2,400 industrial establishments, employing 170,000 workers and paying about \$550,000,000 in wages and salaries, produced finished products worth \$1,750,000,000 in 1955, compared with \$1,700,000,000 in 1954. Under the state law exempting new industrial installations from taxation for ten years, capital investments in new industrial plants and expansions of existing ones amounted to \$150,000,-

000 in 1954, compared with \$267,000,000 in 1953; these provided 4,500 new jobs in 1954, compared with 5,000 in 1953.

Forest Products, Furs, Fisheries.—Louisiana forests produced 818,600 bd.ft. of lumber and 1,486,871 cords of pulpwood in 1954, compared with 879,571,579 bd.ft. and 1,355,666 cords in 1953.

The Louisiana fur harvest for the 1954–55 season was valued at \$3,418,730, compared with \$1,835,983 for the 1953–54 season. Net income of \$1,000,000 of the increase was from muskrat, a fur-bearing animal introduced into the state a decade ago.

The total catch of Louisiana commercial fisheries—fish, oysters, shrimp, crabs, frogs and menhaden—was valued at more than \$1,000,000 in 1953, compared with \$35,000,000 in 1952. The industry furnished a livelihood to 65,782 persons in 1953. (W. Pr.)

Mineral Production.—Table IV shows the tonnage and value of mineral commodities produced in Louisiana in 1952 and 1953 (preliminary). In 1953, Louisiana was second among the states in output of natural gas and sulphur, and third in petroleum and salt; and fourth in the value of its mineral output, with 6.71% of the U.S. total.

Table IV.—Mineral Production of Louisiana

Mineral	1952		1953	
	Quantity	Value	Quantity	Value
(Short tons, except as noted)				
Clays	390,136	\$434,000	624,000	\$ 952,000
Natural gas (000 cu.ft.)	1,237,143,000	82,889,000	1,293,644,000	106,079,000
Natural gasoline (000 gal.)	672,042	48,579,000	665,532	55,421,000
Petroleum (bbl.)	243,929,000	645,090,000	256,632,000	721,150,000
Petroleum gases (000 gal.)	297,444	14,890,000	287,280	12,654,000
Salt	2,553,000	7,808,000	3,061,000	9,190,000
Sand and gravel	6,005,000	6,737,000	4,538,000	5,162,000
Sulphur	1,624,000	32,015,000	1,802,000	43,453,000
Other minerals . . . . .	...	10,059,000	...	11,176,000
Total		\$848,401,000		\$965,237,000

Low, Solon Earl (1900–), Canadian political leader. He was born Jan. 8 at Cardston, Alta. He was educated at Calgary Normal college and at the universities of Alberta and Southern California. He entered provincial politics in Alberta as a Social Credit party candidate in 1935 and was a member of the legislature until 1945; provincial treasurer for Alberta, 1937–44; minister of education, 1943–44; minister without portfolio, Alberta government, Oct. 1944 to May 1945. Elected president and national leader of the Social Credit Association of Canada at the national conventions, Toronto, 1945, and Regina, 1946, he resigned his provincial seat in 1945 and on June 11 of that year was elected to the house of commons for Peace River, Alta.

Following a lengthy visit to Israel, Low returned to Canada in the fall of 1954 and subsequently delivered a score of lectures on his visit to audiences in the U.S. and Canada. In June 1955 he conducted a campaign in Alberta on behalf of the Social Credit party which was returned to power again under Premier E. C. Manning. Low was instrumental in helping to end opposition filibuster in the house of commons over the Defective Production act, since it was his proposal, with slight changes, which finally broke the unprecedented deadlock between the government and the official opposition, which sought a time limit on the act and won its point on this principle. (M. L. S.)

Lumber. A preliminary estimate by the National Lumber Manufacturers association placed the total production of lumber in the United States in 1954 at 37,329,000,000 bd.ft. The total included 29,296,000,000 bd.ft. of softwood (

Table I.—Lumber Production in the U.S., Selected Years

(in 000,000 bd.ft.)			
Year	Softwoods	Hardwoods	Total
1910	34,000	10,500	44,500
1920	26,810	6,989	33,800
1930	21,323	4,729	26,052
1940	24,903	4,031	28,934
1950	30,633	7,374	38,007
1951	29,493	7,711	37,204
1952	30,234	7,228	37,462
1953	29,562	7,180	36,742

niferous) lumber and 8,033,000,000 bd.ft. of hardwood lumber (broadleaved species). Production for 1953 and for selected earlier years, as reported by the bureau of the census, U.S. department of commerce, are given in Table I.

The production figures by species for 1953, according to the Bureau of the census reports, are shown in Tables II and III. Of the total lumber output in the United States in 1953, the Pacific states produced 47%, nearly all softwoods. Oregon, California and Washington were the three leading producers, in the

Table II.—Softwood Lumber Production in the U.S. by Species*

(in 000,000 bd. ft.)	1953 production
all softwood	10,367
Douglas fir	7,581
Western yellow pines	3,783
Western white pine	1,577
Redwood	1,441
Jack pine (including western [Idaho] and eastern white pines)	1,354
Other softwood	969

*Lumber in smaller quantities also was produced from sugar pine, Englemann and other species, cedars, larch, cypress and other softwoods.

order named. Other important producing states were Georgia, North Carolina, Alabama, Virginia, Idaho, Arkansas, Mississippi, Louisiana, Montana and Texas.

Exports of lumber from the United States in 1953 amounted to 543,900,000 bd.ft., according to department of commerce reports. The total included 472,300,000 bd.ft. of softwood lumber, 500,000 bd.ft. of hardwood lumber, 500,000 bd.ft. of box

Table III.—Hardwood Lumber Production in the U.S. by Species*

(in 000,000 bd. ft.)	1953 production
all hardwood	3,339
White oak	709
Black and tupelo gum	551
Beech	530
Elm	406
Birch	331
Other hardwood	236

*Other hardwood species included ash, sycamore, alder, basswood, hickory and walnut.

shooks and 74,500,000 bd.ft. of sawed railroad ties. Imports of lumber amounted to 2,770,400,000 bd.ft., including 2,526,700,000 bd.ft. of softwood lumber, 232,600,000 bd.ft. of hardwood lumber, 3,400,000 bd.ft. of box shooks and 7,700,000 bd.ft. of sawed railroad ties.

The wholesale lumber price index in 1954 dropped slightly below the 1953 figure. It was also below the high point reached in 1951. Table IV shows average wholesale price indexes for lumber for selected years, from statistics published by the Bureau of labour statistics, U.S. department of labour.

An estimate of world production of sawn wood for 1953 by the forestry division of the U.N. Food and Agriculture organization placed the total at 266,850,000 cu.m., an increase of 3% over the 1952 estimate (1 cu.m.=424 bd.ft.). Approximately one-fifths of the total 1953 production was softwood.

Table IV.—Wholesale Lumber Price Index in the U.S.

(1947-49=100)	Year	Index
1950	114.5	33.2
1951	123.6	23.1
1952	120.5	28.9
1953	119.4	40.7
1954	117.3	59.3
		107.3

In a regional breakdown of the estimated total world production, North America (the U.S. and Canada) accounted for 111,000,000 cu.m.; the Soviet Union for 64,000,000 cu.m.; Europe, 20,000,000 cu.m.; Asia, 25,620,000 cu.m.; Latin America, 9,680,000 cu.m.; the Pacific area, 4,400,000 cu.m.; and Africa, 2,520,000 cu.m.

The United States ranked first in production both of softwood and hardwood lumber. Its total output of approximately 92,500,000 cu.m. was more than one-third of the world production of sawn wood. The U.S.S.R.'s 64,000,000 cu.m. ranked second. Canada reported 18,153,000 cu.m.; Japan, 17,255,000 cu.m.; West Germany, 7,104,000 cu.m.; Sweden, 6,900,000 cu.m.;

Brazil, 4,304,000 cu.m.; Finland, 4,115,000 cu.m.; France, 4,100,000 cu.m.; Austria, 3,282,000 cu.m.; Australia, 3,007,000 cu.m.; Yugoslavia, 2,196,000 cu.m. Other countries producing more than 1,000,000 cu.m. in 1953 were Italy, Norway, United Kingdom, New Zealand and Switzerland.

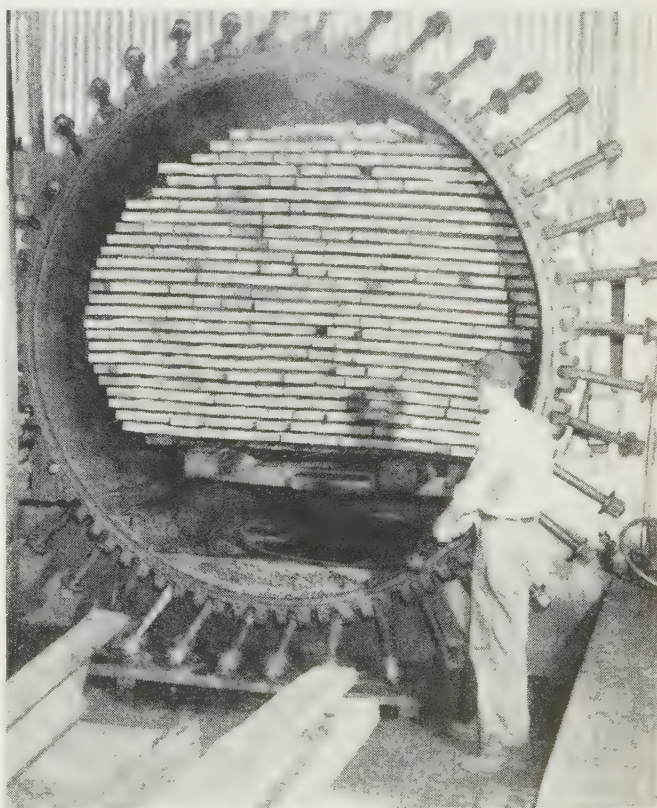
A new wood-fibre building board that filters poison bases, disease-laden particles and radioactive fall-out was announced by the U.S. department of agriculture and the U.S. army. The new material, called diffusion board, was developed by the department of agriculture's Forest Products laboratory at Madison, Wis., with the co-operation of the army chemical corps. The laboratory reported that the material could be manufactured with much the same equipment used to make ordinary building fibreboard and that any species of wood could be pulped to make it.

Standards for establishment of basic stress and higher allowable working stresses for timbers were revised by the Forest Products laboratory. The new standards were adopted by the American Society for Testing Materials.

Forest Products laboratory tests showed that low-grade lumber can be used to produce high-grade material for house siding and for interior use by overlaying it with resin-impregnated paper. The laboratory also developed a low-cost, easily installed flooring material made from hardwood veneer with a special drying process that makes it flexible and gives it good dimensional stability.

A South Carolina insurance company announced that it was completing arrangements to write fire insurance on merchantable timber, young growing timber and forest plantations in the 11 southern states from Virginia and Tennessee to Arkansas and Texas. This was the first forest insurance to become commercially available in the United States. (See also FORESTS.)

(C. E. R.)



WOLMANIZED LUMBER emerging from pressure cylinder. Announced in 1955, the use of Wolman salts makes lumber resistant to termites, decay, mould and leach, and partially fireproofs the lumber as well. The solution of salts is raised to 140° F. and impregnated in the lumber by vacuum and pressure in the chamber shown in the photograph

Lutherans. In 1955, Lutheran church membership in North America passed the 7,000,000 mark. The total was 7,117,906, including 6,906,331 in the U.S. and 211,575 in Canada, according to the National Lutheran council.

The 16 Lutheran church bodies had a total of 17,239 congregations and 15,881 ministers; combined property valuation was \$1,238,843,998; debts \$156,766,470; total expenditures \$272,511,767, including \$218,214,297 for local expenses and \$54,297,470 for church work at large.

Lutheran missionary efforts, at a new peak since 1946, were carried on at an expense of more than \$4,500,000 by 1,687 American Lutheran missionaries, serving 5,265 mission congregations with 865,000 native members in 18 foreign countries.

Merger talks between Lutheran bodies continued. The 2,200,000-member United Lutheran Church in America, largest single body, and the 516,000-member Augustana Lutheran Church jointly invited all Lutherans to talks "looking toward organic unity." Meanwhile, a proposed affiliation of the small (22,000-member) American Evangelical Lutheran Church with the United Lutheran Church in America was postponed because it failed to achieve the required two-thirds majority vote in the smaller body.

Jan. 1, 1960, was declared target date for merger of four other bodies: the Evangelical Lutheran Church (960,000 members), American Lutheran Church (862,000), Lutheran Free Church (67,000) and United Evangelical Lutheran Church (57,000).

Preparations were begun for the 1957 assembly at Minneapolis, Minn., of the Lutheran World Federation which, during 1955, increased its membership to 56 churches in 28 countries and embraced nearly two-thirds of the world's estimated 77,000,000 Lutherans.

The National Lutheran council, U.S. national committee for the Lutheran World federation and agency for eight U.S. church bodies (largest non-member in the U.S.: the Missouri Synod), announced that contributions in cash and goods to world-wide relief projects had reached nearly \$82,000,000 from 1939 through 1954, including cash gifts to Lutheran World Action and food, clothing and medicines donated to Lutheran World Relief. The combined relief effort was described as the most extensive undertaken by any Protestant denomination.

In 1955, the National Lutheran council launched a \$1,000,000 refugee program in co-operation with the Missouri Synod, aiming at the resettlement of 15,000 refugees under the U.S. Refugee Relief act. The 1955 goal of the All-Lutheran Food Appeal, also in co-operation with the Missouri Synod, was envisioned as \$1,000,000 worth of food products for overseas relief.

"Martin Luther," widely acclaimed U.S. Lutheran-financed feature film, wound up its commercial runs with a gross of more than \$2,000,000. Tentative plans were announced for a Lutheran feature film on composer Johann Sebastian Bach.

Much publicized in 1955 were Lutheran "heresy trials" against three young pastors in the Milwaukee, Wis., area, the first such trials in the United Lutheran Church in America since the 1920s. Pastor George P. Crist of Durham, Wis., was suspended for denial of the virgin birth and physical resurrection of Jesus Christ as well as deviation from other doctrines. Investigations against two other pastors were continued. (See also CHRISTIAN UNITY; CHURCH MEMBERSHIP.) (A. LA.)

Luxembourg. An independent grand duchy in western Europe, Luxembourg is bounded south by France, northwest by Belgium and northeast by Germany. Area: 999 sq.mi. Pop.: (Dec. 31, 1947, census) 290,992; (1954 est.) 308,000. Languages: *Letzeburgesch*, a German dialect, and French (official). Religion: Roman Catholic 98%. Capital, Luxembourg, pop. (1953 est.) 66,382. Sovereign, Grand Duchess

Charlotte. Prime minister in 1955, Joseph Bech.

History.—On April 16, 1955, by 48 votes to 3, the chamber of deputies ratified the Paris agreements on the rearmament of the German Federal Republic and its access to the North Atlantic Treaty organization. On April 19–21, Joseph Bech, the premier, paid an official visit to Vienna. On Sept. 9 the United States and Luxembourg each raised its legation in the other country to embassy status. In October a Luxembourg parliamentary delegation visited the U.S.S.R.

On April 16 Princess Josephine-Charlotte, wife of Prince Jean, the heir to the grand ducal throne, gave birth to a son who was baptized Henri. (See also EUROPEAN UNITY.)

Luxembourg Industrial Production

(In thousand metric tons except as noted)

Product	1954	1953	1952	1945	1937–44
Iron ore (metal content 30%)	5,892	7,164	7,248	1,404	6,224
Pig iron	2,796	2,724	3,076	318	1,964
Crude steel	2,832	2,664	3,000	264	1,900
Gas (million cu.m.)	20.16	19.08	18.5	11.6	1.2
Electricity (million kw.hr.)	990.0	879.6	831.6	177.6	50.0

Education.—Schools (1953–54): primary 1,045, pupils 28,597, teachers 1,063; secondary 7, pupils 3,253, teachers 280; vocational 7, pupils 3,313, teachers 170. Institutions of higher education 2, students 683.

Finance.—Monetary unit: Luxembourg franc, at par with the Belgian franc. Budget (1954 est., 1955 est. in parentheses): revenue 3,867,000,000 fr. (4,039,000,000 fr.); expenditure 4,379,000,000 fr. (4,790,000,000 fr.).

Transport and Communications.—Roads (1952): 4,300 km. Railways (1954) 505 km. Licensed motor vehicles (Jan. 1955): cars (including taxis) 18,532, commercial vehicles 5,844. Telephones (Jan. 1954) 28,000.

Agriculture.—Main crops: wheat, oats, potatoes. Livestock (1954): cattle 131,000; sheep 3,000; poultry 443,000; horses 11,544; swine 86,161.

Macao: see PORTUGUESE OVERSEAS TERRITORIES.

Macedonia: see YUGOSLAVIA.

Machinery, Farm: see AGRICULTURE.

Machinery and Machine Tools.

The year 1955 was notable in the machine-tool industry of the U.S. for two reasons: builders held their first national show in eight years, at Chicago, Ill., and automation emerged as an important factor in machine-tool design and performance. The industry booked orders totaling around \$800,000,000, thus setting a new record for a peacetime year. Shipments did not exceed \$675,000,000, compared with \$900,000,000 the previous year. The result was that the industry ended the year with a backlog considerably larger than at the start. This situation applied to metal-forming machines as well as to metal-cutting machines.

The machine-tool show, which was attended by 103,000 people, bore out the contention of qualified observers that machine-tool design had made a greater advance within 8 years (figure the previous show in 1947) than in the previous 80 years.

In machine-tool circles, automation originally meant less than the feeding and ejecting of work into and out of machines mechanically, and the transfer of the work from one machine to another by mechanical means. Then it was broadened to include the mechanization and automatic control of manufacturing processes.

Automation had long been used in mass-production plants, especially in the automobile industry. In 1955 it was applied to assembly as well as processing operations. Final assembly of V-eight engines at Plymouth's new plant in Detroit, Mich., completed during the summer of 1955, was done automatically by mechanized lines with subassemblies manually positioned and then automatically fastened by air-operated runners and other units. More than 560 ft. long, the line was by overhead conveyors bringing colour-coded plastic trays to an area where devices automatically loaded compartments with the exact number of parts needed. Trays were routed to va-

tions of the lines according to need.

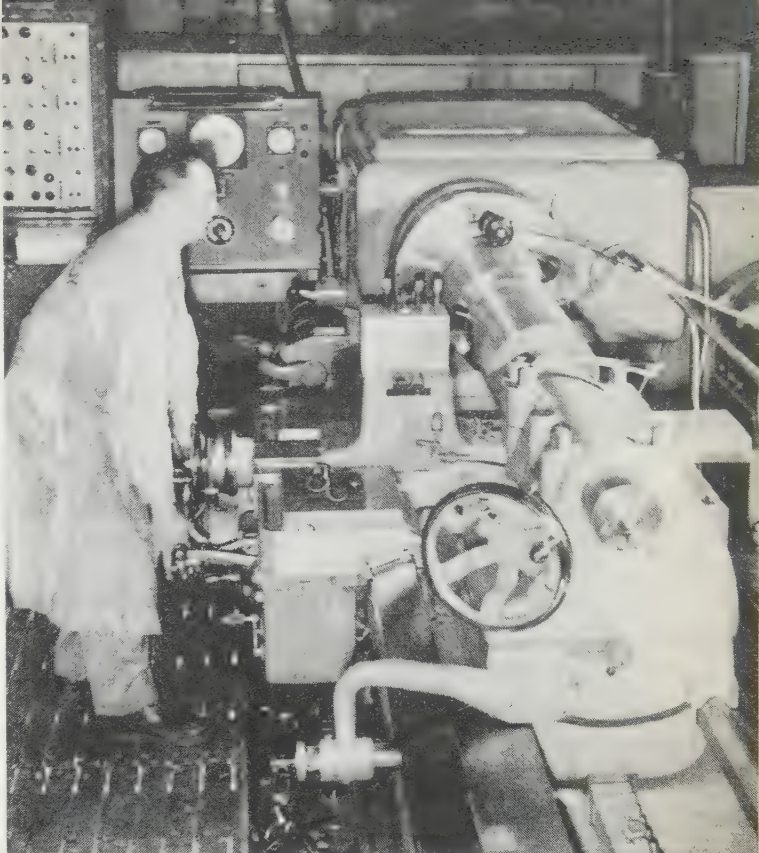
A survey made by the editors of *American Machinist* of 1,574 metalworking plants showed that 1 out of 5 of them had installed some form of automation. Even in shops with 50 employees or less, 1 out of 10 had some kind of automation. To qualify as possessing any form of automation, a company had to have one or more of these units: transfer machines, transfer cranes, automatic loading or automatic assemblies.

Preselection of feeds and speeds for machine tools so that they could be applied at the touch of a button or automatically on completion of the previous operation was a growing development during the year. Methods for doing this ranged from a simple card placed over the change-gear lever (which merely indicated the next setting but was numbered for the operation) to a fully automatic tape-controlled machine that produced different parts alternately from a single loop of tape that determined speed, feed, length of cut and operations sequences. The builder had a numerical-sequence programmer that used punched cards (which could be punched in the shop or made in direct decimal numbers) placed over a panel of buttons. The pushing of a pin through the holes set the buttons, or a master pin plate accomplished the same thing. This panel could sequence 25 functions and select from 8 different combinations of feeds and speeds, preset on dials. Numerically controlled table positioning came into considerable use. One was a turret punch using a system newly developed by the builder of the press builders.

At least three lathes and two hobbing machines first built during 1955 were equipped with self-resetting or feed back devices. Grinding machines showed the influence of the automotive industry in automatic cycling, automatic loading, clamping, wheel dressing and other devices. Several cylindrical and centreless grinders were equipped with electromechanical controls for automatic compensation for wheel wear as a result of redressing. Automatic threading control on a standard turret lathe was provided with a hydraulic unit which powered the automatic feed infeed to the proper graduation cutting depth for each pass. One grinder manufacturer worked on a project for eliminating mechanical and electrical wheel positioning controls. He substituted an electric eye beamed across flanges on the work to position the wheel.

Tracer control came into greater use during the year. A vertical boring and turning mill with an automatic tracer-controlled movement was unveiled by one builder. The system on this machine included a tracer head with a stylus and motors providing individual drives for each motion. A prominent builder displayed at the show a roll-contouring lathe of 50-in. capacity with a two-direction tracer that handled steep-angle contours. For heavy-duty work, another company brought out an automatic tracing lathe which removed up to one-half inch of material on one, two, three and four automatically controlled tracing passes.

Three developments were noteworthy in threading equipment: continuous automatic threading operations, thread broaching and chip-screw tapping. Infinitely adjustable speeds, hydraulic feeds, air-powered unit drill heads and minimizing of noncutting time were stressed in new designs of radial drills. More capacity in the same machine size was provided in certain radials, which were equipped with double right-angle bases to permit one job to be set up while another was working. Fully automatic gear grinding came into its own during the year. The machine for this purpose could be fed by hopper or magazine and had an automatic work release at the end of its cycle. Milling machines, like other types of machine tools, were redesigned to improve accuracy and convenience of operation and to make them more powerful and rigid for effective use of carbide milling cutters at



HIGH-SPEED LATHE installed at the Carboly department of General Electric Co., in 1955. Weighing 12 tons, the machine is 32 in. long and is capable of variable speeds from 4 to 1,400 r.p.m. It was to be used in testing materials machinability with various grades of cemented carbide tools, and to determine carbide life under all conditions

optimum cutting speeds and feeds. In broaching, manufacturers revealed many new features: higher speeds, substitution of electromechanical for hydraulic drives, easier control of the machine by redesign, reduction of time lost between cutting strokes and automatic loading and removal of the work.

"Packaged presses" began to come into prominence in 1955. These presses are ready to run after they are set down on the shop floor and are plugged into air and electric lines. For mass-production users, these presses save the cost of setting up. Also, the builder engineers the controls—for air, electricity and automation—puts them into substantial cabinets and properly labels their elements and functions. The electrical devices are also prewired.

Electrical-discharge machines assumed increased importance during the year. One such machine was suitable for tool sharpening, surfacing, forming, piercing, diemaking or polishing. A four-station machine of this type pierced 32 elliptical holes in stainless steel in 110 minutes, using extruded tubular brass electrodes. The contour was held to 0.005 in., and alignment to 0.001 in.

No innovation created more excitement during 1955 than ceramic (cemented-oxide) cutting tools. When applied properly, they increased steel-finishing speeds four to five times. These tools cut at 600 to 3,000 ft. per minute with depth of cut ranging from 0.110 to 0.250 in. and feed rate from 0.008 to 0.016 in. per revolution. When designed right, adequately supported and used in a machine with enough power, ceramic tools could remove metal at least four times faster than tungsten-carbide tools could cut it. Tool bits lasted 26 to 30 minutes; they remained cool if properly designed. Power required for ceramic tools was about the same as for carbide tools. Most of the bits were composed of aluminum oxide with varying percentages of other oxides, processed by powder metallurgy. Ceramic tools were being made experimentally during the year and were not available commercially. (B. Fy.)

McKay, Douglas (1893-), U.S. government official, was born on June 24 at Portland, Ore., and received his bachelor's degree in agriculture at Oregon State college, Corvallis, in 1917. He served overseas as an infantry officer in World War I. He was an automobile salesman at Portland, Ore., from 1920 to 1927, then set up his own automobile dealership at Salem, Ore. Mayor of Salem for one term (1933-34), he was later Oregon state senator for four separate terms (1935-37, 1939-41, 1943-45 and 1947-49). In 1948 he was elected governor of Oregon on the Republican ticket; he was reelected in 1950.

Although a staunch opponent of such vast public power developments as the projected Columbia Valley authority and the Missouri Valley authority, McKay became known in the west as a supporter of local governmental development of natural resources. He was named secretary of the interior in Pres. Dwight D. Eisenhower's cabinet and was sworn into office Jan. 21, 1953. The following April 17 McKay announced that he had cut the department of the interior's budget from the \$607,251,400 asked by former Pres. Harry S. Truman to \$484,363,000.

During 1955 McKay opposed federal building of the controversial Hell's Canyon dam on the Oregon-Idaho border. In testimony before the senate's interior subcommittee in Feb. 1955, he advocated admission of both Alaska and Hawaii to the union.

Madagascar. An island (fourth largest in the world) off the southeast coast of Africa, Madagascar is an overseas territory of the French Union. Comoro archipelago is administered as a separate territory. Areas and populations are:

	Area (sq.mi.)	Population 1936 est.	1954 est.
Madagascar (with dependencies)	230,165	3,669,328	4,540,400*
Comoro archipelago	849	128,608	170,046

*1953 estimate.

Population: many indigenous racial and tribal groups, the Merina being the most numerous (about 900,000); 66,423 Europeans (1952) including 47,274 French; small Hindu, Chinese and Arab minorities. Language: Malagasy, related to the Malayo-Polynesian group. Religion: Madagascar, Christian and pagan; Comoro archipelago, Moslem. Chief town (pop., 1951 census): Antananarivo or Tananarive (cap.) 182,982; Tamatave 36,133; Majunga 38,042. High commissioner in 1955, André Soucdaux. Comores: administrator, Pierre Coudert.

History.—Madagascar's economy was going through a critical period in 1955, mainly because of the fall in coffee prices, coffee being the country's principal export. The coffee crop rose nonetheless, reaching 40,000 metric tons. The former nationalist deputy, Raseta, who had been sentenced to death after the rebellion of 1947, was released from prison on condition that he should reside in France. In September conversations between the deposed sultan of Morocco and the delegates of the French government and of the Moroccan political parties took place at Antsirabe. Two dams were started to the east of Tananarive, to provide additional electricity.

By a law of Aug. 6 the administration of the French Austral and Antarctic territories was detached from that of Madagascar: henceforth they were to constitute a distinct overseas territory. Reindeer, ponies and some sheep were landed on Kerguelen island.

The governor-general of the Union of South Africa, E. G. Jansen, paid an official visit to Madagascar in July. (Hu. DE.)

Education.—(1953) *Madagascar*: Schools: primary 1,856, pupils 255,855; secondary (including teacher training) 146, pupils 11,385; vocational 135, pupils 6,194. Higher institutions 4, students 378. *Comores*: pupils 2,700.

Foreign Trade.—Monetary unit: franc C. F. A. (Colonies Françaises d'Afrique)=2 metropolitan francs. In 1955, U.S. \$1=350 metropolitan francs. *Madagascar*: imports (1954) 24,040,000,000 fr. C. F. A., includ-

ing 18,000,000,000 fr. C. F. A. from France; exports 16,026,000,000 fr. C. F. A., including 11,000,000,000 fr. C. F. A. to France (coffee 41.2 metric tons, rice 16,000 metric tons, tobacco). *Comores*: imports 55,000,000 fr. C. F. A.; exports 558,000,000 fr. C. F. A. (mainly vanilla and essential oils).

Agriculture.—*Madagascar* (metric tons, 1953): rice 1,025,000; coffee 43,500; potatoes 80,000; peanuts 22,000; maize 72,500; manioc 856,000; Cape peas 12,000; sisal 8,700; raffia fibre 5,100; castor oil 2,700; tobacco 4,400; vanilla 350; pepper 350; dry beans (1952) 32,000.

Madeira: see PORTUGAL.

Magazines and Periodicals: see NEWSPAPERS AND MAGAZINES.

Magnesium: see MINERAL AND METAL PRODUCTION AND PRICES.

Maine. The extreme northeastern state of the United States. Maine was admitted as the 23rd state in 1820, and is popularly known as the "Pine Tree state." Land area 31,000 sq.mi.; water area 2,175 sq.mi.; pop. (July 1, 1955, est.) 890,000; (1950 census) 913,774. The largest cities and their 1950 populations are: Portland 77,634; Lewiston 40,974; Bangor 31,558; Auburn 23,134; South Portland 21,866; Augusta (cap.) 20,913; Biddeford 20,836; Waterville 18,287.

History.—Gov. Edmund S. Muskie took office Jan. 5, 1955. The Republican controlled legislature met in regular session on Jan. 5, 1955, and adjourned on May 21. The first in 20 years to deal with a Democratic governor, it passed many of his recommendations, creating a department of industry and commerce, authorizing a survey of state government, and providing money for state institutions and aid to education. It also reappointed the house of representatives for the first time since 1931. The constitution provides for decennial reapportionment. On the other hand, the legislature also passed a one cent per gallon increase in the state gasoline tax (from 6 to 7 cents over the gubernatorial veto, turned down a proposed income tax (or a sales tax increase alternative) refused to set up a building reserve fund and frowned on a highway bond issue. A budget supplement of \$10,000,000 was cut in half and various tax increases provided to finance the remaining \$5,000,000 appropriation.

Governor Muskie allowed the supplementary tax and appropriation bill to become law without his signature. A new state office building and a state liquor warehouse were pushed toward completion at the state capital.

At a special September election voters approved four minor amendments to the state constitution and approved a bridge bond issue. Maine Indians on state reservations were privileged to vote at this election, their first chance in Maine history. An amendment approved in 1954 gives "Indians not taxed" the right denied by the 1820 constitution.

Favourable weather and a prosperous national economy pushed Maine's vacation industry to a new high point, and other features of the state's economic picture were sound, with unemployment lower than in 1954. The Maine turnpike extension begun in 1954 was completed in 1955.

The chief officers of Maine during 1955 were: governor (or elected state official in Maine), Edmund S. Muskie; secretary of state, Harold I. Goss; attorney general, Frank F. Hardin; treasurer, Frank S. Carpenter; auditor, Fred M. Berry; commissioner of agriculture, Fred J. Nutter.

Education.—The net enrolment in the public schools April 1, 1955 was 173,147, compared with 168,225 in 1954 and 167,024 in 1953. The state general fund appropriation for the department of education for the year 1954-55 was \$9,254,357, compared with \$8,694,076 in 1953-54. Expenditure per pupil based on average daily attendance 1953-54 was \$148.54 for elementary schools, \$333.18 for secondary schools; in 1952-53 it was \$136.19 and \$293.50, respectively. Public school teaching positions in the state (elementary and secondary) numbered 6,916 in 1953-54 compared with 6,603 in 1952-53. The commissioner of education in 1955 was Herbert G. Espy.

Social Insurance and Assistance, Public Welfare and Related Programs

of Dec. 31, 1955, there was a balance (Oct. 1 est.) of \$42,500,000 the unemployment compensation benefit funds of the Maine employment security commission, compared with \$42,649,892 a year earlier. Total benefit payments for 1955 (Oct. 1 est.) were \$8,700,000, compared with \$9,837,344 the previous year. The state expended for health, care and charities for the fiscal years ending June 30, 1955, and June 30, 1954, \$16,903,738 and \$16,663,764 respectively. Ten state institutions (correctional, mental, etc.) as of Sept. 30, 1955, had a total state population of 5,416 and 1,370 employees, and three tuberculosis sanatoria had 274 inmates and 264 employees. These sanatoria were transferred from the department of institutional service to the department of health and welfare as of Aug. 20, 1955. The total expended on 13 institutions for the fiscal years 1955 and 1954 was \$7,150,717 and \$6,826,933, respectively.

communications.—Highways of the state in 1955 were: state highway 3,163 mi.; state aid system, 7,297 mi.; local system, 9,293 mi.; total, 19,753 mi. In the year ended June 30, 1955, the state expended \$1,195,531 and federal funds for highway and bridge purposes, exclusive of interest charges, \$31,758,806, compared with \$31,217,212 in 1954. Total expenditures of the highway department for the same years were \$35,385,043 and \$34,467,872. Steam railway mileage on 8 railroads was 1,832 line miles (Dec. 31, 1953). As of Aug. 1955 there were an estimated 230,024 telephone instruments in Maine, compared with 222,000 as of July 1954. Maine had 23 licensed commercial airports as of July 1955, and one regularly scheduled commercial airline. There were 4 commercial A.M. radio stations, 4 commercial TV stations operating in Maine as of Oct. 1955. There were 338,519 motor vehicles, including cars, registered in 1954 and 357,330 (est.) for 1955, with 377,516 drivers' licences issued in 1954 and 391,000 estimated for 1955.

Banking and Finance.—During 1955 the Maine banking department revised 32 savings banks, with one branch; 28 trust companies, with branches; and 29 loan and building, and savings and loan associations. The following figures are for June 30, 1955: deposits of savings banks, \$305,903,134; total assets, \$349,912,445; trust company deposits, \$1,479,589; total assets, \$311,638,855; building and loan and savings loan associations, total resources, \$50,296,544. There were 31 national banks in the state with combined assets on June 30, 1955, of \$1,034,000, and total deposits of \$259,934,000. Receipts, expenditures, and bonded debt of the state government for the year ending June 30, 1955, were respectively: \$85,366,180; \$87,798,624; \$37,300,000. For year ending June 30, 1954, these were respectively: \$81,721,240; \$82,894; \$39,141,500.

Agriculture.—Except for a high potato yield, 1955 was a normal year for Maine agriculture.

Table I.—Principal Crops of Maine

Crop	Indicated 1955	1954	Average, 1944-53
Barley, bu.	468,000	312,000	474,000
Buckwheat, bu.	2,880,000	3,003,000	3,344,000
Corn, bu.	108,000	100,000	132,000
Oats, bu.	768,000	712,000	772,000
Peas, bu.	68,200,000	48,960,000	61,758,000
Potatoes, bu.	1,530,000	740,000	927,000
Wheat (dry), 100-lb. bags	69,000	32,000	66,000

Source: U.S. Department of Agriculture.

Fisheries.—During 1954 there were 283,905,900 lb. of fish landed in the ports, valued at \$16,855,600 to the fishermen. Corresponding figures for 1953 were 241,558,713 lb. and \$16,754,164 respectively. This represented an increase in quantity of 18%, and an increase in value of 1% for 1954 compared with landings of 1953. The value of the principal species (1954) with weight in pounds in parentheses, was: lobster \$8,087,165 (21,667,713); rosefish or ocean perch \$5,500 (79,670,711); clams \$1,460,351 (4,013,568); herring \$1,516 (123,602,099).

Manufacturing.—The average weekly hours worked in manufacturing by production workers (Aug. 1955) was 40.3 and average hourly earnings \$1.446 compared with 39.9 and \$1.399 for the same period in 1954.

Table II.—Principal Industries of Maine, 1954

Type of Industry	Value of Product	Gross Wages Paid	Employees
Manufacturing	\$1,138,778,168	\$317,258,713	110,675
Food and kindred products	153,350,041	23,709,067	14,117
Textile mill products	219,803,904	57,898,193	19,594
Chemical and other finished products made in fabrics and similar materials	18,494,520	4,187,062	2,201
Paper and wood products (except furniture)	109,989,863	31,973,326	14,726
Stone and fixtures	5,256,338	1,634,828	659
Textile and allied products	292,735,384	67,758,079	17,206
Printing, publishing and allied industries	15,252,263	5,690,563	1,702
Chemicals and allied products	15,761,304	1,866,347	652
Food products	858,925	200,400	100
Textile and leather products	148,805,044	44,383,633	19,880
Clay and glass products	10,530,806	2,898,350	925
Nonmetallic mineral products	2,656,122	569,538	224
Transportation, machinery and transportation equipment	39,505,262	9,043,221	2,631
Electric, electronic and optical equipment (except electrical)	41,370,525	15,809,060	4,147
Radio, television, communication, and electronic equipment, and supplies	7,970,497	1,354,795	420
Transportation equipment*	52,731,358	47,094,523	10,852
Arms, explosives, and related products	756,668	276,221	79
Nonferrous metal manufacturing industries	2,949,344	901,507	560

*South Naval shipyard included, except value of product.

Source: Maine Department of Labor and Industry.

Nonagricultural labour force of the state employed in mid-August, 1955, was estimated at 280,300, or 1.1% above the figures of 277,200 in mid-August, 1954. Production of Maine industries in 1954 was valued at \$1,138,778,168, or 2.6% less than the previous year and there were

110,675 employees of whom 34,762 were women. Comparable figures for 1953 were: \$1,169,170,378; 120,134; and 37,071. Average annual earnings were: \$2,866 (1954); \$2,864 (1953). (E. F. D.)

Mineral Production.—Table III shows the tonnage and value of those mineral commodities produced in Maine in 1952 and 1953 (preliminary) whose value exceeded \$100,000. In 1953, Maine was fourth in the production of feldspar and ranked 44th among the states in the value of its mineral output, with 0.07% of the U.S. total.

Table III.—Mineral Production of Maine

Mineral	1952		1953	
	Quantity	Value	Quantity	Value
Cement (in bbl.)	1,457,000	\$3,750,000	2,001,000	\$5,422,000
Feldspar	19,000	147,000	18,000	117,000
Sand and gravel	7,078,000	2,188,000	8,072,000	2,608,000
Stone	317,000	1,796,000	249,000	1,215,000
Other minerals . . . . .	...	1,098,000	...	1,141,000
Total		\$8,979,000		\$10,503,000

Maize: see CORN.

Malaria: see TROPICAL DISEASES.

Malaya, Federation of. The Federation of Malaya consists of the British settlements of Malacca and Penang and the protected states of Johore, Kedah, Kelantan, Negri Sembilan, Pahang, Perak, Selangor, Trengganu (sultanates) and Perlis (rajaship). Area 50,690 sq.mi. Pop.: (1947 census) 4,908,086, including 2,427,834 Malays (49.5%), 1,884,534 Chinese (38.4%), 530,638 Indians and Pakistanis (10.8%); (mid-1954 est.) 5,888,578. Religion: Malays are Moslem; Indians mainly Hindu; Chinese Buddhist, Confucian and Taoist. Chief towns (pop. 1947 census): Kuala Lumpur (Selangor; federal cap.) 175,961; Penang or George Town 189,068; Ipoh (Perak) 80,894; Malacca 54,507; Taiping (Perak) 41,361; Johore Bahru 38,826; Seremban (Negri Sembilan) 35,274. High commissioner in 1955, Sir Donald MacGillivray; chief minister Tengku Abdurrahman.

History.—For the Federation of Malaya the year 1955 was by far the most momentous year since the defeat of the Japanese. The country's first general elections were held on July 27. The overwhelming victory of the U.M.N.O.-M.C.A.-M.I.C.* alliance enabled the new chief minister, Tengku Abdurrahman, to offer an amnesty to the communist terrorists. In the closing months of the year hopes rose high that after more than seven years the emergency might be ended.

The elections were notable in two respects. Despite the poor communications, which meant that in some areas ballot boxes had to be transported from village to village in motor launches or by helicopter, more than 80% of the electors on the register went to the polls. And these voters, in 51 out of 52 constituencies, voted for the alliance, the party which had laid most emphasis on the blending of the races to form a Malayan nation. Dato Sir Onn bin Ja'afar, the federation's elder statesman (who had founded the United Malays' National organization, but had subsequently left it to help form the rival party Negara), was himself defeated. Partly because of the difficulties experienced by the Chinese in obtaining the right to vote under the existing laws, and partly because of their own lethargy in tackling these difficulties, only 11% of the electorate were Chinese although they formed about 40% of the total population. Nevertheless, Tengku Abdurrahman, the U.M.N.O. leader, insisted that 15 candidates out of the 52 sponsored by the alliance should be Chinese. The president of M.C.A., Col. H. S. Lee, one of the country's leading tin magnates, re-entered the legislative council and the government as one of the 43 members nominated by the high commissioner to represent the states and settlements and such "scheduled interests" as the rubber and tin industries, trade unions and chambers of commerce. The final composition of the legislative council was 50 Malays, 26 Chinese, 7 Indians,

*United Malays' Nationalist organization—Malayan Chinese association—Malayan Indian congress.

: Ceylonese, 1 Eurasian, 5 European officials and 7 European nonofficials.

Within a few weeks of the elections, A. T. Lennox-Boyd, U.K. secretary of state for the colonies, paid a visit to Malaya and was able to hold satisfactory talks on constitutional changes needed to meet the overwhelming success of one political party. Tengku Abdurrahman was to head a delegation to London early in 1956 to carry these discussions further. Before the elections he had promised his followers self-government in two years and complete independence in four; with so nearly unanimous a mandate from the electorate, the leisurely development envisaged on the British side during his 1954 visit to London was clearly insufficient.

A compromise between these two views had, of course, to depend upon the emergency. There were two important reasons why the British authorities fell in with Tengku Abdurrahman's desire to bring the emergency to an end by the offer of an amnesty. First, the world-wide communist campaign in favour of "co-existence" tended to reduce the campaign in Malaya to an absurdity. Secondly, the alliance victory in the elections destroyed the last pretense of the communists that they represented public opinion and greatly increased their desire to claim some share in the campaign for national independence. Doubtlessly a third factor also influenced Chin Peng, the communist leader, in asking for a meeting at which the chief minister could discuss the amnesty—the very high rate of surrenders in 1955, even before the amnesty offer had been made. This communist desire to transfer activities from the jungle to the towns and villages was, however, paralleled by a dangerously indiscriminating desire on the part of the public to finish with the emergency at any cost—a desire which more responsible persons in the country feared might gravely increase the power of the communists, once they had returned to civilian life.

In other respects the year was a very favourable one for the federation, mainly because of the high market price of rubber. There was a satisfactory rise in the country's foreign trade, and it was expected that an estimated deficit of Mal. \$148,000,000 would be converted into a small surplus. (See also SINGAPORE.) (V. BT.)

Education.—Schools (1953): Malay 2,038, teachers 11,843, primary pupils 338,100, secondary pupils 4,060; Chinese 1,210, teachers 7,572,

primary pupils 236,100, secondary pupils 14,840; Indian 869, teachers 1,565, primary pupils 43,200, secondary pupils 180; English 319, teachers 4,751, primary pupils 97,800, secondary pupils 42,400; junior technical 5, pupils 723. Teachers' training colleges 3, students 942. Institution of higher technical education 2, students 309, teaching staff 24. University of Malaya (Oct. 1954) students 1,043, teaching staff 161.

Finance.—Monetary unit: Malayan dollar (equal to 2s. 4d. sterling) and valued in 1955 at 32.66 cents U.S. Budget (1953 actual, 1956 estimates): revenue Mal. \$713,195,987 (\$744,000,000); expenditure Mal. \$883,352,435 (\$794,000,000).

Foreign Trade.—(Including Singapore, 1954): imports Mal. \$3,139,000,000; exports Mal. \$3,109,000,000. Principal exports (metric tons, 1954): rubber 598,987; tin 71,735; coconut oil 80,400; copra 41,600; palm 51,200.

Transport and Communications.—Roads (1953) about 9,980 km. Registered motor vehicles (1953): cars 44,552, commercial vehicles 29,400. Railways (including Singapore, 1954) 1,700 km.; freight 379,200,000 ton-km. Air transport (1953): 143,000 passengers arrived or departed from federation airports. Shipping (see SINGAPORE).

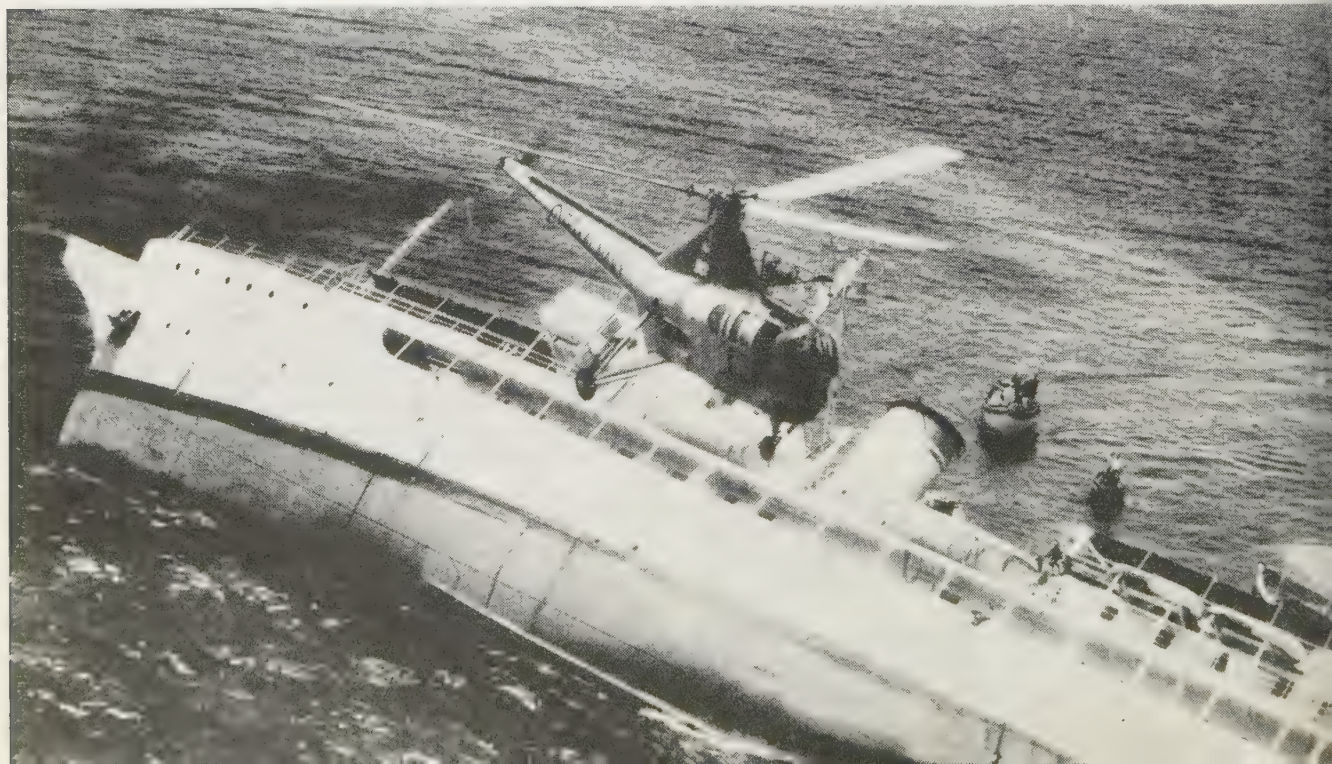
Agriculture.—Main crops (metric tons, 1954): rubber 594,000; rice 700,000; copra 166,800; palm kernels (estates) 14,700; palm (estates) 54,800; tea (estates, 1953) 1,900; pineapples (1953) 17,000. Livestock (1953): sheep 26,300; horses 600; pigs 306,000; goats 281,700; buffaloes 242,800; cattle (Sept. 1955) 278,000.

Industry.—Production (metric tons, 1954): tin concentrates (metal content) 61,680; coal 229,590; iron ore 1,238; bauxite 169,500; cement 86,400; gold 21,000 fine troy ounces. Electricity 873,600,000 kw. hr.

Malta. This British internally self-governing colony and strategic base consists of a group of three Mediterranean islands and three uninhabited islets, about 60 mi. south of Sicily. Area of main islands: Malta 95 sq. mi.; Gozo 26 sq. mi.; Comino 1 sq. mi. Total pop.: (1948 census) 305,991; (1955 estimates) 315,000. Language: Maltese (possibly of Punic [Phoenician] origin with heavy Arabic and some Italian overlay) and English; Italian is also spoken. Religion: Roman Catholic. Principal towns (pop., 1953 est.): Valletta (cap.) 19,145, excluding suburbs; Sliema 24,839; Pawla with Tarxien 20,471; Hamrun 13,995; Birkirkara 17,774. Governor in 1955, Sir Robert Laycock. Prime ministers, G. Borg Oliver and (from March 10) Dominic Mintoff.

History.—General elections held in March 1955 resulted in a win for Dominic Mintoff's Labour party by 23 seats to G. Borg Oliver's Nationalist party's 17. Mabel Strickland's Progressive Constitutional party won no seats. The Duke of Edinburgh attended the first session of the new legislature. In June the party leaders had talks in London on the long standing question of independence.

RESCUE IN VALLETTA HARBOUR, Malta, in Aug. 1955. The ferry boat, principal means of communication between the island and Sicily, struck a reef during a fog.



Malta's future status and in September a round-table conference gave an opportunity for all shades of political opinion to discuss the matter. Mintoff's proposal for Malta's integration with Great Britain, with Maltese representatives in parliament at Westminster, was opposed by G. Borg Olivier whose original aim for administration under the home office had now been replaced by a wish for self-government within the commonwealth. Miss Strickland proposed, *inter alia*, that there should be a minister of state for Maltese affairs in London. Malta's need for assistance with long-term social and economic planning was recognized by all those taking part in the political discussions.

(J. J. Ty.)

Education.—(1953-54) Government schools: primary 112, pupils 45,500; secondary 6, pupils 1,837; vocational 3, pupils 347. Private schools: pupils about 15,738. Royal University of Malta (Oct. 1954): students 411, teaching staff 52.

Finance and Trade.—Currency: sterling. Budget (1953-54 actual, 1955-56 est. in parentheses): revenue £7,695,000 (£8,968,000); expenditure £20,000 (£11,160,000). Foreign trade (1954): imports £20,300,000; exports £2,880,000.

Manchuria: see CHINA.

Mandated Pacific Islands: see TRUST TERRITORIES.

Mandates: see TRUST TERRITORIES.

Manganese. World production of manganese based on data supplied by the U.S. bureau of mines appears in Table I. The total for 1954 reflected a slump from 1953, but in 1955 an increase was indicated in other data. In British Guiana, Northwest Guiana, an associate company of the Union Carbide and Carbide Co., acquired a 33-yr. lease to develop deposits of manganese and associated minerals in a 60-sq.-mi. area. Inadnam Corp. of America exercised its option on a large manganese deposit in Northern Rhodesia, late in 1955.

Table I.—World Production of Manganese Ore

	1948	1949	1950	1951	1952	1953	1954
(In thousands of short tons)							
Algeria	155.7	165.2	215.5	224.4	274.7	255.1	220.0*
Australia	24.4	8	37.0	40.3	59.4	60.2	58.4
Belgium	32.0	68.9	87.3	169.9	277.4	389.4	296.8
British Guiana	14.1	13.5	18.7	78.2	141.1	238.8	424.3
Morocco	236.3	257.8	316.7	410.3	469.9	473.5	441.4
East Coast Africa	705.6	830.0	796.7	902.8	889.5	835.5	515.5
India	589.0	723.3	988.9	1,447.5	1,637.7	2,125.4	1,344.0
French India	6.5	17.9	33.1	95.7	122.4	165.3	117.0*
Japan	60.6	110.2	153.2	203.9	228.6	214.3	180.2
Kenya	9.2	24.9	35.5	55.7	88.7	99.0	54.9
South Africa	304.7	722.2	871.9	836.5	964.1	912.3	772.9
U.S.S.R.	1,980*	1,650*	2,200*	2,800*	2,800*	3,900*	4,400*
United States	131.1	126.1	134.5	105.0	115.4	157.5	211.7*
Total	4,620	5,071	6,200	7,800	8,600	10,600	9,700*

United States.—Vast deposits of low-grade manganese are found in the U.S. which under present conditions cannot be mined profitably. Small high-grade deposits supply a very small part of consumption requirements. Therefore most requirements are imported. Table II, which shows salient statistics of the manganese industry in the U.S., lists the chief countries supplying the imports.

All U.S. government contracts for manganese were cancelled in Sept. 1954.

Table II.—Data of Manganese Industry in the U.S.

	1948	1949	1950	1951	1952	1953	1954
(In thousands of short tons)							
Shipments	131.1	126.1	134.5	105.0	115.4	157.5	211.7*
Metallurgical ore	119.8	110.9	122.9	95.2	101.0	140.0	193.0*
Battery ore	10.8	15.0	11.5	9.8	14.4	17.5	17.0
Exports, general	1,256.6	1,544.5	1,834.9	1,767.6	2,669.0	3,501.0	2,166.1
Imports for consumption	1,473.5	1,423.8	1,925.1	1,902.9	2,204.0	3,115.0	2,244.1
Brazil	160.5	201.6	136.3	97.6	174.2	155.4	100.1
Chile	10.3	14.7	7.8	23.8	21.8	32.4	18.5
Cuba	32.8	60.8	96.9	147.1	259.2	397.3	261.5
East Coast Africa	217.8	281.8	378.1	360.3	282.0	333.6	193.6
India	314.8	357.2	642.5	616.9	772.5	1,218.2	952.6
Mexico	53.8	53.6	34.5	99.9	92.3	129.9	122.5
U. S. of A.	283.4	275.6	510.0	424.0	298.3	406.0	240.4
U.S.S.R.	384.1	151.0	65.6	2.6	...	...	...
Consumption	1,538.4	1,360.0	1,650.4	2,121.0	1,918.0	2,254.0	1,658.0

In the first eight months of 1955, based on preliminary monthly reports of the U.S. bureau of mines, manganese shipments aggregated 188,490 short tons of metallurgical grade and

10,055 tons of battery grade. The Wenden, Ariz., purchasing depot closed in May 1955, having filled its quota according to plans. (F. E. H.; B. B. M.)

Manitoba. A central province of Canada, Manitoba was established as a province on July 15, 1870. Area 246,512 sq. mi. (26,789 sq. mi. water). Pop.: (1951 census) 776,541; (1954 est.) 828,000; approximately 60% urban. Capital: Winnipeg, pop. (1951) 235,710. Other cities (1951): St. Boniface, 26,342; Brandon, 20,598; Portage la Prairie, 8,511; Flin Flon, 9,899.

History.—During 1955 J. S. McDiarmid represented the crown as lieutenant governor for the province; D. L. Campbell was premier; Dufferin Roblin was re-elected leader of the opposition (Progressive-Conservative) in June. There were 57 seats in the provincial legislature with the following distribution: 35 Liberal Progressives (government), 12 Progressive-Conservatives (official opposition), 5 Co-operative Commonwealth federation, 2 Social Credit, 1 Labour Progressive, 2 Independent. Manitoba has six representatives in the senate and 14 members in the house of commons at Ottawa. William Wall, the first Ukrainian senator in Canada, was appointed from Manitoba in July 1955.

The government royal commission under the chairmanship of John Bracken, after an 18-month survey of liquor laws at home and abroad, advised a liberalization of Manitoba's liquor laws. When passed by the legislature each district would have the right to vote to adopt or reject the recommendations.

In 1955 about 55,000 children were given two doses of Salk vaccine. Polio cases to Sept. 15 numbered 21; in 1954, 3,000 children received the vaccine and there were 117 polio cases reported.

The redistribution of electoral seats was passed after the special legislative committee's report, and it was to come into effect after the census of 1956.

Nearly 1,000,000 tourists visited Manitoba in 1955.

Education.—In the school year 1954-55 there were 1,722 school districts, of which 1,500 were rural; 145,222 pupils were taught by 5,562 teachers, of whom 567 were permit teachers. The University of Manitoba is situated at Ft. Garry and has six affiliated colleges. There is one normal school and one technical vocational high school.

Public Health and Welfare.—Under the Manitoba Health Services act there were 13 local health units in 1955 serving a total population of more than 293,430; three laboratory and X-ray units were operating with headquarters at Selkirk, Virden and Dauphin. Hospitals for mental diseases at Brandon and Selkirk had 3,539 patients under treatment during 1954-55. There were 12 general hospitals with more than 60 beds; 61 with fewer than 60 beds; 2 contagious diseases hospitals; 1 for chronic diseases and 6 sanatoriums. Old-age assistance was given (to those between ages 65-70) to 4,833 persons as at Dec. 31, 1954. There is one Manitoba school for mental defectives.

Communications.—The estimated length of all-weather roads at April 1, 1955, was: gravelled 3,024 mi., bituminous 950 mi., concrete 105 mi. There are seven radio stations and two short-wave stations in Manitoba and one television station. As of Dec. 31, 1954, there were 199,338 subscriber stations in the government-owned telephone system. There was a total of 5,048 mi. of railway exclusive of yard tracks and sidings. In 1954 there were 151,049 licensed passenger cars, 12,176 snowmobiles and snowplanes and 49,648 trucks. There were three air lines operating daily from Winnipeg, as well as a biweekly flight to Churchill, triweekly flights from Flin Flon to Lynn Lake and flights from Flin Flon to Sheridan and Snow Lake.

Finance.—At March 31, 1954, surplus over expenditure was \$218,438 from a revenue of \$55,727,948. For 1955-56 the anticipated revenue was \$58,475,000 and anticipated expenditures were \$58,318,564.

Agriculture.—Production for 1954: field crops \$109,621,000 (initial payments only for wheat, oats, barley); livestock \$48,313,000; dairy \$27,694,000; garden products \$7,680,000; poultry products \$18,613,000; fur farming \$1,500,000; honey \$616,000. Shipment of grain through Churchill Port amounted to 12,484,893 bu.

Fishing and Fur.—Production of fish for the year 1954-55 amounted to 28,441,500 lb. The value as marketed was \$5,435,305; value to fishermen, \$3,087,959. In 1954-55 the estimated value of raw furs exported was \$9,869,174.26; the estimated value of processed furs was \$1,276,828.49.

Mineral Production.—The estimated value of mineral production in 1954 was \$34,952,541, of which \$19,906,022 represented metals; the total included about 2,090,000 bbl. of crude oil, valued at \$5,663,900. Manitoba had ten established oil fields. In the new tenth field southeast of Virden, called the Maples field, there were 11 producing wells with 2 more nearing completion.

Manufacturing.—There were 1,596 manufacturing firms, giving employment in 1954 to 50,000 persons. Payrolls for production workers alone reached a total of \$119,000,000. A total of 48 new industries were established in 1954. (O. Kx.)

Mao Tse-tung (1893–), chairman of the Chinese Communist party and of the Chinese People's Republic, was born in Shao Shan, Hunan province, and educated in Changsha. He helped found the Chinese Communist party in Shanghai in 1921; became political commissar of the 4th Red army in 1931; and in 1934 at the second All-China Soviet congress became the unchallenged leader of the Chinese Communists. He led his forces into northwest China to escape the Chiang Kai-shek "annihilation campaigns" in 1934–35. Between 1937 and 1943 he led his forces against the invading Japanese, but after the Japanese surrender in 1945 supervised the Communist armies that drove Chiang's Nationalists back until, by the autumn of 1949, the Communists were strong enough to launch their People's regime.

Mao, with Chou En-lai (q.v.), shaped the foreign and domestic destinies of Red China in its early years, drawing it closer to the soviet union through military and commercial pacts, and adopting at the same time a completely hostile front to the United States. But in 1954 and 1955 Mao seemed to have retired into the backstage of Chinese politics, letting Chou take the initiative in foreign affairs—at least publicly.

At a Communist party convention in March 1955 Mao was reported to have approved a revised five-year economic plan for China.

Maple Sugar: see SUGAR.

Maps: see CARTOGRAPHY.

Mariana Islands: see MARSHALL, CAROLINE AND MARIANA ISLANDS.

Marine Accidents: see DISASTERS.

Marine Biology. **Distribution of Planktonic Animals.**—Methods for sampling the animal fraction of the plankton population are unsatisfactory, chiefly because the organisms are so sparsely distributed. Nets for the capture of the zooplankton are usually towed for a considerable period of time over a distance of several miles and at one or more subsurface levels. The precise level of towing cannot be controlled or even computed with any great accuracy, and consequently information on the distribution of the zooplankton population is based chiefly on its average density within a large volume of water from various subsurface depths.

Yet it had long been known to fishermen that "krill" or "red feed" appear in dense swarms more or less limited in extent. More recently, dense clouds, the scattering layer, had been located acoustically. Now, by a system of telemetering (W. Dow, 1955), it became possible to determine whether a net is fishing within this layer, just above it or just below it, the trace being recorded on the same roll as that for the scattering layer itself. This made it possible to obtain more accurate information on the depths where zooplankton swarm.

The inadequacies of sampling methods became more obvious as more and more direct visual observations were made. For example, divers (C. Limbaugh and A. B. Rechnitzer, 1955) using an aqualung reported that a thermocline, or the boundary between two water masses, may be very sharply located by an abrupt change from murky to clear water. Accumulations of planktonic organisms, as well as particles suspended in the water, may be responsible for such turbidity. Yet sharp boundaries of this sort are not detected when studying plankton in more conservative ways.

From depths below those explored by free divers came re-

ports of observations from the bathyscaphe F.N.R.S.3 of the French navy. Comparison of the abundance of plankton seen with the naked eye and that actually caught by a plankton net made the deficiencies of the latter even more obvious (G. 9 Houot, 1955). The plankton was observed to be quite dense from the surface down to a level just above the bottom, where in the last two or three metres the density decreased. The organisms were clearly visible with reflected light from the bathyscaphe. The movement of the animals together with the movement of the bathyscaphe prevented any precise identification of the smaller organisms except such slow-moving ones as medusae, heteropods, etc., at least in the vicinity of Dakar (T. Monod, 1954).

In the Mediterranean, much the same density of organisms was observed even with the same decrease in numbers when approaching the bottom, a decrease which may possibly be correlated with the decrease in amount of available oxygen (Fagnon and Brouardel, 1954) just above the bottom (J. M. Pérès and J. Picard, 1955). At the lower levels of the bathyscaphe's descent (i.e., 350 to 380 m. and 450 to 550 m.) medusae, salpae, ctenophores, siphonophores and *Gnathophausia* were also observed, in contrast with the upper layers where solitary radiolarians with large spines and some arrow worms were reported (Pérès and Picard, 1955).

Productivity.—In recent years, advances in the understanding of the productivity of the oceans had chiefly been concerned with the plant fraction of the plankton (H. W. Harvey, 1955) but a milestone was reached in the study of the animal portion with the publication of the monograph *Biology of a Marine Copepod* by S. M. Marshall and A. P. Orr of the marine station of Millport, Scot.

Existing knowledge of *Calanus finmarchicus*, the species under consideration, had been scattered in numerous scientific papers written within the past 25 to 50 years. Now within the covers of one book there were summarized the details of its life cycle and its part in the economy of the sea. It had been studied more intensively than any other species in the group because of its abundance in boreal waters and hence its importance in the food chain, feeding as it does on the phytoplankton and, in turn, being preyed upon by various pelagic fish, especially herring, and by whales.

Rough estimates for the maximal efficiency for the conversion of organic matter to animal tissue of the organic matter synthesized by the phytoplankton indicate that much of the material is lost as it passes along the food chain. Thus, 100 g. of the organic matter in phytoplankton may yield, in turn, about 70 g. when digested by zooplankton organisms, about 4–7 g. when the latter is ingested by plankton-feeding fish (such as herring) and about 0.3 g. when the latter are eaten by other carnivores, such as man (Harvey, 1955).

To test the efficiency of the first step in this conversion, cultures of diatoms and flagellates labelled with radioactive phosphorus (P^{32}) were fed to the copepod *Calanus finmarchicus*. By measuring the initial concentration of the P^{32} in the culture and the amount present in the *Calanus* body, faeces and eggs discharged, it was possible to show that a *Calanus* may filter from 1 to 40 ml. of fluid a day and ingest between 60% and 90% of its food (Marshall and Orr). Although there were certain disadvantages to using radioactive carbon (C^{14}) for such experiments, it was used for comparison with the P^{32} experiments and a fairly good agreement was obtained (Marshall and Orr).

Harvesting Plankton.—Serious consideration was given to harvesting marine plankton as one of the more abundant products of the sea. This was partly because organic matter is roughly decimated as it passes through each step in the food

in, partly because of the success of growing fresh-water unicellular algae in mass cultures, partly because of the publicity given to plankton as a survival food for persons adrift on rafts and partly because of the search for new resources in the sea. Most of the computations and experimental evidence were encouraging. Nevertheless, the idea persisted, and a number of persons had given serious thought to harvesting plankton on a commercial scale. This optimism was possibly based on the fact that in Asian countries, such as Thailand, plankton had been harvested for perhaps 100 years or more (S. W. Ling and K. Suriyong, 1954).

However, many factors militate against harvesting the plankton crop economically in any extensive way (P. Jackson, 1954). There are few, if any, localities along the shore where plankton is sufficiently abundant at all times to justify the operation of fixed equipment, and it is expensive to operate a vessel to reach out areas rich in plankton. Predictions cannot yet be made that it will be abundant at a particular depth, at a particular time or in a particular place. To make the harvest profitable the average plankton density should perhaps be twice that which it is reasonable to estimate for a rich area (Jackson, 1954). Thus the cost per dry ton of plankton might range from about \$5,000 by towing from a small vessel to \$12,600 for a fixed installation (Jackson, 1954). If it is assumed that roughly 60% of the plankton is in the form of protein, the cost would be about 20 times greater than for an equivalent amount of fish protein (Jackson, 1954).

Living Fossils.—Of the eight specimens of the coelacanth *Latimeria* that had been captured since 1928, the last was taken in 1953. The fish did not live more than a few hours after its capture and confinement in a submerged lifeboat. Since it had presumably been living at a depth of 140 fathoms, it was thought that its death was caused by decompression, by a sharp drop (of 26° C.) in temperature and by a high degree of photophobia (J. Millot, 1955). Indeed, the eye of *Latimeria* has a maximal development of light-sensitive elements, and this may account for the extreme photophobia noted when the fish was released (Millot and N. Carasso, 1955).

There appeared to be some disagreement, however, as to the cause of death, because the first specimen seemed to be quite healthy; it had survived for three hours lying on the deck in hot sun (J. L. B. Smith, 1955).

See also FISHERIES; NATIONAL GEOGRAPHIC SOCIETY; ZOO GEOGRAPHY.

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Marine Corps, U.S.

In May 1955 marines participated in atomic operations at Desert Rock, Nev., where helicopter-borne troops of a marine air-



LIGHTER COMBAT PACK for marine troops demonstrated in 1955. At left is 58 lb. pack carried by World War II forces; at right is new 18 lb. pack

ground experimental force carried out an assault exercise on an objective that had been hit by an actual atomic explosion. This unit, formed to test tactics and techniques of vertical envelopment, applied newly developed principles of offense and defense in atomic warfare. Large-scale amphibious exercises were staged during the year in North Carolina, California and the far east.

The average strength of the marine corps in 1955 was approximately 207,000 officers and enlisted personnel, including about 2,200 women marines. The corps was commanded by Gen. Lemuel C. Shepherd, Jr., the commandant, who assumed office on Jan. 1, 1952. Lieut. Gen. Randolph McCall Pate was appointed by the president to assume four-star rank and the office of commandant on Jan. 1, 1956.

The first marine corps trainees under the Reserve Forces act of 1955 were enlisted in September. Men so recruited would serve with the regular establishment for six months with an additional seven and a half years in the marine corps reserve.

The 1st marine division was redeployed to the United States in March after nearly five years' service in Korea—three of them in front-line combat.

Although the size of the corps diminished somewhat in 1955, the authorized strength remained at three combat divisions and three aircraft wings. One division and one aircraft wing remained in the far east.

A new armoured antitank vehicle called "Ontos" was displayed in 1955. Relying on speed and fire power, it carries six 106-mm. recoilless rifles. An all-weather air support system was also unveiled. The system, using radar guidance, enables planes flying blind and releasing bombs automatically to hit targets with excellent accuracy. Tested in Korean combat, this method had been described as the most practical of its kind yet devised.

The marine corps continued its experimental work with, and field-testing of, lightweight geodesic domes—igloo-shaped hemispheric frames covered by plastic-coated synthetic fabric almost as strong as steel and, except for the largest sizes, fully transportable by helicopter even when fully assembled. These domes, far cheaper and much more quickly assembled than other types of shelter, were expected to solve many problems of military shelter in the field.

A new inflatable rubberized nylon reconnaissance boat, to hold nine men, was made available to the operating forces while experiments continued with a larger type.

Logistically, the corps pioneered in the development of a

bulk fuel supply system for amphibious assaults, using nonrigid rubberized tanks.

When hurricanes caused disastrous floods in the northeastern United States and on the Gulf coast of Mexico in late summer of 1955, marines participated with other armed services and federal agencies in aiding the stricken areas.

Major marine bases in the U.S. are at Quantico, Va.; Cherry Point and Camp Lejeune, N.C.; Parris Island, S.C.; Miami, Fla.; El Toro, Camp Pendleton and San Diego, Calif. In Hawaii, marines are stationed at Kaneohe bay on the island of Oahu. They also serve in Japan, on Okinawa, with the various fleets and naval bases, with U.S. embassies, and at North Atlantic Treaty organization (NATO) and United Nations installations.

Maritime Administration, U.S.: see MERCHANT MARINE.

Marriage and Divorce. Although world-wide marriage and divorce rates generally continued the slight declines noted in 1954, birth rates varied considerably. In contrast to births in 1953, the rates in 1954 for 36 countries showed increases in 14, decreases in 19, and no change in three. In 1955, further declines were expected in Europe, Asia, and Africa, as well as in nearly all English-speaking countries. The latest available data (1953) indicated that Ceylon's rate of 28.5 of natural increase per 1,000 population was the highest in the world. Other high rates included 19.2 in Canada, 15.1 in the U.S., 13.8 in Australia, 12.6 in Japan, 12.1 in Portugal and 11.7 in India. Among the lowest rates were 6.8 in Switzerland, 5.8 in France and 4.0 in England.

United States.—Reflecting a marriage rate of 8.9 per 1,000 population during the first half of the year, a total of 1,470,000 marriages was estimated for 1955, possibly approximating the provisional total of 1,476,000 marriages for 1954, which represented a loss of 3.7% from the revised total of 1,533,000 marriages for 1953. The marriage rate in 1954 of 9.2 per 1,000 population was the lowest experienced since 1933. This was largely because of the combination of low birth rates in the 1930s, the record-breaking marriage rates of 1946 and 1947, and the reduction in age at first marriage in recent years. Including annulments, the number of divorces forecast for 1955 was 370,000, a slight decrease from the possible 375,000 divorces in 1954, but a drop of nearly 5% from the revised final total of 390,000 in 1953.

Table I.—Median Age of Bride and Groom by Specified Age of Spouse at First Marriage of Both: 21 Reporting U.S. States, 1953

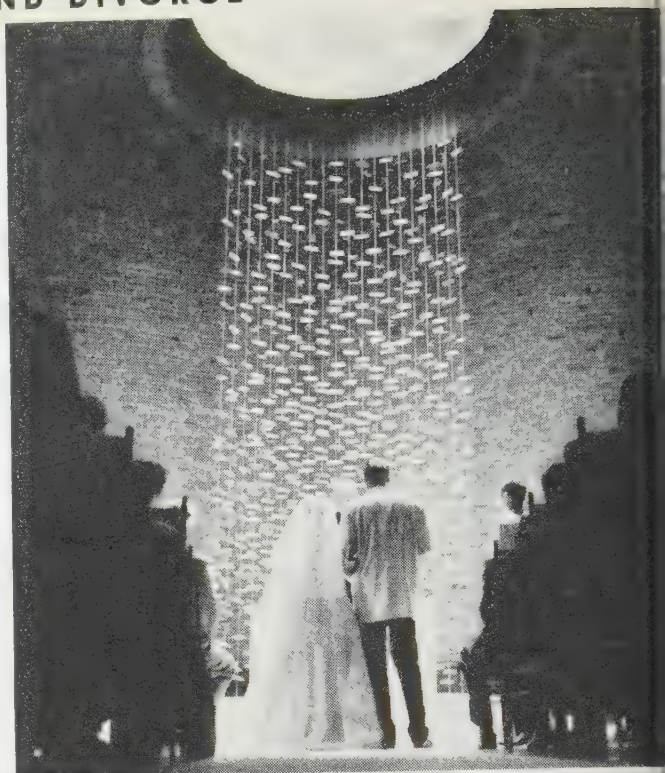
Specified age of bride (years)	Median age of groom	Specified age of groom (years)	Median age of bride	Specified age of bride (years)	Median age of groom	Specified age of groom (years)	Median age of bride
15	19.7	18	18.1	24	25.7	27	22.7
16	20.1	19	18.5	25	26.6	28	23.3
17	20.6	20	19.0	26	27.4	29	23.9
18	21.3	21	19.4	27	28.3	30	24.6
19	21.9	22	20.5	28	29.1	31	25.0
20	22.7	23	20.7	29	30.0	32	26.1
21	23.3	24	21.2	30	30.8	33	26.7
22	24.2	25	21.7	31	32.0	34	27.5
23	24.9	26	22.2				

Source: "Marriages, Detailed Statistics for Reporting Areas, 1953," U.S. Department of Health, Education and Welfare, National Summaries, vol. 42, no. 5, p. 91.

Table II.—Duration of 135,187 Marriages in Years Prior to Actual Divorce and Annulments in 23 U.S. States, 1953

Duration of marriages in years	Number of divorces and annulments	Duration of marriage in years	Number of divorces and annulments	Duration of marriage in years	Number of divorces and annulments	Duration of marriage in years	Number of divorces and annulments
Under 1	9,260	7	8,107	14	2,505	20-24	6,137
1	13,485	8	5,293	15	2,187	25-29	4,129
2	13,067	9	4,029	16	2,283	30-34	2,073
3	10,790	10	3,905	17	2,128	35-39	1,007
4	9,549	11	4,037	18	1,881	40 and over	686
5	9,291	12	3,557	19	1,714	Not stated	2,079
6	8,976	13	3,032				

Source: Data from "Divorces and Annulments by Duration of Marriage in Years: Each Reporting State, Territory, and Possession, 1953," U.S. Department of Health, Education and Welfare, National Summaries, vol. 42, no. 2, pp. 34-35.



FIRST COUPLE to be married in the nondenominational chapel at the Massachusetts Institute of Technology, Cambridge, Mass., June 1955. The building is circular and windowless, illumination coming from the skylight above the altar as shown in the photograph

The U.S. supreme court declared invalid the 1953 territorial law of the Virgin Islands that permitted divorces to be granted to persons without requiring them to swear that they would make their permanent homes in the territory.

From various studies it was learned that, among married students in college, the greatest source of dissatisfaction was sexual nature, with one in three husbands declaring that the wife was not sufficiently responsive and one in four wives stating that the husband was too passionate, and one-third of each sex had already felt a need for marriage counselling; since 1890, the divorce rate had increased more than 500%; of persons presently marrying, nearly one-fourth had been previously married; the median duration of marriages ended by divorce was about 6.1 years; in contrast to persons who waited 3.5 years after widowhood before remarrying, divorced individuals waited on average 2.7 years.

Great Britain.—The registrar general provisionally reported 340,619 marriages and 673,212 births, with estimated respective rates about 7.7 and 15.2 per 1,000 population, for England and Wales in 1954; the number of absolute divorce decrees was 2,027. In expectation of a continuing downward trend, not more than 335,000 marriages, 670,000 births and less than 28,000 divorces, were forecast for 1955. Of persons receiving divorces, two-thirds to three-fourths were believed to remarry. The greatest proportion of divorces comes within the period of five to ten years after marriage with one-third of divorces going to childless couples.

Because of the postwar record-breaking marriage rates, particularly of women of younger ages, the number of unmarried men at ages 25-34 years exceeded that of unmarried women one-third. If present trends were to continue, it was feared that by 1983, more than 400,000 men would be unable to find wives among their own countrywomen.

The 9th conference of the National Marriage Guidance Council was held in Ilkley, Eng., in May, 1955. The conference theme was "Marriage Counselling as Social Service." The need

ore and better reconciliation facilities, as well as for education and preparation for marriage, was emphasized. Although five local marriage councils were in process of formation, several had to be discontinued because of their inability to meet the requirements of having at least two trained counsellors (one of each sex).

Canada.—Although the 416,825 births recorded in 1954, a rate of 38.5 per 1,000 population, had represented the highest birth rate since 1947, slight declines in both birth and marriage rates were anticipated. One reason for the falling marriage rate was the shortage of women, with the excess of men thought to be more than 190,000. It was estimated that the number of deserted spouses in the country approached 50,000. To the question "How successful would you say your own marriage is?" asked by the Canadian Institute of Public Opinion, 67% and 6% of the respondents respectively answered "very successful" and "moderately successful," 3% said "not very successful" and 24% did not know. British Columbia, faced with the lowest birth rate in the dominion and a divorce rate triple that of any other province, opened a marriage counselling centre with the aid of the Canadian Mental Health association.

Other Countries.—In Belgium, the Association of Catholic parishes voted to establish a marriage counselling education centre in Brussels. Denmark restricted the right of fathers of illegitimate children to vote, and to contract a legal marriage with another woman, until adequate provision was made for the maintenance and education of such children. Because of the low birth rate, the French government was hoping to treble its production of new housing, and was exploring the possibility of increasing family income by finding part-time work for married women. In East Germany, the Communist party continued to promote equality for women; in West Germany, where less than three-fifths of children resided with both parents and, further, spurred on by the low birth rate, the government was sponsoring a program for earlier marriages, happier homes and larger families.

In Jaunswar Bawar, where there were four times as many women as men, the official Indian government gave encouragement to the increasing pressure among wives to replace polygamy with monogamy. The All-Pakistan Women's association demanded its revolt against polygamy and further extended its general boycott of women who became plural wives.

Of divorces granted in Northern Ireland, a ratio of one to every 50 marriages, it was estimated that 6% and 38% were obtained respectively by the upper and middle classes, and 56% by the lower class, and that the biggest single cause of marital dissolution appeared to be migration for work; in Ulster, only one person in 20 eventually does not marry. In Spain, a survey indicated that urban women believed the most desirable marriage age for women was 24 and, for men, 30 years, ages about 10 years younger than present estimated median ages at marriage. Although both Sweden's marriage and divorce rates remained relatively high, the birth rate continued to decline. In the U.S.S.R., co-education, re-established in 1954-1955, and the Moscow University for Parents, where training is given in many aspects of family life, were directed more firmly toward greater family solidarity and the prevention of juvenile delinquency. Because of the shortage of unmarried males and the broadness of grounds for divorce, a sharp rise in unregistered and common-law marriages was noted in Yugoslavia.

With the exception of Venezuela, both marriage and birth rates were declining in most countries in South America. Divorce was legalized in Argentina.

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ment of Health, Education and Welfare, *Monthly Vital Statistics Report*, and *Vital Statistics-National Summaries* (1955). (C. R. A.)

Marshall, Caroline and Mariana Islands.

The Marshall, Caroline and Mariana Islands, stretching from about 1° to 20° N. lat. and from 130° to 170° E. long., constitute, with the exception of Guam (*q.v.*) in the Marianas, the Trust Territory of the Pacific Islands. The territory contains about 2,130 islands in 96 distinct island units of which 64 are inhabited, with a combined area of about 687 sq.mi. Truk in the centre of the territory is 4,931 mi. W. of San Francisco and 1,832 mi. E. of Yokohama. The population on June 30, 1954 totalled 61,102, exclusive of administrative and military personnel. Three-fifths of the population live on the six principal island units: Saipan, the Palaus, Yap, Truk, Ponape, and Majuro. Eleven different languages are spoken in the territory, including English and Japanese. The majority of the population is Christian.

History.—The territory, which the United States has administered under United Nations trusteeship since 1947, is under the administration of the U.S. navy. Frank E. Midkiff, high commissioner since March 1953, resigned on Sept. 1, 1954. He was succeeded by Delmas H. Nucker who remained as acting high commissioner in 1955. Headquarters of the trust territory were moved from Honolulu, T.H. to Guam in Sept. 1954.

In March 1955 a seventh administrative district, Rota, was added to the territory's original six administrative districts. The other districts in 1955 were Saipan (under navy administration except for the island of Rota), Palau, Truk, Ponape, Yap and Marshall Islands.

Natives of the territory have the status of "citizens of the Trust Territory of the Pacific Islands."

In 1954, inhabitants of the atolls of Rongelab and Uterik had been affected by falling radioactive materials resulting from thermonuclear tests conducted by the U.S. government in the Marshall Islands. In 1955 the United States paid out \$6,870 in property claims to the Uterikese and the Rongelapese in addition to compensation for loss of copra production and replacement of their livestock and fowl.

Education.—On June 30, 1954, there were 156 public schools, of which 149 were elementary, 6 were intermediate, and one (the Pacific Islands Central school at Truk) advanced, technical and normal school. These schools had 7,386 pupils and 343 teachers. There were also 23 elementary and intermediate mission schools with 1,833 pupils and 109 teachers. Instruction is in English except in the first three grades where the native dialect is used. Educational expenditures represented 5.2% of total expenditures during the fiscal year 1953-54.

Finance.—During the fiscal year ending June 30, 1955, local revenues were estimated at \$1,422,000 and U.S. appropriated funds \$5,000,000. Expenditures were estimated at \$7,249,500.

A branch of the Bank of America operates on Saipan. In addition the Island Trading company of Micronesia, a Trust Territory government corporation, had provided banking services in areas other than Saipan until it was liquidated Dec. 31, 1954.

Production and Trade.—About 30,000 ac. (47 sq.mi.), or 7% of the total land area, is under cultivation. In 1955 the economy of the territory was based upon three commodities: copra, which utilized about two-thirds of the cultivated land of the territory and whose production rose 20% over the preceding year to an estimated 12,120 short tons in the year ending June 30, 1955; trochus, the production of which increased fourfold in the same period to 449 tons; and handicrafts, the production of which doubled in the same period to \$40,000. Experimental production of cacao with more than 100,000 trees continued in 1955. Other principal crops were maize, sorghum, taro, sweet potatoes, cassava, breadfruit, bananas, papaya, and citrus fruit. The production of phosphate rock on Angaur in the western Caroline Islands terminated on June 30, 1955, since the limit to which productive agricultural land could safely be mined had been reached. As of June 30, 1954, the territory had 22,975 cattle, 121 carabao, 11,623 swine, 75,000 chickens, 1,500 ducks, and 467 goats. The territory also had a small soap factory, a sawmill, and a boatyard.

In the fiscal year ending June 30, 1954, the value of exports totalled \$3,342,789, of which phosphate rock represented \$2,050,000, copra \$1,070,000, and trochus \$185,200. Imports were valued at \$2,258,326; the most important imports were food, clothing and tobacco. The U.S. and Japan were the major sources and destinations of the territory's imports and exports.

Transportation and Communications.—Air transportation in the territory, except in the Saipan district, was maintained by Transocean Airlines; 4,140 passengers were carried in the year ending June 30, 1954. The Military Air Transport service provides air service in the Saipan district.

There are three civil airfields in the territory. Majuro in the Marshall Islands was developed into a world port for the entire territory in 1954 and 1955. There were somewhat more than 200 mi. of roads in the territory in 1954. Only Saipan had paved roads. There were two privately owned broadcasting stations (one at Majuro and one at Truk), five U.S. postoffices, and 188 telephones. A monthly newspaper was published by the trust territory government for distribution throughout the territory. (S. Nr.)

Marshall Plan: see FOREIGN AID PROGRAMS, U.S.

Martinique. This French overseas island *département* in the Lesser Antilles has an area of 425 sq.mi. Pop.: (1946 census) 261,595; (1954 census) 239,130, mainly coloured (Negro or mixed). Language: French and creole French. Religion: Roman Catholic. Capital: Fort-de-France, pop. (1953 est.) 80,000. Prefect in 1955, Gaston Villegier.

History.—Eleven of the previous councillors were re-elected to the general council in April 1955; three communists were elected. In the elections to the senate, held in June, the two previous senators, a Radical and a Socialist, retained their seats. (Hu. De.)

Foreign Trade.—(1954) Monetary unit: metropolitan franc, valued at 350 fr. to the U.S. dollar. Imports 12,600,000,000 fr., including 9,700,000,000 fr. from France. Exports 8,200,000,000 fr., including 7,500,000,000 fr. to France (1953, sugar 49,603 metric tons, bananas 51,509 metric tons, rum 76,683 hectolitres).

Maryland. One of the original states of the United States, long known as the "Old Line state" and, in later years, as the "Free state," Maryland is bounded on the north by Pennsylvania and Delaware, on the east by Delaware and the Atlantic ocean and on the south and west by Virginia and West Virginia. The total area is 10,577 sq.mi., of which 696 sq.mi. are water. Pop. (1950 census) 2,343,001; (July 1, 1955 est.) 2,593,000. Urban population in 1950 was 69% of the total. Annapolis (1950 pop., 10,047) is the capital. Other cities in the state, with 1950 population figures, are Baltimore (949,708), Cumberland (37,679), Hagerstown (36,260), Frederick (18,142) and Salisbury (15,141).

History.—During 1955, the state continued a large-scale program of public works, much of which was devoted to the roads system. The so-called 12-year road program was well under way, involving a total expenditure of approximately \$568,000,000, in addition to normal expenditures on the road system. Ground was broken for a vehicular tunnel under Baltimore city harbour, to be completed by Dec. 1957. Also, the legislature authorized the construction of a new toll expressway running northeasterly from Baltimore city toward the Delaware Memorial bridge.

The state budget enacted in 1955 totalled approximately \$269,000,000 and was the largest in the history of the state. A prospective need for new revenue at the 1956 session of the legislature, in an amount estimated as possibly in excess of \$35,000,000, was the cause of intensive searches for new sources of revenue during the year.

Another subject of wide study was that of a concerted state-wide effort to improve the facilities of the port of Baltimore.

The principal state officers in 1955 were as follows: governor, Theodore R. McKeldin (Rep.); comptroller, J. Millard Tawes (Dem.); attorney general, C. Ferdinand Sybert (Dem.).

Education.—In 1954-55 there were 791 public elementary and occupational schools in the state (including Baltimore city), with a total fall enrolment of 293,278 and a teaching staff of 9,493. There were 217 secondary and vocational schools, with an enrolment of 161,597 and a teaching staff of 7,250. The enrolment in Catholic schools for the entire state was 78,450. The enrolment in non-Catholic private schools was 16,373. Thomas G. Pullen, Jr., was state superintendent of schools.

Social Insurance and Assistance, Public Welfare and Related Programs.—As of June 30, 1955, old-age assistance was being given to 10,542 persons, with a total cost of \$5,728,452 for the fiscal year ended June 30, 1955; public assistance was being given to 478 needy blind persons, with a total cost of \$289,453 for the fiscal year; aid to dependent children was being given to 6,375 families, with a total cost of \$7,044,520 for the fiscal year; and 4,453 persons were receiving aid to the permanently and totally disabled, with a total cost of \$2,699,169 for the fiscal year.

As of June 30, 1955, there was 1,961 white inmates and 2,914 Negro inmates, or a total of 4,875 inmates, in the five penal institutions (under the jurisdiction of the department of correction). Of these, 60 were white females and 105 were Negro females.

Communications.—The state roads commission expended \$140,470,452 for the fiscal year ended June 30, 1955. The total road mileage in the state highway system, as of June 30, 1955, was 4,803, in the county system 12,619 and in the municipalities 1,322. As of June 30, 1955, there were 1,320 line miles and 2,800 track miles of steam railroads and 22 line miles and 28.4 track miles of electric interurban railways. As of June 30, 1955, there were 901,906 telephone instruments in service in the state, of which 361,703 were in Baltimore city. There were 3,638,390 mi. of wire, of which 1,776,849 were in underground cable as of June 30, 1955.

Banking and Finance.—On June 30, 1955, there were 95 state banks and trust companies doing business in Maryland, with total deposits, of that date, of \$1,075,214,922.75 and total resources of \$1,177,381,172.15. There were 8 mutual savings banks doing business in Maryland, with deposits of \$480,046,821.91 and total resources of \$533,514,513.77. There were 57 national banks in the state with deposits of \$887,999,000 and total resources of \$963,762,000. Total resources of all state and national banks were \$2,674,657,685.87.

As of Dec. 31, 1954, savings and loan and building and loan associations were computed to have assets of \$767,325,467.

State appropriations for the year ended June 30, 1955, were \$241,810,800.24 and expenditures were \$386,080,567.71. Estimated appropriation for the year ending June 30, 1956, were \$274,933,111. The general surplus as of June 30, 1955 was \$4,431,358.96 and the outstanding bonded indebtedness \$160,268,000.

Table I.—Leading Agricultural Products in Maryland

Crop	Indicated 1955*	1954	Average 1944-53
Barley, bu.	3,268,000	3,400,000	2,319,000
All corn, bu.	20,610,000	18,778,000	19,489,000
Oats, bu.	2,774,000	2,691,000	1,459,000
Wheat, bu.	4,564,000	4,972,000	6,189,000
Hay (all), tons	665,000	621,000	644,000
Potatoes (Irish), bu.	1,021,000	767,000	1,500,000
Tobacco, lb.	43,350,000	42,500,000	37,919,000
Tomatoes (market), bu.	588,000	532,000	622,000
Tomatoes (processing), tons	110,000	97,900	177,900
Potatoes (sweet), bu.	962,000	990,000	1,097,000
Potatoes, crates (83 lb.)	130,000	117,000	201,000
Cantaloupes, processing, tons	60,900	78,100	84,500
Sweet corn (market), bu.	128,000	96,000	120,000
Lima beans (processing), tons . . . . .	...	3,710	2,600
Lima beans, early (market), bu.	297,000	280,000	310,000
Snap beans, late (market), bu. . . . .	...	72,000	91,000
Snap beans (processing), tons	20,700	22,100	16,000
Apples, bu.	990,000	1,485,000	1,176,000
Peaches, bu.	448,000	502,000	480,000
Strawberries, crates	136,000	128,000	157,000

*Estimates made during growing season.

†Five-year average, for 1949-53.

Agriculture.—Maryland farmers received an estimated \$80,950,000 from the marketing of the principal farm crops during the year 1954, as compared with \$83,763,000 in 1953. Cash receipts from livestock and livestock products amounted to \$164,461,000, compared with \$181,946,000 in 1953.

Table II.—Principal Industries of Maryland

	All employees 1953	Salaries and wages 1953 (in 000s)	Value added by manufacture 1953 (in 000s)	Value added by manufacture 1955 (in 000s)
Food and kindred products	*	*	*	\$222,900
Textile mill products	3,869	\$12,061	\$18,602	17,700
Apparel and related products	27,544	75,121	123,909	17,700
Furniture and fixtures	*	*	*	33,000
Paper and allied products	5,365	20,233	35,573	33,000
Printing and publishing industries	11,987	47,646	81,530	71,000
Chemicals and allied products	16,678	63,914	182,863	165,000
Petroleum and coal products	2,842	14,496	32,964	36,000
Rubber products	6,544	22,281	39,043	57,000
Stone, clay and glass products	8,054	29,455	67,835	254,000
Primary metal industries	32,900	151,392	319,870	111,000
Fabricated metal products	18,178	71,072	134,056	91,000
Machinery (except electrical)	11,397	46,242	81,227	99,000
Electrical machinery	13,049	54,532	94,506	263,000
Transportation equipment	47,641	217,751	309,341	41,000
Miscellaneous manufactures	10,309	36,957	38,677	...
Administrative and auxiliary	3,645	13,108	...	...

*Withheld because the estimate did not meet publication standards, either on the basis of the associated standard error of estimate or on the basis of a consistency review. Source: U.S. Department of Commerce, *Annual Survey of Manufactures*, 1953.

Table III.—Mineral Production in Maryland

Mineral	Quantity 1952 (in short tons)	Value 1952	Quantity 1953	Value 1953
Clays	772,000	\$1,427,000	671,000	\$1,135,000
Coal	589,000	2,695,000	531,000	2,442,000
Coke*	2,491,000	?	3,269,000	?
Iron, pig*	2,946,000	?	3,753,000	?
Lime	73,000	747,000	72,000	708,000
Natural gas (100 cu. ft.)	2,372,000	460,000	1,408,000	268,000
Sand and gravel	6,957,000	8,137,000	7,380,000	8,915,000
Stone	3,392,000	6,330,000	3,578,000	6,275,000
Other minerals . . . . .	...	7,051,000	...	7,336,000
Total . . . . .	...	\$26,847,000	...	\$27,085,000

*Values for processed materials are not included in the totals.



AST GUARD HELICOPTER bringing food to Smith Island in Feb. 1955
er heavy ice conditions in Chesapeake bay prevented supply vessels from
ssing from the mainland

ceived in 1953. Total cash receipts from farm marketings in 1954
ounted to \$245,411,000. Cash receipts in 1953 totalled \$265,709,000.
Manufacturing.—The Maryland Employment Security board estimated
number of manufacturing establishments covered by unemployment
mpensation as of Dec. 31, 1954, to be 3,178 employing 246,003 per-
s, as compared with 3,231 employing 259,582 in Dec. 1953; and the
nmanufacturing establishments to be 39,122 employing 385,918 per-
s as compared with 38,096 employing 380,475 in Dec. 1953. The total
roll for the year 1954 was \$991,280,595 in manufacturing and \$1,161,-
3,210 in nonmanufacturing, making total payrolls for the year \$2,152,-
8,805 as compared with \$2,166,783,621 for the year 1953. The amount
unemployment compensation benefits paid during the benefit year end-
March 31, 1955, was \$32,271,505, as compared with \$16,698,655 in
benefit year ending March 31, 1954. (C. N. E.)

Mineral Production.—Table III shows the tonnage and value of those
neral commodities produced in Maryland in 1952 and 1953 (prelimi-
y) whose value exceeded \$100,000. In 1953, Maryland ranked 38th
ong the states in the value of its mineral output, with 0.19% of the
s. total.

Masonic Fraternity: see SOCIETIES AND ASSOCIATIONS, U.S.:
emasonry.

Massachusetts. A north Atlantic state of the United
States. Massachusetts was the sixth state
ratify the federal constitution. It was admitted to the union
Feb. 6, 1788. Its popular name is the "Bay state," derived
m its earliest title "the Colony of Massachusetts-Bay" (1629-
). Area: 8,257 sq.mi., including 350 sq.mi. of water. Popula-
n: (1950 census) 4,690,514 of which 84.4% was urban; (July
55 est.) 4,972,000. The capital is Boston (1950 pop.) 801,444;
er important cities are Worcester 203,486; Springfield 162,-
; Cambridge 120,740; Fall River 111,963; New Bedford
189; Somerville 102,351; Lynn 99,738; Lowell 97,249;
ncy 83,835; Newton 81,994; Lawrence 80,536.

History.—The 162nd session of the legislature adjourned on
pt. 16, 1955 (the third longest session), after it had enacted
e acts and 149 resolves. Seven acts were vetoed by the gov-
or and two acts and one resolve became law without his sig-
ure. The total appropriation for general purposes amounted
\$324,148,311, an increase of \$40,306,478 over the preceding
r. In addition to this total a capital outlay, covered by
nds of \$30,000,000, was provided to cover new buildings at
e state university, \$3,611,000; Salem Teachers college, \$1,-
0,000; civil defense underground building in Natick, \$1,452,-
0; and mental hospitals, \$2,187,000.

The temporary decrease of 20.5% in the income tax was
opped and a new income tax equal to the state rate was im-

posed on nonresidents working in Massachusetts. Temporary
taxes amounting to \$78,000,000 were extended for one year.
State bond issues totalling \$90,000,000 included \$30,000,000 to
reimburse cities and towns for flood damage caused by the
August rain and hurricane and \$25,000,000 for the repair of
highways and bridges washed out by the same storm. The Boston
artery, for which a state appropriation of \$100,000,000 was
made, was opened for traffic from the Mystic Bridge to Fort Hill
Square in the fall. The second half of this highway was under
construction.

Following the prison riot at the old state prison in Charles-
town in January when four armed convicts held five guards as
hostages for 84 hours, a sweeping reorganization of the penal
system was enacted. The act increased the power of the com-
missioner of corrections, provided for a new classification system
for prisoners, set up a training school for prison officers, liber-
alized credits for good behaviour thus shortening the time which
must be served and modernized the prison industries program.

The Youth Service board was reorganized and empowered to
develop programs for the prevention of juvenile delinquency.
The new law provided for the appointment by local school de-
partments of school adjustment counselors whose duty it would
be to help children who showed evidences of becoming juvenile
delinquents. The state was to reimburse the local communities
for the expense involved in limited amounts.

Other new legislation included a minimum wage increase from
75 to 90 cents an hour, stiffer penalties for sex criminals, and a
system of life and health insurance on the group plan for all
state employees, the state paying half the premium. Cities and
towns were empowered to adopt similar plans for their em-
ployees.

Hurricane "Connie" kept Massachusetts on the alert during
the second week in August. The area suffered only a heavy rain-
fall which ended a six-week period of drought which began in
the middle of June. The real deluge came as a by-product of
Hurricane "Diane" which occurred on Aug. 18 and 19. The dis-
astrous floods which resulted were of such magnitude that travel
out of the state by either railroad or highway was impossible
for more than a week. Thousands of families were homeless
and destitute.

State officials for 1955-56 were: governor, Christian A. Herter
(Rep.); lieutenant governor, Sumner Whittier (Rep.); secretary
of the commonwealth, Edward J. Cronin (Dem.); treasurer,
John F. Kennedy (Dem.); attorney general, George Fingold

(Rep.); auditor, Thomas J. Buckley (Dem.).

Education.—In 1954 there were 1,692 public elementary schools with 478,040 pupils; 104 junior high schools with 88,932 pupils; 216 senior high schools with 127,913 pupils. The public schools of the state employed a total of 27,764 full-time teachers, principals and supervisors. Salaries for this group totalled \$113,312,683. The total expenditure of the public schools for support and outlay was \$206,155,852.92. John J. Desmond, Jr., was the state commissioner of education.

Social Insurance and Assistance, Public Welfare and Related Programs.—During the fiscal year ending June 30, 1955, old-age assistance was extended to an average monthly number of 90,998 persons at an annual cost of \$83,152,886; an average monthly number of 12,722 families received assistance for the care of 18,489 dependent children at an average expenditure of \$19,298,228; general relief was extended to an average monthly number of 13,885 persons at an annual cost of \$10,641,297. Payments for unemployment insurance for 1953-54 totalled \$75,112,117, an increase of 81.87% over 1953.

For the year ending June 30, 1955, the commonwealth appropriated \$6,826,613.15 to maintain correctional institutions including the state prison (566 inmates), prison colony (767 inmates), reformatory for men (565 inmates), reformatory for women (208 inmates and 22 babies) and the state farm (1,541 inmates) including the criminally insane.

Banking and Finance.—Revenue receipts of the commonwealth for the year ending June 30, 1955, were \$479,541,041.92, including the sale of bonds amounting to \$108,450,000. Expenditures for state government amounted to \$481,317,022.25. The direct gross debt was \$432,774,500. less a sinking fund of \$6,688,774.36 for a net debt of \$426,085,725.64. The assessed valuation of the state as of Jan. 1, 1955, was \$8,322,200,618.

As of June 30, 1955, bank deposits in the savings banks amounted to \$4,317,637,075; total assets of commercial departments of trust companies \$1,431,612,000; bank deposits in savings departments of trust companies \$228,202,000; total assets of credit unions \$129,121,325; and total assets of co-operative banks \$831,305,965.

Agriculture.—Preliminary figures of cash receipts from the marketing of farm products in 1954 totalled \$192,300,000. This included total crop

Table I.—Principal Crops of Massachusetts

Crops	Indicated 1955	1954	Average, 1944-53
Corn, bu.	1,702,000	1,656,000	1,656,000
Apples, bu.	3,300,000	2,180,000	2,436,000
Hay, all, tons	512,000	524,000	532,000
Potatoes, bu.	1,740,000	2,100,000	2,769,000
Oats, bu.	105,000	99,000	171,000
Tobacco, lb.	10,965,000	11,629,000	11,114,000
Cranberries, bbl.	560,000	590,000	510,700

Source: U.S. Department of Agriculture.

cash receipts of \$64,200,000 and total livestock products of \$128,100,000.

Manufacturing.—In 1955 there were 2,082 labour unions in Massachusetts; the total membership was 564,938, a decrease of 24,145 from 1954 when there were 589,083 members. In 1953 the total valuation of

Table II.—Principal Industries of Massachusetts

	All employees 1953	Salaries and wages 1953 (In thousands of dollars)	Value added by manu- facture 1953	Value added by manu- facture 1952
Food and kindred products	38,450	\$135,688	\$254,870	\$251,503
Textile mill products	83,485	284,410	426,169	512,869
Apparel and related products	58,233	147,703	247,363	204,583
Furniture and fixtures	12,707	46,038	72,824	69,318
Paper and allied products	34,395	133,686	256,543	220,329
Chemicals and allied products	19,882	80,684	194,045	158,003
Petroleum and coal products	2,488	11,898	16,071	18,824
Rubber products	27,504	107,465	186,166	161,050
Leather and leather products	74,962	230,668	328,943	325,087
Stone, clay, glass products	10,452	47,285	83,368	82,681
Primary metal industries	19,222	89,043	150,307	149,488
Fabricated metal products	39,694	161,097	297,120	259,590
Machinery (except electrical)	83,382	364,858	624,176	637,914
Electrical machinery	92,745	342,261	588,864	477,516
Transportation equipment	25,103	118,664	254,202	229,699
Instruments and related products	18,116	68,232	121,700	99,949
Miscellaneous manufactures	53,890	178,253	284,713	240,630
Administrative and auxiliary	7,589	37,716	...	...

Source: U.S. Department of Commerce, Annual Survey of Manufactures, 1953.

manufactured goods was \$9,289,749.021; total manufacturing employment was 683,800 in Aug. 1955, of which 538,846 were production workers. The gross weekly payroll of production workers was \$37,123,700.

(D. A. Dy.)

Table III.—Mineral Production of Massachusetts

Mineral	(In short tons)		1953	
	Quantity	Value	Quantity	Value
Clays	140,000	\$ 160,000	152,000	\$196,000
Coke*	1,056,000	?	850,000	?
Iron, pig*	138,000	?	127,000	?
Lime	132,000	2,000,000	135,000	2,156,000
Sand and gravel	7,646,000	6,129,000	7,308,000	5,931,000
Stone	3,356,000	9,332,000	3,458,000	8,821,000
Other minerals . . . . .	...	191,000	...	787,000
Total . . . . .	...	\$17,812,000	...	\$17,891,000

*Values for processed materials are not included in the totals.

Mineral Production.—Table III shows the tonnage and value of those mineral commodities produced in Massachusetts in 1952 and 1953 (preliminary) whose value exceeded \$100,000. In 1953, Massachusetts ranked 42nd among the states in the value of its mineral output, with 0.12% of the U.S. total.

Massey, Vincent (1887—), governor general of Canada, was born in Toronto, Ont., Feb. 2

He was educated at St. Andrew's college, Toronto, University of Toronto, and Balliol college, Oxford. He was sworn in the privy council and appointed minister without portfolio in Sept. 1924. He was appointed the first Canadian minister to the United States in 1926 and held that post until 1930. He was high commissioner for Canada in the United Kingdom, 1935-46, and chairman of the royal commission investigating national development in the arts, letters and sciences, 1949-51. He became Canada's first Canadian-born governor general on Feb. 28, 1959.

During 1955, Massey made official visits to many areas of Canada. He also visited the United Kingdom in June and July. Upon his return from overseas at the end of July, he unveiled the naval memorial at Halifax, N.S., paying tribute to the seafarers and sailors who died at sea in World War II. As Chairman of the Scout of Canada, he formally opened the International Boy Scout Jamboree at Niagara-on-the-Lake, where more than 10,000 scouts from every continent gathered for a 10-day camp in the latter part of August. Late in the same month, he made a tour of Newfoundland outport communities for the first time, calling on more than a dozen towns and villages around the coast.

(M. L. S.)

Mathematics. In contrast to the major advances in mathematics recorded in the two preceding years, 1955 was largely devoted to consolidating ground already gained. In the fields of point set topology and algebraic groups the process of consolidation was particularly visible.

The study of point set topology had begun about the turn of the century and had undergone three decades of hectic development. In the 1930s the subject had become a standard tool of applied mathematics as well as in other branches of mathematics. By 1940 most mathematicians had been ready to concede that point set topology was embalmed for all time. A sudden revival had occurred in 1944 with the invention by Dieudonné (France, now in U.S.A.) of *paracompactness*. Stimulated by the proof by A. H. Stone (England) that any metric space is paracompact, in 1951 Nagata (Japan) and Smirnov (U.S.S.R.) had independently discovered a neat characterization of metrisable spaces, thus solving a problem earlier considered to be hopeless. Technically, the Nagata-Smirnov theorem states that a regular space is metrizable if and only if it has an open base expressible as a countable union of locally finite subsets. The American Mathematical society recognized this lively rebirth by devoting to point set topology its 1955 summer seminar (held at the University of Wisconsin, Madison). Many simply stated problems remained to challenge the point set topologist of 1955; for example, it was not known whether the product of a paracompact space and a metric space was necessarily paracompact.

With the appearance of the third volume of Chevalley's series on Lie groups, the subject of algebraic matrix groups took on a definitive shape. In the case of characteristic *O* the same level of perfection was attained as that enjoyed by the much older field of Lie groups. The case of characteristic *p* (where addition of sufficiently many 1's yields *O*) awaited new methods. Some of the people actively at work on algebraic groups in 1955 were I. Barsotti, A. Borel, C. Chevalley, W. Chow, J. Dieudonné, A. Kolchin, S. Lang, T. Matsusaka, G. Mostow and A. Weil.

Progress was reported on the fourteenth of Hilbert's famous list of problems. Concerning this problem Hilbert enthusiastically remarked that the formulation was so simple that it could be explained to the man in the street. Here is the precise statement: if *K* is a field, *R* the polynomial ring over *K* in *r* variables, *M* the quotient field of *R*, and *L* a field between *K* and *M* is the intersection of *L* and *R* finitely generated over *K*?

case $r=1$ is easy and had been answered affirmatively many years ago. O. Zariski (U.S.A.) found the answer to be again affirmative for $r=2$ and characteristic O . He also showed that the question is equivalent to asking whether a certain subset of a Riemann surface is closed.

In the field of high speed computing, the most notable event of the year concerned finite projective planes. A projective plane is a geometric system resembling Euclid's geometry; but it is more general in that, for instance, it may have only a finite number of points. In that event the number of points on each line is the same, and that number diminished by one is called the order. As of 1955, all known planes had prime power order, and it was an outstanding problem to determine whether this was always true. The lowest order for which the question was open was 10. A second problem was to find all planes of a given prime power order, and in particular to determine whether there are any other than the standard Desarguan one. There is a known non-Desarguan plane of order 9. It was found that all planes of lower order are Desarguan. This was accomplished by a computational scheme devised by M. Hall and carried out on a WAC (the computer on the campus of the University of California at Los Angeles).

The American Mathematical society's Cole prize in algebra was awarded to Harish-Chandra (India, now in U.S.A.) for his outstanding series of memoirs on the representations of Lie groups. (See also STANDARDS, NATIONAL BUREAU OF.) (I. K.)

Mau Mau Revolt: see BRITISH EAST AFRICA.

Maurice and Laura Falk Foundation, The: see SOCIETIES AND ASSOCIATIONS, U.S.

Mauritania: see FRENCH UNION; FRENCH WEST AFRICA.

Mauritius. British colony in the Indian ocean with island dependencies, of which the largest is Rodrigues. Area: Mauritius 720 sq.mi.; Rodrigues 40 sq.mi.; other dependencies (Chagos archipelago including Diego Garcia, Agalega and Carriacou Carajos or St. Brandon groups) 45 sq.mi. Pop. (June 1952 census): Mauritius 501,415 including 65% Indo-Mauritians (Indian immigrants and their descendants); Rodrigues 13,133, mostly of African descent; Diego Garcia 619; other dependencies 1,133; (1955 est.) 545,000. Languages: English and French (official); creole French and Hindi widely used. Religion: Indo-Mauritians mainly Hindu; others mainly Roman Catholic. Chief towns (pop. 1952): Port Louis 69,693; Beau Bassin and Rose Hill 28,690; Curepipe 22,026. Governor in 1955 Sir Robert Scott.

History.—Mauritius government expenditures for 1955–56 were estimated at £2,000,000 more than for 1954–55. The main crop, sugar, was expected to give a high yield and proposals were made for expansion in the important tea trade. A survey was made during 1955 of road requirements.

Overpopulation continued to cause anxiety. Representative committees were appointed to examine this problem and to review the colony's fiscal system. In July 1955 Governor Scott, accompanied by eight members of the legislature, visited London for talks on constitutional reform. A court of criminal appeal was established on Jan. 1.

(J. J. Ty.)

Education.—(1953) Schools: primary 241, pupils 79,400; secondary 4 (including 3 government and 9 grant-aided), pupils 7,770. One teachers' training college, students 190. College of agriculture, students 1952) 80.

Finance and Trade.—Monetary unit: Mauritius rupee, valued at 21 cents U.S. and 1s. 6d. sterling. Budget (1953–54 approved estimate; 1954–55 estimate in parentheses): revenue Rs. 96,968,903 (Rs. 129,18,873); expenditure Rs. 94,542,827 (Rs. 128,772,303). Foreign trade (1954): imports £16,100,000; exports £19,600,000. Principal exports: sugar, molasses, rum (97% of all exports); fibre. Production (metric tons): sugar (1954, *tel quel*) 499,000; molasses (1953) 40,537; rum 9,625 hectolitres; aloe fibre (1953) 506 metric tons.

Meany, George (1894–), U.S. labour leader, was born on Aug. 16 at New York city and was educated in the public schools of the Bronx in Manhattan. In 1910 he began plumbing apprenticeship and in 1922 entered labour organizational affairs as business representative of a plumbers' local union in New York city. From 1934 to 1939 Meany was head of the New York state federation of labour and then secretary-treasurer of the American Federation of Labor, of which he was named president Nov. 25, 1952, by the federation's executive council after the death of William Green (1873–1952). Meany was confirmed as president at the union's national convention in Sept. 1953 and was re-elected to the office in 1954. Frequently critical of the Eisenhower administration, particularly after the resignation of Martin P. Durkin as secretary of labour in Sept. 1953, Meany soon was the acknowledged "first man" of the A.F. of L. Meanwhile negotiations had been under way for a merger of the A.F. of L. and its long-time rival, the Congress of Industrial Organizations. The merger was accomplished in Dec. 1955, and Meany was elected president of the combined organization.

Meany was recipient of the 1955 Laetere medal of Notre Dame university as outstanding U.S. Roman Catholic layman in that year.

Meat. Supplies of red meat in the United States in 1955 totalled about 26,875,000,000 lb., 6% more than the previous record high of 1954. On a per capita basis this was 161 lb., up 8 lb. from 1954 and exceeded only by the 163 lb. of 1908.

Beef consumption reached about 81 lb. per person, exceeding the record attained in 1954. Pork was superabundant, at 66 lb. per person, up from slightly less than 60 lb. in 1954. Veal declined very slightly to 9.6 lb. per capita and lamb and mutton continued at about 4.5 lb. per capita. Poultry declined in availability because of unsatisfactory prices to producers in 1954 and early 1955. Chicken on a ready-to-cook basis was indicated at 23.4 lb. per person as compared with 23.8 lb. in 1954, but only 13.2 lb. average per capita before World War II. Turkey meat declined to 4.3 lb. per person from the record high level of 4.9 lb. in 1954; prewar use was only 2.1 lb. per capita. Fish consumption was stable at 11.1 lb. per capita.

Meat prices in 1955 declined below those of 1954 in spite of full employment and rising wage levels. Declines in the price of live animals, especially of hogs which accounted for much of the decline in farm income as compared with 1954, were in part transmitted to the retail meat counter, especially for the less sought after cuts. In May, composite retail prices for all meat

Table 1.—U.S. Meat Production
(In millions of pounds, dressed weight)

	1956*	1955	1954	1950	1947	Average 1937-41
Red meats†						
Beef	13,350	13,600	12,991	9,538	10,432	7,196
Veal	1,525	1,625	1,656	1,230	1,605	1,022
Lamb and mutton	725	750	734	597	799	884
Pork (excl. lard)	11,400	10,900	9,952	10,714	10,502	8,573
Total	27,000	26,875	25,333	22,079	23,338	17,675
Poultry‡						
Meat	—	4,650	4,772	3,782	3,190	—
Total	—	31,525	30,105	25,861	26,528	—

*Forecast by U.S. Department of Agriculture.

†Carcass weight equivalent.

‡Chickens, including commercial broilers and turkey, ready-to-cook basis.

stood at 246 as compared with 273 a year earlier. In September, choice steer meat at wholesale was about \$1 per hundredweight lower than one year previously, but fresh pork loins were \$48.75 per hundredweight as compared with \$52.50 per hundredweight in Sept. 1954; hams showed a decline of about the same magnitude.

Meats to the value of \$43,547,000 were exported in 1954–55, almost the same as in 1953–54. Imports, however, were valued at \$146,623,000 as compared with \$172,495,000 in the previous year. Canned cooked hams and shoulders accounted for approxi-

mately half the imports by value. U.S. imports of frozen whale meat increased sharply to more than 2,000,000 lb. as compared with 700,000 lb. in the previous year.

Wilson and Co., major meat packer, announced in August that it would cease to slaughter hogs and cattle in the Chicago area.

Meat production in principal producing countries in 1954 set a new record, 3% above the 1953 record and 20% above prewar levels, with further moderate increases indicated for 1955. Supplies, and in some cases stocks of frozen and cured meat, were

Table II.—Production of Meats in Principal Producing Countries

(In millions of pounds, carcass meat basis)

Country	Beef and veal			Pork, excl. lard			Mutton, lamb and goat		
	1954	1953	Average 1946-50	1954	1953	Average 1946-50	1954	1953	Average 1946-50
United States . . .	14,647	13,989	10,980	9,952	10,063	10,541	734	728	743
Argentina	3,527	3,637	4,284	287	320	391	485	441	540
France	2,998	2,557	1,937	1,984	2,028	1,398	243	243	185
Brazil	2,376	2,352	2,114	571	560	512	86	88	69
Western Germany	1,836	1,722	1,060	2,925	2,848	1,530	39	45	45
Australia	1,618	1,579	1,226	194	189	210	840	823	701
United Kingdom .	1,416	1,398	1,230	1,317	1,219	490	409	386	305
Canada	1,135	1,041	1,043	930	915	956	30	29	54

sufficiently abundant to put moderate pressure on prices.

Pork production increased in 1955 in almost every producing country, with a further increase anticipated in 1956, particularly in the U.S. and Canada and in much of western Europe. However, a decrease was anticipated in the U.K., the Netherlands and Denmark (because of lower prices), and in Argentina because of a small corn crop. A new Anglo-Danish bacon agreement concluded in Copenhagen in October called for a minimum payment of 240 shillings (\$33.60) per hundredweight for a maximum of 208,000 tons, with sharing of proceeds obtained from wholesale prices above a specified level. In general, western Europe was well supplied, with some surplus for export to deficit countries including those east of the "iron curtain."

Australia and the U.K. completed review of the 15-yr. meat agreement under which producers were guaranteed a minimum price for beef, lamb and mutton. New Zealand searched dili-

gently for new export meat markets, and in late 1954 and early 1955 sent 33,000,000 lb. to 20 countries, including the U.S.S.R. while shipping 319,000,000 lb. to the U.K.

Livestock slaughter in Argentina was the largest in recent years. Chilled beef moved in volume for export for the first time since before World War II, and refrigerator space was filled. South Africa on the other hand was reported as suffering a beef shortage. More than 5,000,000,000 lb. of meat were exported from 44 countries in 1954 as compared with 4,600,000,000 lb. in 1953. About 70% of the exports originated in Denmark, Argentina, New Zealand and Australia. The United Kingdom was the largest importer with 2,900,000,000 lb. of about 70% of the world total. The U.S. was second (412,000,000 lb.) and the U.S.S.R. third (185,000,000 lb. from the free world). (See also LIVESTOCK.) (J. K. R.)

Medical Rehabilitation of the Disabled.

The major factor affecting medical rehabilitation of the disabled in 1955 was the success of the Salk vaccine in the prevention of poliomyelitis. In those nations using antipoliomyelitis vaccination on a large scale, polio incidence rates were substantially decreased during the year, thus reducing the number of persons disabled by polio and requiring rehabilitation services.

Throughout the world there was increased recognition of the social and economic benefits of medical rehabilitation services for the disabled and of the need for establishing additional patient service and programs for the training of professional personnel. In the United States, for example, the number of rehabilitation centres had grown to more than 96. These 96 centres, however, were located in 26 states, thus leaving 22 states in which comprehensive rehabilitation services were not available.

Similar advances were made in expanding services in other nations. In Canada, in the past five years, four new rehabilitation centres and seven new cerebral palsy treatment-training centres had been established and a national plan to encourage the development of rehabilitation services had been initiated through a federal co-ordinator of rehabilitation in the department of labour, with provincial co-ordinators in the ten provinces. The department of national health and welfare had also instituted a grants-in-aid program for training personnel, providing equipment and constructing facilities for rehabilitation.

Steps which might lead to a similar scheme were taken in South Africa by the formation within the ministry of labour of a South African Rehabilitation board to study and promote rehabilitation and selective placement of the disabled in the country.

Emphasis in Great Britain was on the continuing expansion of sheltered workshop facilities for the severely disabled. It was reported that 40 such workshops were being operated in Great Britain in 1955 under the auspices of 32 voluntary organizations.

During the year the International Labour organization adopted a statement of basic principles on vocational rehabilitation which was to be submitted to the 70 member nations for ratification. This document was confined to vocational guidance, training and placement of the handicapped since medical and social rehabilitation were not the responsibility of the organization. The document itself, however, emphasized the broad concepts of rehabilitation including emphasis on medical rehabilitation.

Increased emphasis in the United States on the education of medical students and graduate physicians in the basic concepts of medical rehabilitation of the disabled had resulted from financial grants to 13 medical schools for this purpose from the National Foundation for Infantile Paralysis. In addition to the nearly \$2,000,000 given in these grants, the National foundation had given scholarships and traineeships for advance study



25,000 LB. OF HAMBURGER, part of the 880,000 lb. U.S. navy surplus, which was brought to public attention in 1955 as a result of a report of the Hoover commission

650 physicians, therapists, social workers, scientists and other health workers. This aid to advanced education on medical rehabilitation of the disabled was increased in 1955 by the office of vocational rehabilitation, which made grants of \$80,000 to extend the teaching of rehabilitation in five medical schools and to provide 11,074 traineeships at a cost of \$536,000 for rehabilitation personnel.

Other significant federal action in the U.S. included increased appropriations for direct services, research, special projects and professional training in vocational rehabilitation; the maximum appropriation authorized by law was made for state crippled children's services, under the children's bureau; and substantial increased appropriations were voted for research and study of the problems of mental retardation.

During 1955, the United Nations assisted 11 countries in Latin America, the middle east and southeast Asia in the development of rehabilitation services. Survey and advisory missions by 6 experts were provided to 8 countries; 14 experts for the training of personnel were assigned to 6 countries on a long-term basis; a pilot rehabilitation scheme was initiated in India; rehabilitation seminars and conferences were organized in Austria, Italy and Sweden; and 14 scholarships and fellowships were granted for the training of personnel.

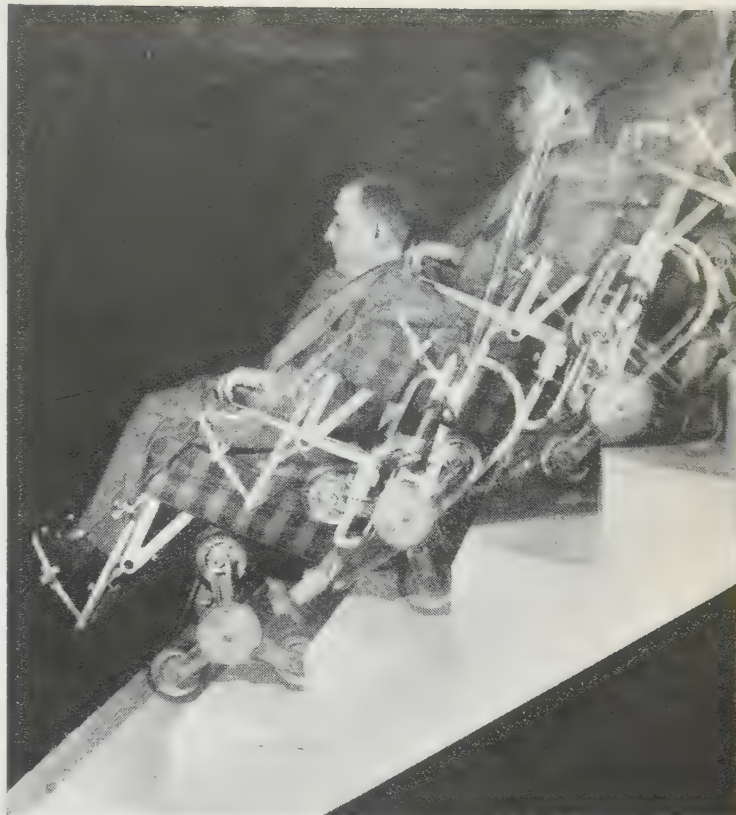
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Medicine. The Salk vaccine against poliomyelitis, the development of the ataractic agents which produce peace of mind and freedom from confusion, the appearance of several new antibiotics with remarkable properties, and the report from Germany of a new substance to be taken by mouth for control of blood sugar were outstanding developments in medicine in 1955.

Prednisone was developed as a product preferable to cortisone for most conditions. All four valves of the heart had been approached surgically. Scabies was gradually disappearing as a disease. New anticonvulsants and antispasmodics were offering benefit in Parkinson's disease and epilepsy. The location of tumours of the brain through the use of radioactive substances reached an efficiency of about 75%.

Salk Vaccine.—On April 12, 1955, Thomas Francis, Jr., announced the results of the greatest controlled experiment ever performed in the history of medicine, involving inoculation of 50,000 children in 1954 with the Salk vaccine and a similar number with an inert substance. This demonstrated the effectiveness of the Salk vaccine against poliomyelitis. The U.S. public health service released the vaccine for general use as prepared by six manufacturers. The National Foundation for Infantile Paralysis prepared to inoculate all children in the first and second grades of school with two doses of the vaccine given ten days apart with the understanding that the third dose would follow after ten months as a booster dose, to give the greatest possible and longest lasting immunity. Some unfortunate accidental contaminations with live virus led to a change in the system of inspection in manufacturing, leading toward maximum safety. As the year ended, the U.S. public health service announced that even one dose of the vaccine might yield high immunity, and that inoculation was safe and effective.

Ataractic Agents.—People live at a speeded-up rate and multiple tensions bear constantly on the human being. Tranquillizing substances had begun to appear in several forms. Most notable among those previously known were rauwolfia and chlorpromazine. By 1955 these drugs were being widely used in the treatment of various mental disorders and they had revolution-



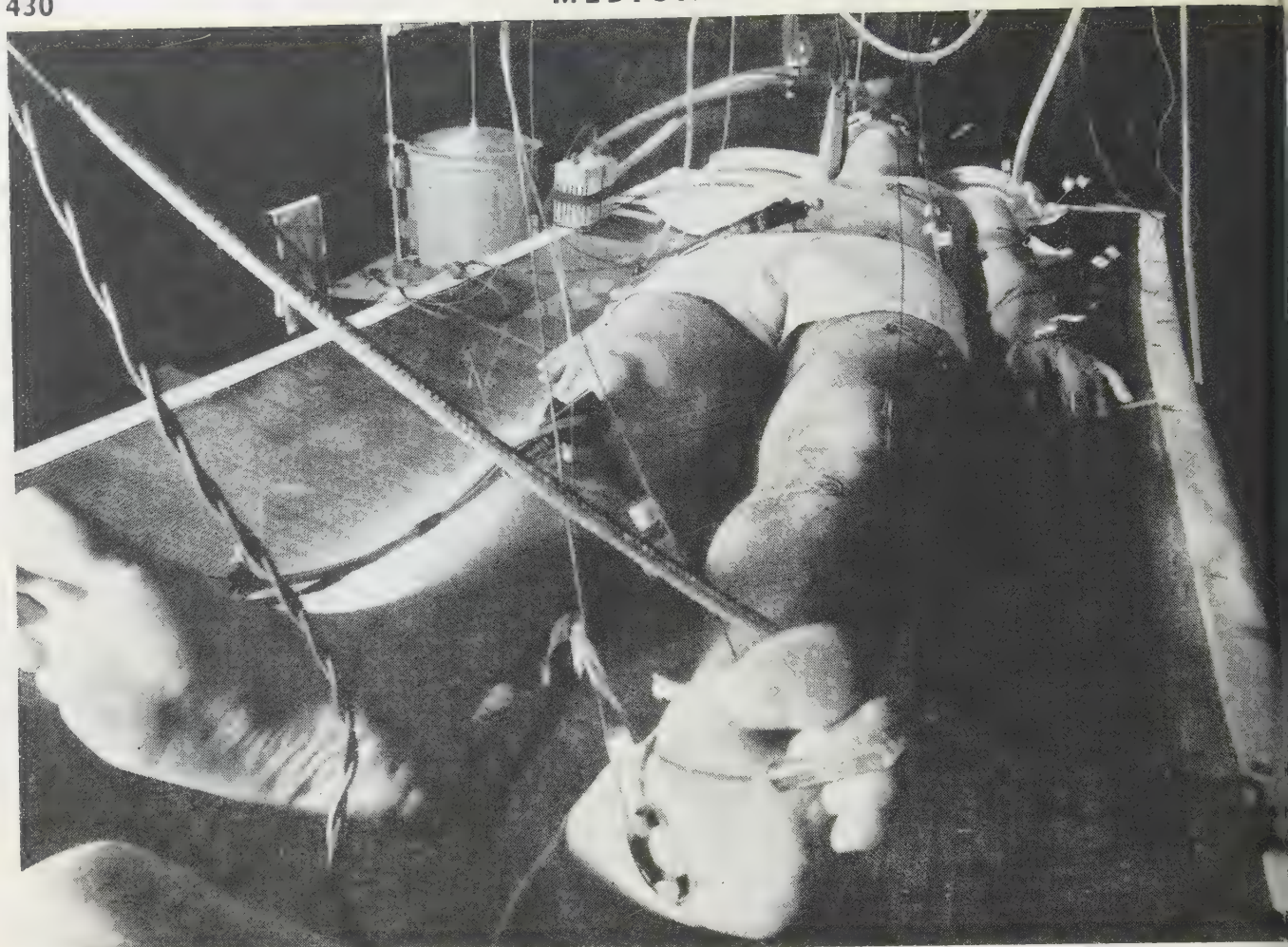
STAIR-CLIMBING WHEEL CHAIR shown operating in a multiple exposure photograph. Devised by a Danish engineering company, the chair is electrically driven, requiring only guidance and balance by one person other than occupant

ized the conduct of institutions for the mentally disturbed. Many different preparations of rauwolfia and of reserpine were offered by the manufacturers. The mechanism of action of these products had not been established or fully understood. Apparently they are concerned in the development of serotonin in the brain. Among the other drugs which depress the action of the nervous system were Miltown® which was known also as Equanil®, the longer established Mephenesin®, Flaxedil® which was gallamine triethiodide and Mephenesin® which was sold under a great variety of names. These were all in the general group of relaxants of the skeletal muscles. They provide more complete muscular relaxation during such procedures as anaesthesia, manipulations, the use of the gastroscope and the application of intubation. Another skeletal muscle relaxant was succinylcholine chloride, a blocking agent that acts at the nerve muscle junction. Miltown® or meprobamate was relatively nontoxic and seemed to be chiefly of use in anxiety syndromes and in tension states.

Various combinations of these preparations had been used widely in the treatment of hypertension, particularly of the type associated with anxiety and stress. For instance, Miltown®, which was named for the place in New Jersey where it was discovered, proved effective as a tranquillizing agent in anxiety and tension states, for inducing natural sleep, as a muscle relaxant, for relief of muscle spasm, for control of spasticity, for alcoholism and for certain convulsive disorders. The drug does not knock out patients but calms them by blocking conductivity in the interneuronal circuit.

As the tranquillizers gained popularity, a decreasing emphasis occurred in the use of electric shock and of insulin coma therapy in the treatment of various emotional disturbances.

Two drugs, mescaline and LSD (d-lysergic acid) were used extensively in experimentation to determine the mechanisms of such conditions as schizophrenia. Many experiments were done on persons with these hallucinogenic agents. Glutamic acid inter-



HEAT TEST SUBJECT at the school of medicine, St. Louis (Mo.) university, where in 1955 research into body temperature reactions was conducted. In the experiment shown, the subject was placed in temperature and humidity conditions such as would be experienced in supersonic flight. Thermocouples attached to his body recorded reactions, while the tube in his mouth measured metabolic changes

rupts or retards the effects of LSD. In acute schizophrenics the symptoms caused by LSD are an exaggeration of symptoms that already exist. Chronic schizophrenics exhibit behaviour like that in acute episodes. Schizoid patients with depression complain of an intensification of anxiety, depression and physical symptoms. Investigators in the National Institute of Mental Health concluded that LSD makes it impossible for the ego to integrate the evidence of its senses and to co-ordinate its activities.

Epilepsy, Myasthenia Gravis, Parkinsonism.—Two new preparations were available in the treatment of epilepsy and seemed to be having general acceptance. These were Mysoline®, which was used preferably in *grand mal*, and Milontin® for *petit mal*.

In *Myasthenia gravis* a new drug was Mysuran chloride®; the clinical reports seemed to give it advantages over other drugs previously used, such as neostigmine.

Two new drugs were developed for the treatment of Parkinsonism. These were Kemadrin® and Parasiodol®. Clinical studies showed that these have greater effectiveness and perhaps somewhat less toxicity than the previously used drugs, Artane® and Pagitan®. Both drugs apparently decrease tremor and rigidity.

B-Z-55 for Diabetes.—German investigators made available in Oct. 1955 the results of research with a new sulfonamide substance that lowers blood sugar through action on the pancreas. The substance was thus far called B-Z-55. It is rapidly absorbed when taken by mouth and apparently acts to stimulate certain cells of the pancreas in such a manner that they interfere with

the glucagon produced by the A cells of the pancreas and known to be antagonistic to insulin. When this interference is ended more insulin is produced and as a result the sugar is lowered. The substance was still in an experimental stage.

Rheumatic Fever.—Reduction in the incidence and the number of relapses in rheumatic fever was being accomplished by proper and effective treatment of streptococcal infections of the throat. The drugs used included the newer antibiotics such as erythromycin, and chief reliance was placed on penicillin and sulfadiazine. Other preparations used included oxytetracycline (terramycin), also Bicillin® and aureomycin. A single injection dosage of a repository preparation, benzathine penicillin, was also reported to be extremely effective. It was considered especially important that streptococcal sore throat should be promptly diagnosed.

Prednisone and Prednisolone.—Among the most significant developments of 1955 was the introduction of prednisone and prednisolone, also known under a variety of names such as Metacorten®, Metandrasen®, Meticortandrolone®, Deltacortril®, Deltatone®, Delta-Cortif®, Deltra® and Hydreltra®. The advantages over cortisone and hydrocortisone consist in the increased potency of these preparations and in the fact that they do not interfere with the salt and water metabolism. Patients who seemed to cease to benefit after prolonged treatment with cortisone and hydrocortisone developed favourable reactions with the new drugs. One difficulty was the increased hydrochloric acid that sometimes developed in the stomach in connection with the use of these preparations, and in the increased incidence of ulcers. The drugs were given extended trial in rheumatoid arthritis, cases of intractable bronchial asthma, and in most of the other conditions for which cortisone and hydrocortisone had been

und useful. In the treatment of rheumatic fever and in various food dyscrasias, the new preparations served equally well or better than the older ones.

Cortisone had been found by some investigators to yield favorable effects in cerebral haemorrhage. Its use in ulcerative colitis was being extended. In Great Britain a report of the British Medical Research Council concluded that patients with acquired haemolytic anaemia and those with idiopathic thrombocytopenic purpura developed remissions under treatment with ACTH or cortisone. The reports stressed the necessity of adequate dosage. Dameshek indicated his belief that this method of treatment had definitely reduced the necessity for splenectomy in the vast majority of cases, and he recommended the careful and repeated trial of the hormones in such cases before resorting to splenectomy.

Antibiotics.—A report from the Upjohn company indicated that a new antibiotic, Albamycin®, had been found in soil samples collected in Queens Village, N.Y. This substance is derived from *Streptomyces niveus* and the drug was given the name of streptonivcin as a generic term. The special claims made for the product were that it may take over when other longer used antibiotics have failed and that it may establish high blood levels. Stylomycin® was a new antibiotic developed by Lederle and apparently tried with some success in 15 cases of trepanosomiasis. This drug was formerly called puromycin. Bristol Laboratories had a preparation called Amphomycin® for the same purpose; Merck had one called Cathomycin® and Squibb one called diostepton®.

New in the use of antibiotics was the employment of a combination of Nystatin®, a new antifungal antibiotic, with tetracycline in the treatment of a number of conditions. The advantage of such a mixture was said to be its ability to prevent the invasion of various fungi following elimination of bacteria by antibiotics. Investigators reported that a combination of oxytetracycline and neomycin antibiotics did not prevent fungal overgrowth but that the combination was effective in eradicating *Coccidioides* organisms as an invader. Studies were made on the combination of Nystatin® and tetracycline under the name of Nystecclin® and found effective in a variety of bacterial infections.

APC Infection.—Outbreaks occurred in many portions of the United States and also in other countries of a condition involving inflammation of the adenoids, the pharynx and the conjunctiva. In studies of this condition, nine different viruses were found, all of them respiratory viruses. Type III APC virus causes a five-day illness with fever, sore throat and conjunctivitis. This was the form most prevalent in children's summer camps. Investigators of the National Institutes of Health of the U.S. public health service prepared a vaccine which was used on 45 persons who were shown by tests to have little or no antibodies in their blood against type III APC virus. Further epidemiologic studies were necessary to determine the effectiveness of a multistrain vaccine. This work was considered to be still in an experimental stage. (See also ALLERGY; BACTERIOLOGY; BIOCHEMISTRY; BIRTH CONTROL; BLOOD, DISEASES OF THE; CANCER; CHEMOTHERAPY; DENTISTRY; DERMATOLOGY; DIABETES; EAR, NOSE AND THROAT, DISEASES OF; ENDOCRINOLOGY; EPIDEMIOLOGY; EYE, DISEASES OF THE; HEARING; HEART AND CIRCULATORY DISEASES; HOSPITALS; INDUSTRIAL HEALTH; MEDICAL REHABILITATION OF THE DISABLED; NARCOTICS; NUTRITION, EXPERIMENTAL; PSYCHIATRY; PSYCHOSOMATIC MEDICINE; PUBLIC HEALTH ENGINEERING; RESPIRATORY DISEASES; RHEUMATIC DISEASES; STOMACH AND INTESTINES, DISEASES OF THE; SURGERY; TROPICAL DISEASES; VETERINARY MEDICINE; VITAMINS AND NUTRITION; X-RAY AND RADIOLOGY.)

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Merchant Marine. The United States merchant marine on Sept. 1, 1955, consisted of 1,172 active ocean-going vessels of 1,000 gross tons and over. Private companies owned 1,050 and the government owned 122. The fleet was composed of 49 combination passenger-cargo vessels, 775 freighters, and 348 tankers. The government also had 2,101 ships immobilized in eight national defense reserve fleets. Another 51 ships were temporarily inactive while undergoing repairs or awaiting cargo.

The active and temporarily inactive fleet was 68 ships less than the similar fleet one year before. Privately-owned fleets had decreased by 116 ships. The government fleet was 48 ships larger, but most of the increase was in vessels being employed for storage of surplus grain. Eighteen government-owned vessels were under bareboat charter to private steamship companies for use in their own services. Another 39 vessels were operated in Military Sea Transportation service by private companies acting as general agents for the government.

Of the vessels in operation, 292 ships operated by 16 lines were receiving operating-differential subsidies, paid by the government to cover the excess of costs of crew wages and subsistence, maintenance, repairs and insurance of U.S. flag vessels over similar costs of foreign competitors.

In the 12-month period preceding Sept. 1, 1955, United States shipyards built 11 large ocean-going merchant vessels. At the end of the period there were 30 ships being built or converted, of which 10 were for the government and the other 20 were for private owners. This was twice as many vessels as were under construction at the same time a year before.

A number of new shipbuilding contracts were in prospect. Bids had been received for four large passenger-cargo ships for two lines operating in the Caribbean and South American trades. Eight tankers were to be built by a private company for charter to the navy department. A new prototype tanker, of the "Pipeline" class, was to be built by the Maritime administration.

Two major steamship companies had signed agreements to replace their present fleets over the next 10 to 20 years, projects that would result in the building of more than 50 new ships worth about \$500,000,000. Applications for federal ship mortgage insurance on 35 new "roll-on, roll-off" type ships had been received by the government, and proposals had been made seeking government help in the building of six large ore-oil carriers and six vessels that would operate from Great Lakes ports to foreign countries via the new St. Lawrence seaway.

In addition to encouraging new shipbuilding by private firms, the government also placed a number of contracts on its own account, in order to keep the merchant fleet up-to-date and to retain the vital shipbuilding skills in the shipyards that would be required as a nucleus for expansion in any future emergency. A number of merchant type ships were ordered for operation by the navy department. In addition to two refrigerated ships and a "Mariner" class conversion to an AKA (attack cargo ship) which were completed or nearing completion, orders were

placed for four large tankers, two small ice-strengthened tankers and three small ice-strengthened cargo ships, a landing ship dock, and a vehicle carrier.

The Maritime administration withdrew four Liberty ships from its reserve fleets for installation of better types of propulsion and cargo handling equipment. This program was designed to determine whether it would be possible to convert the outmoded Liberty ship to a faster and more efficient carrier for emergency use. It was also an experimental program for testing new types of engines such as the gas turbine, and improved cargo handling gear for possible use on other vessels of the active fleet.

Designs for seven new prototype vessels were worked out by the Maritime administration in conjunction with naval architects and shipping companies. These were intended to serve as future replacements for the present standard cargo ships as they became obsolete. They included four cargo ship types to replace the C-type vessels, a tanker (the "Pipeline" class), a bulk carrier, and a roll-on, roll-off ship (the "Turnpike" class). Also in prospect was an experimental ship powered by nuclear energy, funds for which had been requested by the president and were under consideration by congress.

The Maritime administration was also engaged in repairing and placing in operating condition the best of the military auxiliaries in the reserve fleet so that they would be ready for immediate use in an emergency. (See also SHIPBUILDING.)

(C. G. M.)

Table I.—Tramp Shipping Freight Index, 1955
(1952=100)

Month	Voyage rates	Time charter rates	Month	Voyage rates	Time charter rates
January	115.1	114.6	July	130.0	145.8
February	119.8	123.8	August	129.9	137.0
March	113.7	113.8	September	138.1	142.2
April	110.2	102.3	October . . . . .	...	...
May	122.6	124.2	November . . . . .	...	...
June	128.0	135.4	December . . . . .	...	...

Source: Chamber of Shipping of the United Kingdom.

International.—The world-wide demand for shipping space, of which the first signs became apparent at the end of 1954 when freight rates began to rise above earlier levels, was maintained throughout 1955. In fact the normal seasonal fluctuations in freight rates were scarcely apparent, so persistent was the rise in freight rates generally. The Chamber of Shipping of the United Kingdom indices of tramp shipping freight rates shown in Table I indicate the general strength of the demand for shipping, and liner freight rates were able to show comparable increases. In almost every liner trade route in the world, liner conference tariff rates were advanced during the year.

The biggest single factor underlying the strength of the tramp shipping market was undoubtedly the demand for tonnage to ship U.S. coal to western Europe and the United Kingdom, arising from the declining coal production and increasing industrial

Table II.—Merchant Fleets of the World, Dec. 31, 1954*

Country	No. of vessels	Gross tons (in 000s)	Country	No. of vessels	Gross tons (in 000s)
United States	3,346	25,483	Panama	519	3,935
United Kingdom	2,538	17,422	Commonwealth	508	2,105
Norway	1,056	6,559	Netherlands	507	3,083
Japan	598	3,242	Liberia	363	3,487
France	589	3,540	Denmark	315	1,451
Italy	581	3,634	Spain	285	1,070
U.S.S.R.	581	1,729	Greece	198	1,148
Sweden	576	2,492	Other	1,675	6,886
Germany	558	1,992	Total	14,793	89,258

*Excluding specialized ships and Great Lakes vessels; excluding 83 lend-lease vessels of 518,000 tons included in U.S. total.

Source: U.S. Department of Commerce (Maritime Administration).

consumption there. The growing dependence of the U.S. steel industry on supplies of imported ore also helped to create a demand for bulk-cargo tonnage. Although seaborne movements of other bulk commodities such as grain, sugar, fertilizers, timber and esparto grass were not on a significantly greater scale



FISHING TRAWLERS for South Korean fleet being readied at Kowloon, Hong Kong, for the voyage to Korea. The vessels were to be used for fishing in the Bering sea and for all types of bottom fishing in the China seas.

than in 1954, the high rate of shipments of coal, ores and scrap created a shortage of tonnage for other trades.

Tanker freight rates remained at a fairly consistent and not particularly profitable level. The demand for seaborne oil transportation remained well below the capacity of the tonnage available, but this situation was being rapidly adjusted toward the end of the year. Although more than 3,000,000 tons deadweight of new tankers were delivered from the world's shipyards during 1955, the tonnage of laid-up tankers in the world declined to less than 1,000,000 tons deadweight for the first time for two years. Many more old tankers were disposed of for scrap than in the previous year, and the demand for dry-cargo tonnage became so great as to persuade owners of numerous tankers to have their vessels converted for the carriage of grain, ore and coal.

Ship operating costs, however, also showed substantial increases, somewhat offsetting the advantages to shipowners of higher freight rates. Toward the middle of the year British and European coal prices were advanced by about 12s. 6d. a ton for ships' bunkers, and oil bunker prices were shortly afterwards increased by about 7s. 6d. a ton. Seafarers' wages in many countries, including the United Kingdom, were increased by 7½% to 12½%.

A wave of strikes in the United Kingdom, particularly of railway and dock workers, seriously interfered with the normal flow of shipping in the first half of the year, the chief ports affected being London and the Humber and Mersey ports. A strike of catering staff in North Atlantic passenger liners also interrupted normal services for a time, but despite this a record number of passengers crossed the Atlantic by sea, as well as by air. In other parts of the world increasing traffic and the disruption of sailing schedules caused by dock strikes created port congestion which became particularly serious in West Africa, Ceylon, India and Pakistan, and to a lesser extent in East African ports. (P. DE.)

Mercury: see MINERAL AND METAL PRODUCTION AND PRICES

Metallurgy. Significant happenings in metallurgical research and applied practice in 1955 are mentioned in the following.

Aluminum.—Aluminum was gaining ground as a substitute for other metals, especially copper. In 1955 one of the foremost producers of copper began aluminum production. Aluminum was replacing copper almost entirely in the installation of new long transmission lines.

Casting.—Continuous casting of metals, especially brass and

aluminum, was being improved. This method was also being adapted to steel with some success.

Copper.—Melting refined copper in the vacuum furnace and the grade of copper known as OFHC (oxygen-free high-conductivity) received wider recognition and application. International Nickel company was successfully treating copper concentrates by the oxygen-flash-smelting process. Leach-precipitation-flotation methods on mixed oxide-sulphide ores received new impetus.

Experiments.—The U.S. bureau of mines was starting studies in making metals in a pure state in large enough quantities for further experiments.

Extrusion of Metals.—Attention was being given to applying the extrusion method to iron and steel. The process consists mostly of heating the metal and forcing it with pressure through a die. The extrusion can be cut off at desired lengths.

Iron and Steel.—Significant progress was being made in Minnesota in the low-grade iron ores known as taconites. The ore is ground very fine, concentrated by magnetic methods and then entered into pellets which are shipped to smelters. New plants were installed, notably near Duluth, to handle taconite on a large scale. Many metallurgists foresaw the end of open-hearth furnace practice because the electric furnace was gaining so rapidly in use. However, at the blast-furnace there was significant improvement in fuel efficiency. Data released in 1955 stated that in 1954 blast furnaces producing pig iron used 67 lb. less coke per ton of pig iron produced than in 1953.

Nickel.—Recovery of nickel and cobalt from the enormous lateritic iron ore deposits of Cuba (chromium also present but not being recovered) was receiving attention.

Rare Metals.—It had been found that some metals formerly called rare (such as scandium, yttrium, lanthanum and others known as rare earths) are not so rare in occurrence. Attempts were being made to find uses for them and to explore their properties as minor alloying elements. Rhenium is another metal for which further uses might be found. It is hard and non-corrosive.

Silicon.—Like germanium, silicon was being used as transistor metal in place of the electrical vacuum tubes. Pure silicon was also being used in the new solar battery by which the energy of the sun was being converted to electrical power. The main element of the batteries consists of small silicon wafers.

Titanium.—The quality of titanium metal was improved tremendously in 1955, and the outlook was for still better metal. Improvements in methods of melting and casting titanium in a low-pressure arc furnace were developed. Much trouble in working titanium had come from hydrogen, and this was now removed by vacuum processing and melting. Commercial output of ductile titanium metal, begun in 1954, was continued in 1955. Titanium sponge, or scrap, was consolidated by melting in an induction or an electric-arc furnace.

Uranium.—A description of the metallurgy of uranium was released at the Geneva Conference on Peaceful Uses of Atomic Energy in Aug. 1955. The process used at U.S. Atomic Energy commission plants at Fernald, O., and St. Louis, Mo., is as follows: The material is digested from the raw material with nitric acid and the uranium is extracted from the solution with tributyl phosphate in ether or kerosene—ether in the St. Louis plant and kerosene in the Fernald plant. The third step is the re-extraction of uranium into water, producing a highly purified aqueous solution. This dilute aqueous solution is evaporated to molten uranyl-nitrate hexahydrate, which is thermally decomposed to form an orange uranium trioxide. This trioxide is reduced with hydrogen to form a brown uranium dioxide. The final step is contacting the brown dioxide with hydrogen fluoride gas to produce uranium tetrafluoride (UF_4). Part of the tetrafluoride is shipped to A.E.C. gaseous diffusion plants where

a gaseous uranium hexafluoride, UF_6 , is made by the oxidation of the UF_4 by the fluorine. This UF_6 gas is required to manufacture uranium 235 by the gaseous diffusion process. To make uranium metal the UF_4 is mixed with high-purity magnesium metal. The resulting mixture is placed in containers and heated to the point where a reduction reaction takes place producing uranium metal and a magnesium fluoride slag. The container is then unsealed and the contents separated mechanically. Upon remelting the metal into various shapes, ingots, etc., it is ready for reactor use.

Zirconium.—This metal had gained prominence, since it was produced mainly for use in atomic power reactors. The power plant on the submarine "Nautilus" was the first instance of the metal's being so used in construction. About 17 tons of zirconium was also used in the first ten months of 1955 for other than atomic uses. It is possible to prepare it in pure form, and it is resistant to corrosion, being comparable with tantalum in this respect. (F. E. H.)

Metal Prices and Production: see MINERAL AND METAL PRODUCTION AND PRICES.

Meteorology. Destructive hurricanes and tornadoes in 1954 had aroused public demands for someone "to do something about the weather" and had led the United States congress to take the unprecedented step of increasing by several million dollars the appropriations to the U.S. weather bureau for research and development in severe storm warning services. As if to confirm the need for action, nature paraded a tropical cyclone in the eastern Caribbean on New Year's Day, 1955, the first time in the history of recorded synoptic meteorology that a storm of this type ("hurricane") had been reported in mid-winter. This storm, although mild and short-lived, was harbinger of the several intense hurricanes that came during the following summer and also foreshadowed a year of almost feverish activity among meteorologists seeking to find keys to progress in weather analysis, forecasting, weather modification by artificial means (rain making) and other cogent features of the science of the atmosphere and its varied and valued applications.

Progress in Meteorology During 1955.—Like most sciences, meteorology has several aspects or branches: climatology, descriptive meteorology, dynamic, physical and synoptic meteorology, aeronautical meteorology and others. For many years there was such lack of basic weather data that the subject could be treated only in a descriptive or empirical way. With the advent of telecommunications, aircraft, upper air soundings and extension of outpost weather stations into polar regions and over much of the vast expanses of oceans, it became possible for meteorologists to analyze the general circulation and its secondary weather patterns and get closer to fundamentals and better understanding of the mechanics of the atmosphere and the many varieties of disturbances or storms that it generates. In recent years emphasis has been on dynamic and physical meteorology. During 1955 there were many noteworthy studies in these branches in particular. The results were published in research papers in the *Journal of the American Meteorological Society* (Boston, Mass.), in *Tellus* (Stockholm, Swed.), in the *Quarterly Journal of the Royal Meteorological Society* (London, Eng.) and in other meteorological periodicals. Among papers of special interest for their bearing on progress in applied meteorology for general public use were those on atmospheric turbulence and air pollution, cloud physics and relation to condensation, precipitation, etc., and the jet stream.

Atomic Energy and the Weather.—In July a volume on meteorology and industrial production of atomic energy was published jointly by the Atomic Energy commission and the

weather bureau. It described principal factors in air pollution from atomic fission effluents and suggested the things to be taken into consideration in choosing industrial sites for atomic reactor plants, together with the principles of air pollution safeguards. The relationships between temperature lapse rates and turbulent mixing under various typical meteorological situations were examined and the theories of diffusion applicable to industrial effluents were outlined. In this treatise the results of extensive experiments at Brookhaven laboratory, Long Island, N.Y., were reviewed and the behaviour of debris from clouds produced during large scale tests of atomic bursts was summarized. An important aspect of this subject is the influence of rain or snow occurring either at the time of the burst or later as the air-borne debris dust is carried thousands of miles by the upper winds. Rain or snow greatly modifies the fall-out of debris and introduces so-called wash-out and rain-out from radioactive clouds. Practical methods for calculating radioactive cloud dosage and solving diffusion problems were given and also a check list of meteorological factors relating to hazards from commercial nuclear reactors. Standard meteorological equipment and records useful in industrial production of atomic energy were described. These subjects were of importance not only for industry but for guidance in military planning and in civil defense studies.

Artificial Cloud Nucleation.—As in previous years since discovery in 1946 of the effects of cloud seeding by dry ice or silver iodide, the possibilities of artificial inducement of precipitation (rain making) were still in the forefront of meteorological speculation during 1955. In general there were fewer claims to spectacular success, and conclusions from a majority of scientifically controlled experiments by the military services and other agencies left doubt that rainfall or snowfall had been greatly increased by seeding. A few reports indicated that precipitation may even have been decreased through overseeding by artificial nuclei, but it appeared that most meteorologists were not yet convinced that the large scale effects, if any, were measurable. These conclusions did not cast doubt on the well-established fact that seeding of supercooled clouds by dry ice or silver iodide converts the droplets into snowflakes which may fall as a shower of snow or melt and give light rain, but the amounts of precipitation produced in this way were usually too small to be measurable. A few experimenters continued firm in their claims that in some cases heavy showers had been induced. Unfortunately these tests were not conducted under controlled experimental conditions which excluded natural factors. At the close of the year justifiable questions about the quantity of precipitation induced artificially still remained. Field tests so far had not yielded quantities as great as theoretically expected in meteorological situations which produce warm front or orographical (up-slope) clouds, or in incipient cumulonimbus almost developed to the shower stage which should be "triggered" into precipitation by some small additional factor.

Conclusions of impartial investigators reached more or less independently came closer to the findings of the U.S. weather bureau after its extensive field tests in 1948-49. Briefly, these conclusions were:

(1) Evidence so far does not show that local cloud seeding has large scale effects either in producing widespread rains or in deflection, dissipation or intensification of major storm systems such as hurricanes and extratropical cyclones. Seeding can be used successfully to convert supercooled cloud droplets into ice crystals but the amounts of precipitation produced by a static cloud system even if all of the droplets are coalesced into rain or snow are too small to be of much value. A "dynamic" system or relatively large scale inflow of warm moist

air for several hours is usually necessary to produce heavy precipitation and there appears to be no evidence or scientific reason to expect seeding alone to set up such an inflow of great masses of air if it has not developed naturally. In general nature appears to provide sufficient nuclei for precipitation when the required system of air flow exists, thus limiting the utility of artificially introduced nuclei. However, there are doubtless exceptions to this general condition and much more extensive research is needed to find how frequently such exceptions occur and under what specific conditions of temperature, humidity, nuclei count and other factors.

(2) Presumably supercooled crest clouds on mountain tops could be made to deposit some of their moisture as snow for irrigation purposes. These clouds usually form in winds that bring an inflow of moist air for hours or more and thus resemble a natural rain or snow producing system. How much of an increase in snow pack can be obtained in this way depends upon many factors which can be determined only by extensive field tests. Another situation that might yield precipitation by cloud seeding is that in which incipient shower clouds are brought to active precipitation more quickly by artificially introduced nuclei but these instances appear to be relatively infrequent.

Subsequently, extensive field tests in Utah, Washington, Hawaii and other widely separated regions confirmed these conclusions.

During 1955 only in a relatively few cases where commercial interests were concerned were claims of spectacular increases in precipitation by artificial means reported. Field tests of cloud seeding used several different chemical agents and methods. In some, dry ice or silver iodide particles or pellets were discharged into the clouds from aircraft flying above or through the selected clouds. In a few cases common salt or water droplets were used as the seeding agents. In other tests silver iodide or salt were discharged into the air from generators on the ground with the assumption that natural turbulence in the air would carry the nuclei into the clouds they were designed to seed. Their effectiveness was always in doubt. The great need for fundamental research to obtain the facts in this potentially important field of weather modification and to find ways to distinguish artificially induced precipitation from that which comes naturally was recognized by meteorologists and water resources authorities everywhere.

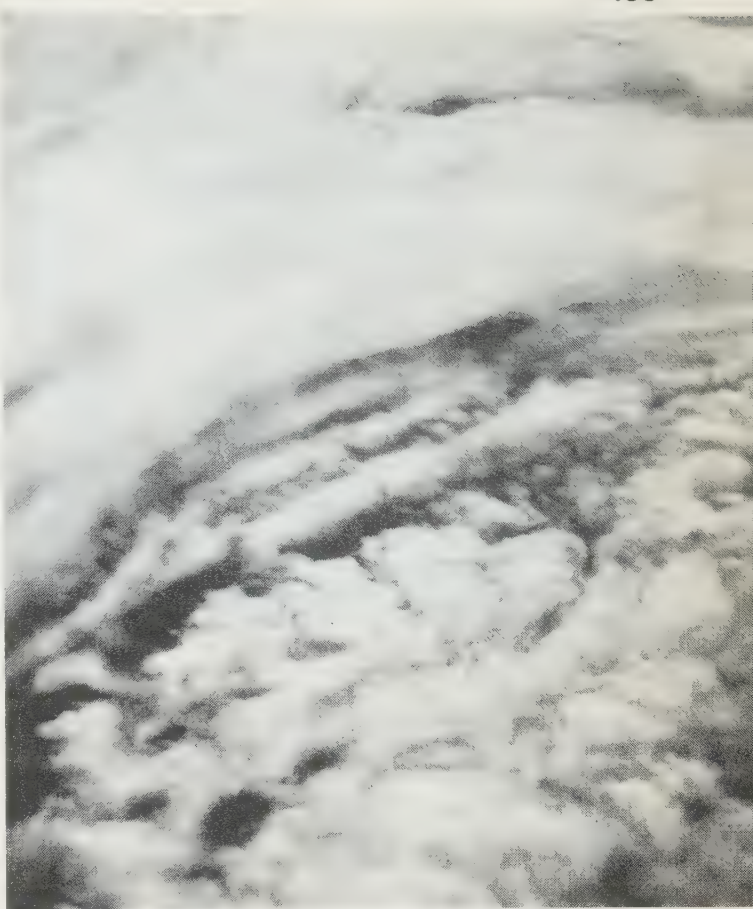
Cloud Physics.—The mechanics of condensation and coalescence of droplets into falling precipitation were the subject of many research studies and a few noteworthy papers of special interest, not only because of their significance in the theory of artificial cloud nucleation but also for their practical value in improving the techniques for forecasting the amounts of rain or snowfall. Quantitative forecasts of precipitation had been carried on experimentally by many meteorological offices for several years, and while the results showed some degree of skill they were not adequate for practical needs. Too many of the factors that determine the amounts of precipitation were still unknown and some that were known were difficult or impracticable to measure; for example, the rate of ascent of warm air in a warm front situation or the degree of convergence in a cyclonic system.

The Jet Stream.—Before discovery by high altitude bombs during World War II of the fast moving streams of air sometimes found about 30,000 ft. above sea level with wind speeds of 100 m.p.h. or more, meteorologists thought that when gale winds occurred aloft they were naturally widespread and persistent. Often when pilot balloon soundings or radiosonde showed very strong winds over a single station the observations were thought to be in error. Jet streams near the tropopause—the phenomenon to which the term was originally applied

eteorology, are now recognized as major elements in the general circulation and in synoptic analysis and forecasting. Unfortunately, practising meteorologists have come to use the term "jet stream" rather loosely to denote almost any swift current in the upper air with isotachs markedly closer together than on either side. Among the many technical papers published during 1955 about tropopause jet streams was one in the April issue of the *Journal of Meteorology*. It gave a cross section of the mean zonal flow and temperatures along the 80th meridian, west. A few years earlier the jet stream was thought to be a rather simple and definite entity, but later research showed that it is not constant nor clearly defined like a river, but is transitory and complex in structure. It usually develops on or near the tropopause where horizontal temperature gradients are large. The network of upper air sounding stations and the reports available through aircraft reconnaissance flights were not at that time in sufficient number to determine the precise structure at any one time, but jet streams are usually found at heights between 25,000 and 40,000 feet above sea level and between latitudes 30 and 60, although occasionally at other altitudes and latitudes. Sometimes they develop two or more cores of maximum winds within the same general stream and apparently there are often several fingers or cores of higher wind speeds associated with a major jet stream. Meteorologists have observed that the wind accelerations across the boundary of a jet stream or perhaps through a "filament" may account for cases of very severe turbulence in clear air sometimes encountered by high-altitude aircraft.

Of interest and practical importance to the general public is the fact that sudden shifts in jet streams and acceleration of its flow may affect the speed and direction of movement of hurricanes. A jet stream may also affect the generation and rapid development of a secondary cyclone. Streams of accelerated winds somewhat lower altitudes also called jet streams by some meteorologists seem to be one factor in the formation of tornadoes. The dynamics of this phenomenon were not yet fully understood although intensive research was in progress during 1955 because of its obvious importance in forecasting.

Numerical Weather Prediction.—Among the most revolutionary of modern meteorological developments is use of the digital computer or "electronic brain" for predicting the weather by numerical process. In May 1955 after several years of experimentation, first at the School for Advanced Study in Princeton, N. J., and later at the weather centre in Suitland, Md., a service of regular daily prognostic charts for a 36-hr. period was inaugurated through a joint project of the air force, navy and weather bureau. From the beginning of this service the prog-



EYE OF A HURRICANE shown in a photograph made from 20,000 ft. off the Florida coast Aug. 9, 1955. The eye is at the lower right portion of the picture

by standard methods of expert analysis. This improvement was particularly noteworthy in instances where cyclonic patterns change rapidly or develop unexpectedly. These developments in prediction of sudden cyclogenesis in which severe general storms generate within a few hours and move rapidly were regarded as milestones in meteorological progress. Specialists in long-range predictions began adopting the techniques of numerical process to the mean charts which serve as basis for weekly and monthly outlooks. A paper on the preparation of long-range forecasts by numerical methods was presented at the Kansas City meeting of the American Meteorological society in June. Meantime, in England and Sweden other schools in numerical weather prediction were busy with the development of their own models of the atmosphere designed for electronic computer processing. In general their models were simpler and barotropic rather than baroclinic. In Stockholm the method was in use for preparation of 72-hr. weather forecasts with fair success.

Other research studies in meteorology during 1955 embraced a large variety of subjects. Solar radiation received more attention because it is the ultimate source of energy to drive the general circulation which for the most part determines weather and climate. The undetermined fluctuations in intensity and spectrum of insolation were re-examined as a cause of changes in climate. Regarding climatic changes, there were also studies of the effects of volcanic dust both as a primary factor in the earth's albedo and as an indication of the probable effects on climate of repeated additions of large quantities of debris dust from atomic bursts. In efforts to extend the time range of forecasts into seasonal outlooks, there were further studies of the zonal index of atmospheric circulation and the phenomena of the planetary wave—concepts which had been important in long range forecasting as practised during the past decade or

Table I.—Tornadoes and Severe Local Storms in U.S., 1955

(Partial list showing most destructive)						
Place	Type of storm	Date	Path, length and width	Deaths	Injuries	Damage, est.
Visburg, Miss., and vicinity	Hail; wind	Feb. 1	Variable	25	169	\$ 300,000
Michigan . . .	Blizzard, ice, snow	March 22	Widespread	10	many	10,000,000
Ham, Dodd City, Tex. and vicinity . . .	Tornado	Apr. 6	30 mi. x 2½ mi.	1	44	2,800,000
ckwell, Okla.	Tornado	May 25	15 mi. x 500 yd.	20	280	8,000,000
all, Kan. . .	Tornado	May 25	45 mi. x 800 yd.	80	270	2,000,000
Vegas, Nev.	Hail	June 13	15 mi. x 3½ mi.	none	none	3,000,000
Platte Valley, Colo. . .	Hail	June 14	80 mi. x 60 mi.	1	5	1,000,000
lahoma City, Okla. . .	Hail	June 15	Indeterminate	none	none	1,000,000
yd, Hale, Crosby and Swisher Counties, Tex. . .	Tornado	June 18	60 mi. x —	none	5	1,700,000
arillo, Tex. . .	Hail	June 19	11 mi. x 3½ mi.	none	none	2,000,000
ings, Mont. . .	Hail	July 6	75 mi. x 5–10 mi.	none	20	5,000,000

nostic charts compared favourably with charts produced by older methods of synoptic analysis. As experience was gained in use of the computer and as the basic baroclinic models were improved, the results in some crucial cases were superior to those



CLOUD FORMATION over Marseilles, Fr. The curious photograph, taken in Nov. 1954, was released without explanation July 1, 1955, by the U.S. navy

two. Another subject, the chemistry of the atmosphere with particular reference to the changing quantities of nitrogen and carbon dioxide, received more attention because of the possible roles of these molecules in absorption of radiation and longer term changes in climate. Radar meteorology, a rapidly growing field of specialization, attracted many students and technicians who saw in its application to tornado and local severe storm forecasting a growing opportunity for professional advancement. In radar observations of tornadoes at Udall, Kan., and Omaha, Neb., a "hook" or loop in the picture seemed to identify the place of the funnel cloud. Of obvious importance in detecting distant tornadoes and issuing advance warnings, this feature called for more research to discover just how frequently it appears and what significance it has.

World Meteorology.—In Geneva, Switz., in April 1955, the World Meteorological organization, a specialized agency of the United Nations, met for its second congress. During the four-week session 86 member countries were represented and some of the weather reporting and service programs of common interest throughout the world were debated. The technical program for the next four-year period was considerably increased over that for the past four, and the budget was expanded accordingly. The congress elected A. Viaut, director of the Service Météorologique of France, Paris, as president to succeed the chief of the U.S. weather bureau, who had just completed the four-year term as first president of the WMO.

In Paris during July the international committee in charge of planning and co-operation for the International Geophysical year, 1957-58, met to complete working arrangements. This program was by far the most ambitious organization for world-wide observations and basic data collection ever attempted in the geophysical sciences—meteorology, oceanography, seismology, terrestrial magnetism, glaciology, auroral and ionosphere studies and others. (See also INTERNATIONAL GEOPHYSICAL YEAR, 1957-58.)

Hurricanes and Floods.—No two hurricanes are alike. Some reach their mature stage and continue at approximately the same size and intensity until they pass off to sea, having followed a relatively smooth parabolic track fairly easy to predict; others are erratic, changing in size, intensity and showing irregularities in path that make them extremely difficult to forecast. A study of Hurricane "Hazel" published in June 1955 after

careful analysis illustrates some of the "unpredictable" developments in tropical cyclones after they move into higher latitude. "Hazel" reached the Carolina coast on Oct. 15, 1954, and after moving northward toward Pennsylvania appeared to be dissipating. It surprised meteorologists by appearing to "rejuvenate" during the night of Oct. 15-16 and thence moving rapidly into Quebec province; disastrous flooding and loss of life in Toronto and environs occurred. Weather maps at the time showed rapid intensification of the storm as it crossed Pennsylvania, but the analysis gave no satisfactory explanation of the causes. More detailed subsequent study showed that the original "Hazel" did not rejuvenate and move into Canada but that it was a new storm whose development in connection with a frontal system over Pennsylvania and western New York when Hurricane "Hazel" arrived in that area was related in some way to the dying out of the hurricane. The jet stream was probably a factor in the genesis of the new storm but there were still many questions about the kinematics and thermodynamics of the atmospheric situation before a complete and satisfactory explanation of the unusual but not unprecedented development could be given.

The most intense tropical cyclone of the 1955 season and probably the worst of the century was Hurricane "Janet" which moved across the Caribbean and over Yucatan peninsula and eventually entered the Mexican mainland near Veracruz on Sept. 29, 1955. A U.S. navy reconnaissance plane with a crew of nine and two Canadian newspaper men was lost in probing the hurricane when it was south of Cuba on Sept. 27. The storm increased in intensity as it crossed the Caribbean, causing severe damage and loss of life in Barbados and the Grenadines and devastating Swan Island, eventually reaching velocities near the Mexican coast of 150 to 175 m.p.h. More than 500 deaths resulted from the storm and more than 100,000 were made homeless.

In some respects Hurricanes "Diane" and "Ione" were the most erratic of the season. After a somewhat uncertain course during its first two days south of Bermuda, "Diane" moved in a fairly predictable path until it reached the Carolina coast on Aug. 17 and moved northeastward across Virginia and Maryland into eastern Pennsylvania on Aug. 18. It gave indications of dying out over Pennsylvania or New York state. During the night of Aug. 18-19 the remaining cyclonic circulation brought convergence of warm moist winds from the south and produced record-breaking rains in parts of Pennsylvania, New York state and Connecticut. A combination of factors, some still not fully understood, led to catastrophic floods in the Pocono mountains and in several river valleys in Connecticut. One factor was that the ground in these places had been saturated with water from rainfall from Hurricane "Connie" just a few days before and the torrential rains from "Diane" contributed directly to excessive runoff into the streams and rivers. Near Hartford, Conn. more than 18 in. of rain fell in some localities during the 36-hour period when the remnants of Hurricane "Diane" dominated the weather situation there. Total rainfall for many places during the five to six days embracing the passage of "Connie" and "Diane" exceeded 20 in.—almost one-half of the normal rainfall there for an entire year!

"Ione" was reported as an extremely severe and unusual large hurricane as it approached the Carolina coast on Sept. 1. It apparently lost intensity rapidly after it moved inland. Studies of wind circulation, katallobars and radar observations showed that the storm centre went through several gyrations and changes in intensity while it recurved and passed northeastward into the Atlantic where it again intensified and produced severe gales over the ocean south of the Canadian maritime provinces and Newfoundland.

In recent years heavy damage from hurricanes on the east coast of the U.S. had given rise to the belief that there had been a permanent change in storm tracks and east coast hurricane liabilities. Unquestionably, these storms had visited the

Table II.—Hurricanes, 1955

No.	Name	Dates	Place of greatest damage	Remarks
I	Alice	Jan. 1-4	At sea (slight)	First winter "hurricane" for many decades
II	Brenda	July 31-Aug. 2	Louisiana (slight)	A small, weak tropical cyclone
II	Connie	Aug. 4-11	N. C. & Chesapeake bay, etc.	Winds exceeded 75 m.p.h. in N. C., and lowest barometer 28.40, Fort Macon, N. C.
V	Diane	Aug. 11-18	N. C., Pa. and Conn.	Gale winds in N. C., but maximum damage in Pa. and Conn. from floods
V	Edith	Aug. 24-31	At sea	Hurricane threatened Bermuda but recurved northward and remained at sea
VI	Flora	Sept. 3-9	At sea	More or less paralleled "Edith's" path few hundred mi. eastward, remaining entirely at sea
II	Gladys	Sept. 4-6	Near Tampico, Mex. and Texas coast	Storm formed in Gulf east of Tampico. Weak and short-lived; turned southward
II	Hilda	Sept. 12-19	Tampico	A severe storm—maximum wind est. 150 m.p.h., lowest barometer Tampico, 28.11 in.
X	Ione	Sept. 14-21	Eastern N.C.	A severe storm at sea, diminished rapidly over N.C. Maximum wind—107 m.p.h. at Cherry Point, N.C.
X	Janet	Sept. 22-29	Swan I., Br. Honduras and Veracruz, Mex.	Probably the most intense hurricane of the century. Maximum winds est. 200 m.p.h.

coastal states from North Carolina northward more frequently since 1953 while the southeastern states, especially Florida where hurricanes had not been unusual, escaped most of them. But there was no reason to believe that this was a permanent shift in hurricane frequency. Incomplete records indicated that there had been periods in the past when tropical cyclones traveled westward and northward of usual paths. In Aug. 1635 the Plymouth Colony saw a terrific storm with hurricane characteristics perhaps even more intense than those which struck New England in 1938 and 1954. In Sept. 1821 a hurricane brought high tides to New York city, the water having risen 13 ft. in one hour, according to reports, bringing it to levels which flooded all harbors in the harbour and did great damage.

Some Special Features of Weather During 1955.—Except for the almost unprecedented New Year's Day hurricane, the month of January brought for North America, the north Atlantic and western Europe as a whole, not unusual alternating patterns of mild weather with clouds and rain in some regions and cold, clear weather in others. Along the west coast of North America, weather during the early part of January was several degrees colder than normal, while east of the Rockies it was unusually warm. In Europe the first two or three weeks were very cold with a few days bringing heavy snowfall in the British Isles and western Europe. During the last ten days of January, conditions were reversed. Weather turned warmer in most regions west of the Rocky mountains and much colder in eastern North America, the average for the week ending Jan. 30 being 15° to 18° below normal in the upper Mississippi valley. Over the eastern Atlantic and western Europe and the British Isles during the last half of January temperatures turned much higher and the heavy snows that had covered the ground earlier in the month were melted, causing the Marne and Rhine rivers to flood to their highest levels in several decades. In the southern hemisphere Melbourne, Austr., continued in the longest period without rain during the past 50 years.

February brought an end to the drought in most parts of eastern Australia with 12 in. of rainfall in two days in parts of Queensland and record-breaking floods with much damage and

loss of life in parts of New South Wales. Far across the Indian ocean in South Africa, Lobatsi had 23 in. of rain—two inches more than the normal for the entire year—during the first three weeks of February. These anomalies were merely illustrative of the record-breaking weather that occurs almost every day in one place or another and were not necessarily indicative of changing climate. Striking anomalies are found here and there year after year throughout the recorded history of weather and climate. In the British Isles, February brought heavy snows and the lowest recorded temperature there since 1895—13° F. at Braemar. In North America a mass of arctic air crossed Canada and brought very low temperatures to New York state where the Hudson river froze from shore to shore for the first time in 37 years. A low temperature of—38° F. was recorded at Saranac lake during the first week of February. Again, during the latter half of the month temperature conditions were reversed with severe cold in the western half of North America and above normal temperatures in the east.

For February as a whole temperatures were 8° to 10° below normal over most of the area west of the Mississippi and 2° to 4° above normal through the east. Precipitation was unusually light in the United States except for a few localities on the Gulf coast and in the far northwest. These characteristics in temperature typified the winter months December through February as a whole, most of the states in the Rocky mountain and Pacific coast areas showing temperatures 2° to 6° below normal. For the eastern half of the country the weekly departures from normal temperature tended to cancel out so that the winter as a whole in most places was within 2° of normal temperature. Rainfall was generally below normal for the winter, particularly in west Texas and New Mexico.

March brought the beginning of the season of severe tornadoes in the United States and strong winds in the plains states with gusts in some localities up to 90 m.p.h. which raised dust storms to heights of 20,000 ft. in some places. Loss of top soil and damage to wheat in the dry sections of eastern Colorado and adjoining Kansas and New Mexico came from these storms. Late March saw some of the extreme temperature differences for which North America is famous—temperatures 15° to 20° below zero in Minnesota and 85° to 90° in Georgia and Florida. As the cold air from the north moved toward the gulf, the average temperatures for the states from Texas to Montana turned 12° to 27° below normal for the last week of March. The contrast of icy air with the warm moist air from the Gulf of Mexico brought tornadoes, floods, blizzards and dust storms to parts of the midwest and southwest United States. All-time records for low temperature at this time of year were recorded at many stations in the southern states. For the month as a whole, temperatures were 5° to 10° below normal for the north-

Table III.—Some New Weather Records, U.S., 1955

Place	New record*	Dates
Harrisburg, Pa. . . .	January drought—only 0.7 in. of rain and snow; the driest in 110 yr.	Month of January
Norfolk, Va.	January snowfall heaviest in 100 yr. Total 13.8 in. snow during month	Month of January
New Orleans, La. . .	Heaviest shower in 60 yr. One inch in 5 min.	February 5
Sheridan, Wyo. . . .	Heaviest snowfall—22.7 in. in 24 hr.	April 3
Little Rock, Ark. . .	Heaviest rainfall—3 in. in 1 hr.; 7.6 in. in 6 hr.	May 26
Chicago, Ill.	Early spring high temperature, 92° F.	May 3
Baltimore, Md. . . .	Hottest July on record for Baltimore, average for month—83.5° F.	Month of July
Jefferson City, Ia. . .	Heaviest rainfall in 1 min.—0.72 in., greatest rate ever recorded in U.S.	July 10
Falls Village, Conn. .	Heaviest rainfall in 24 hr.—9.5 in.	Aug. 19 ("Diane")
Los Angeles, Calif. .	Highest temperature for Los Angeles—110° F.	Sept. 1

*Unless specifically stated the above data are new records for the locality named and not for the country as a whole.

western half of the country and 2° to 4° above normal for the southeastern half. Rainfall was less than half of normal in most of the states in southwestern United States. In Europe the worst snowstorm since 1929 occurred at Nice, Fr., and heavy falls were reported through central Europe. Most parts of the

British Isles had temperatures 3° to 5° below normal for the month as a whole. Belthorpe, Austr., recorded 20 in. of rain in 24 hours, an amount equal to about half of the total average rainfall for a year in most parts of eastern United States.

In April the weather became decidedly warm in eastern United States where parts of Tennessee and Georgia reported maxima of 90° F. to 92° F., all-time records for mid-April. For the month as a whole temperatures were as much as 8° above normal in some regions of the United States and particularly in the Great Lakes region while in Oregon it was 8° below normal, with lesser subnormal temperatures in other parts of the west. In northwestern Europe and the British Isles April was cool and relatively dry. In Switzerland it was the sunniest and most pleasant April on record, the lack of rainfall there and in parts of southern Europe approaching drought in contrast to the cold wet weather of Scandinavia during the spring.

May and June brought relatively few anomalies but July was a month of dry, hot weather both in midwestern United States and in most of the British Isles and western Europe. Unusually violent thunderstorms and hail occurred in parts of central Europe and floods damaged some of Austria. Argentina had its coldest winter weather on record during July while New York city had its hottest month in more than 80 years. The heat continued in eastern United States during August until Hurricane "Connie" arrived and changed the circulation pattern. The frequent and intense hurricanes during August and September have been described in other paragraphs. While Pennsylvania and Connecticut were suffering from hurricane floods, the opposite side of the hemisphere in Burma also had disastrous flooding, the worst in 50 years.

The autumn months were characterized in North America as in western Europe by fairly early arrival of colder weather. In the United States the temperatures in December gave promise of new low records for that month in many localities. The year closed as it began with many people seeking the causes for what they regarded as the changing climate! (See also DISASTERS; FLOODS AND FLOOD CONTROL.) (F. W. RR.)

Methodist Church. During 1955 the annual conferences into which the denomination is divided. 102 in the United States and 46 overseas, elected 754 delegates, half lay, half clerical, to the general conference of 1956. This quadrennial law- and policy-making body was to meet in Minneapolis, Minn., April 25 to May 9, 1956. At the year's end more than 1,500 memorials (petitions for legislative action) had been filed with the secretary. Leading the demands were appeals for full clergy rights for women.

Ten days of Jan. 1955 were devoted to an experiment which brought to Cincinnati, O., 800 members of the governing boards of about 30 general agencies. Annual meetings were held, then a two-day general assembly where each board member was instructed in the over-all program of the church. Normally the agencies meet at various times and places. The general conference was to consider the value in this centralized plan.

Two quadrennial convocations were held: the National Methodist Town and Country conference, with 1,600 delegates, on the University of Indiana campus, Bloomington, July 22-25, and the National Convocation of Methodist Youth, with 4,000 young people and 1,000 youth leaders, at Purdue University, West Lafayette, Ind., Aug. 22-26.

Every day during 1955 two or more Methodist churches conducted 24-hour prayer vigils in the interest of world peace. The project was directed by the Board of Evangelism.

The circulation of the *Upper Room*, a bimonthly publication for daily devotions, now published in 26 languages and Braille, passed the 3,000,000 circulation mark.

Among Methodism's 199 hospitals and homes, 104 new building projects were started at an aggregate cost of \$51,600,000. Four new homes for the aged were begun. Capital gifts to Methodist-related colleges and universities reached more than \$30,000,000.

Methodist Men, organized on the local church level to provide fellowship and inspire larger lay activities, had nearly 9,000 chapters, enrolling 500,000 men.

Ground was broken during the summer for a \$1,500,000 office building adjacent to the manufacturing plant of the Methodist Publishing House in Nashville. Business for the year, reported at the annual meeting in October, was up 10% for a gross of \$19,690,488.

"The Way," a series of 13 half-hour dramatic television programs, was produced in Hollywood by the Radio and Film commission at a cost of \$286,000. To be distributed in 1956 by the Broadcasting and Film commission of the National Council of Churches, the series was a public service contribution of the Methodist Church.

Bishop Clare Purcell of Birmingham, Ala., in April was elected president of the council of bishops. He was to be succeeded April 27, 1956, by the president-designate, Bishop W. Earl Ledden of Syracuse, N.Y.

Paul Bosley of Evanston, Ill., on Aug. 19, was elected president of the National Conference of Methodist Youth.

Figures issued in the fall of 1955 for the latest reported 12 months were: the Methodist Church had 9,223,152 members in the U.S., 607,657 overseas and 96,472 belonging to affiliated autonomous churches. Not included were 1,086,104 preparatory members in the U.S. and 607,491 overseas. Church school enrollment in the U.S. was 6,750,000 with average attendance 3,500,000. The Woman's Society of Christian Service, with 30,667 local units, gave \$16,863,452 for home church projects and \$9,356,389 for its missionary, benevolent and service projects. Total benevolent giving was \$52,481,949, an increase 11.94%; paid for building and improvements, \$94,537,963; totaling for all purposes, \$345,416,448; total value of church parsonages and other property was \$2,030,755,429. (See also CHURCH MEMBERSHIP.) (R. SY.)

Mexico. A federal republic of Middle America lying between the United States on the north and Guatemala and British Honduras on the south, Mexico has an area of 760,354 sq. mi. Population (government est., 1954) 28,850,000. Capital, Mexico City. Chief cities (pop. July 31, 1951): Federal District, including Mexico City, 3,408,687; Guadalajara 379,400; Monterrey 330,012; Puebla 210,533; Mérida 159,405; Torreón 128,557; San Luis Potosí 126,601; León 122,680; Ciudad Juárez 121,912; Veracruz 113,803; Tampico 97,673; Aguascalientes 93,432; Chihuahua 86,796; Tijuana (est.) 80,000; Saltillo 69,874; Mexicali 64,701; Morelia 60,650; Pachuca 58,690; Culiacán 49,801; Matamoros 43,830. Language: Spanish, with an estimated 6.29% (1940) speaking Indian tongues only. Religion: predominantly Roman Catholic. President in 1955: Adolfo Ruiz Cortines.

History.—Marked recovery from the aftereffects of the previous year's peso devaluation, and serious floods which caused widespread damage in 16 of the republic's 29 states, were highlights of 1955 in Mexico.

Ending a nine-year drought, torrential rains swept most of the country in late summer and fall. The port city of Tampico on the Gulf coast was virtually destroyed, and hundreds of residents were saved from drowning by heroic rescue work by the United States navy and air force and by Red Cross teams. The devastation was regarded as the worst in Mexican history.

While admitting the floods had dealt Mexico a crippling blow



ADY BULLFIGHTER, Patricia Hayes of the U.S., saluting the crowd at capulco, Mex., before meeting the first of two bulls at a fight in 1955. She as thrown seven times and knocked unconscious by the bulls

Officials claimed that the long-range effect of the rains would be beneficial.

There was agreement among foreign and domestic observers that Mexico had recovered remarkably from the peso devaluation of April 1954. President Ruiz Cortines and Treasury Minister Antonio Carillo Flores pledged that the peso would not be devaluated again during their administration. Carillo Flores said that the flight of capital which followed peso devaluation had been reversed. The president, in his annual report in September, said Mexico's monetary reserves totalled \$305,000,000 as compared with a low of \$169,000,000 the previous September.

During the year President Ruiz Cortines inaugurated the giant hydroelectric plant, El Cobano, in Michoacán state. The plant could supply electricity to 3,500,000 persons in five states. Petroleos Mexicanos opened a \$25,000,000 lubricants plant in Tlalmanca in January. It would produce oils, greases, low-cost fertilizers, chemicals, detergents and raw materials for nylon and plastics. Plans were also announced to build newsprint plants in Michoacán and Oaxaca states, as well as a steel mill in Veracruz state.

Tourism officials said 425,000 visitors came to Mexico in 1954 and predicted tourism income for 1955 would reach \$550,000,000 U.S., the highest in history.

The Banco Nacional de Mexico said the nation must find jobs for 250,000 more workers annually. The National Harvesters association announced in Dec. 1954 that the average Mexican farm worker received only 1.54 pesos (12 cents U.S.) daily, or 60 pesos a year income. Forty per cent of the population lived on such an income, although in larger cities unskilled labourers received about 10 pesos daily.

Communications Minister Carlos Lazo reported the current administration was spending about eight times as much annually on feeder roads as did the former administration in an effort to raise rural living standards. Expenditures totalled about \$4,800,000 U.S. yearly. About 10,540 mi. of highway were built in 1954, a public works official reported. The newly completed 575-mi. highway down Mexico's west coast from Nogales to Mexico City was opened, and officials said the final link between Mexico and Guatemala would be open by 1956.

Mexico's national elections in July marked the first time

women had exercised their franchise nationally. There was considerable dissent and charges of fraud over announced results, which gave the government party all but 20 of 162 seats in the Mexican congress. Seven governors also were named. The year also saw the ousting by President Ruiz Cortines of the governors of Chihuahua and Tabasco states.

Mexico City continued to sink, giving experts grave concern that portions of the city might have to be abandoned in 40 years unless the subsidence was halted.

Following crashes which killed some drivers in the 1954 Pan-American Road race in Mexico, President Ruiz Cortines banned the annual 1,908-mi. border-to-border sports event as too dangerous. (See also FOREIGN INVESTMENTS.) (C. D. HE.)

Education.—In 1951 there were 24,583 primary schools with 67,871 teachers and 2,660,232 pupils; 466 secondary schools with 7,805 teachers and 80,598 pupils; 57 normal schools with 2,788 teachers and 16,890 pupils; and 43 technical colleges with 2,556 teachers and 16,556 pupils. University education was available at 14 universities with 63 faculties, most important of which was the National university at Mexico City.

Finance.—The monetary unit is the peso, valued at 7.99 cents U.S. currency during 1955. The 1955 budget called for revenue of 5,685,000,000 pesos and expenditure of 5,681,000,000 pesos, of which 26.3% was allocated to communications and transportation, 14.0% to the public debt, 13% to public education and cultural services and 11.4% to the development of agriculture, forestry and cattle. On Dec. 31, 1952, the funded internal debt totalled 3,334,400,000 pesos and the external debt, including the railway debt, 1,360,700,000 pesos. Currency in circulation (April 30, 1955) was 4,478,000,000 pesos; demand deposits, 4,802,000,000 pesos. The U.S. department of commerce estimated U.S. direct investments in 1954 at \$523,000,000, of which manufacturing investments accounted for \$217,000,000. The cost-of-living index (Mexico City) stood at 166 in April 1955 (1948=100). National income in 1954 was estimated at 59,180,000,000 pesos.

Trade and Communications.—Exports in 1954 totalled 6,532,137,044 pesos; imports were 8,419,731,318 pesos. Leading exports were cotton (25%), coffee (12%), lead (9%), petroleum and products (7%) and copper (5%); leading imports included machinery and apparatus (28%), metals and manufactures (16%), chemicals and drugs (12%), petroleum products (6%) and vehicles and parts (5%). Leading customers were the U.S. (71%), the U.K. (7%), Japan (6%), Germany (3%) and the Netherlands (1%); leading suppliers, the U.S. (78%), Germany (4%), Canada (3%), the U.K. (2%) and France (2%).

Railway mileage (1951) was 14,575. Total road mileage (1953) was 37,300, of which 15,450 mi. was all-weather. On Jan. 1, 1954, there were 253,354 automobiles, 179,564 trucks and 19,898 buses. According to Lloyd's Register of Shipping, the merchant marine had 84 vessels (100 tons and over) aggregating 169,327 gross tons on June 30, 1954. Telephones (Jan. 1, 1954) numbered 330,221, 72% of which were automatic and 52% of which were located in Mexico City.

Agriculture.—Production estimates in 1954-55 included maize 4,200,000 metric tons; wheat 830,000 tons; rice (rough) 162,000 tons; coffee 1,500,000 bags of 132 lb. each (exports, 1954, 1,149,000 bags); cotton 1,777,000 bales of 480 lb. each (exports, 1954, 259,419 tons); oranges and tangerines 18,897,000 boxes of 70 lb. each; limes 2,342,000 boxes of 80 lb. each; tobacco (1954) 77,602,000 lb.; sesame 80,000 tons; henequen 231,000,000 lb. Sugar production included an estimated 964,000 tons of centrifugal sugar and 150,000 tons of piloncillo.

According to U.S. department of agriculture estimates, there were 15,800,000 cattle, 5,200,000 sheep and 7,750,000 pigs in 1954 and 2,800,000 horses in 1952; in 1950 there were 6,893,000 goats, 1,021,000 mules and 2,543,000 donkeys. Chiclé exports (1954) were 2,722 metric tons.

Manufactures.—Production figures for 1954 included cement 1,783,200 metric tons; pig iron 231,600 tons; steel 454,800 tons; cotton yarn 4,920 tons; woven cotton fabrics 29,400 tons; wheat flour 400,000 tons; sulphuric acid 111,100 tons; tires 823,000 units; electric energy 6,300,000,000 kw.hr. In 1954 there were 1,123,000 cotton spindles and 34,133 looms. The index of industrial production stood at 141 in 1954 (1948=100).

Minerals.—Production in 1954 (excluding petroleum, coal and sulphur) totalled 923,899 metric tons valued officially at 2,568,453,912 pesos. Most important were lead 216,624 metric tons; zinc 223,749 tons; copper 54,806 tons; silver 39,895,546 fine oz.; gold 386,925 oz.; manganese 83,356 tons; iron ore 313,556 tons; mercury 509 tons; antimony 4,154 tons; bismuth 360 tons; cadmium 513 tons; graphite 21,784 tons; tungsten 327 tons; tin 355 tons; arsenic 2,427 tons; molybdenum 119 tons. In 1954, 83,600,000 bbl. of crude petroleum were produced; known reserves were estimated at 2,427,000,000 bbl. Coal production in 1954 was 1,310,000 metric tons; sulphur 73,636 tons. (J. W. Mw.)

Michigan. One of the north central group of states of the United States, Michigan was the 26th state admitted to the union; it is popularly known as the "Wolverine state." Land area: 58,216 sq.mi. (excluding 39,960 sq.mi. of Great Lakes water surface); pop.: (1950 census) 6,371,766; (July 1, 1955, est.) 7,222,000. Of the state's population in 1950, 70.7% was urban and 29.3% rural; whites composed 92.9% of the population, nonwhites 7.1%. Capital: Lansing (pop. 1950) 92,129. Larger cities were (1950 census): Detroit 1,849,568;

exceeded \$300,000,000, a record in the state's history.

Agriculture.—Production of all field crops in 1955 was 1% above 1954 and 9% above the 10-year average. Feed grain production was 30% above average; food grains were more than 10% below average because of heat acreage restrictions. Drought damage in the north and west central parts of the lower peninsula was more than offset by good to record high yields in most of the southern and eastern counties. The corn crop established a record for Michigan; the oats and barley crops were the largest since 1946; the field bean crop, the largest since 1949. The potato crop, on the other hand, was the smallest since 1887.

Despite the spring freeze, the fruit crop was only 12% below average. Milk production during the first nine months was slightly above that of the corresponding period of 1954.

Manufacturing.—During the first nine months of 1955 industrial production in Michigan was at a record level. The history of Michigan's chief industry, automobile manufacturing, was highlighted by guaranteed annual wage agreements reached first with the Ford Motor company and then with the other leading manufacturers. A strike against the Calumet division of the Calumet & Hecla Mining company in Michigan's northern peninsula, during which the company threatened to liquidate mining operations in Michigan's copper country, was settled by negotiation after a 11-day duration. (L. G. V. V.)

Table III.—Principal Mineral Products of Michigan

(Short tons, except as noted)

Mineral	1953		1952	
	Quantity	Value	Quantity	Value
Asphalt (bbl.)	15,853,000	\$ 41,860,000	14,761,000	\$ 36,819,000
Asbestos	1,646,000	1,686,000	1,776,000	1,811,000
Barite	3,220,000	49,518,000	2,863,000	44,721,000
Bentonite	24,000	13,832,000	22,000	10,502,000
Bryolite	1,447,000	4,091,000	1,488,000	4,200,000
Chromite	14,910,000	94,692,000	13,193,000	76,089,000
Cinnabar	2,472,000	?	2,131,000	?
Magnesium compounds	43,000	4,592,000	38,000	3,917,000
Natural gas (1000 cu. ft.)	7,774,000	1,275,000	9,052,000	1,322,000
Petroleum (bbl.)	12,285,000	35,870,000	13,251,000	35,250,000
Salt	5,127,000	22,172,000	4,778,000	21,446,000
Sand and gravel	30,460,000	23,171,000	29,194,000	22,401,000
Stone	21,616,000	17,640,000	17,974,000	15,771,000
Other minerals	...	25,506,000	...	24,990,000
Total		\$286,487,000		\$254,518,000

*Values for processed materials are not included in the totals.

Mineral Production.—Table III shows the tonnage and value of those mineral commodities produced in Michigan in 1952 and 1953 (preliminary) whose value exceeded \$100,000. In 1953, Michigan was first among the states in the production of gypsum and salt, second in brome, iron ore, and sand and gravel, and fourth in cement and stone. It ranked 14th in the value of its mineral output, with 1.99% of the U.S. total.

Microbiology: see BACTERIOLOGY.

micronesia: see MARSHALL, CAROLINE AND MARIANA ISLANDS.

Middle Eastern Affairs.

The middle eastern countries, stretching from the eastern Mediterranean to the Indian ocean and from the Black and Caspian seas to the Arabian sea, form one of the most important strategic areas of the world, the value of which is enhanced by the wealth of its oil deposits. For the last 200 years this region has been subjected to steady Russian expansive pressure. This pressure was increased at the end of World War II, and in March 1947 it brought the United States into the middle eastern picture in an attempt to strengthen the local defenses against Soviet expansion. By the end of 1954 these efforts seemed to have borne fruit. A cohesive defensive force seemed in the making, linked to the North Atlantic Treaty organization. At the same time the settlement of the disputes over Trieste between Italy and Yugoslavia and over the military guardianship of the Suez Canal Zone between Great Britain and Egypt brightened the outlook for the future. On Aug. 9, 1954, Turkey, Greece and Yugoslavia concluded a defensive military alliance at Bled, Yugoslavia, and a week earlier Turkey and Pakistan had signed a military treaty, which, however, to become geographically effective needed the adherence of Iran and of the Arab states, especially Iraq. Iraq, which has common frontiers with Turkey and Iran, is the natural guardian of access to the middle eastern oil fields.

Iraq as Part of the Western Defense.—On Jan. 6, 1955, the Turkish premier, Adnan Menderes, arrived at the head of a large delegation in Baghdad, the Iraqi capital, where he was welcomed by Iraqi Premier Nuri es-Said. At the end of the visit it was announced that Turkey and Iraq would conclude a defense agree-

ment. Turkish efforts to induce Lebanon, Syria and Jordan to join this defense agreement did not succeed, though cordial relations were established between Turkey and Lebanon, and the heads of the two states exchanged official visits. The main opposition to the entrance of the Arab states into an alliance with Turkey came from Egypt. Insisting on Egypt's role of leadership in the Arab world and under the influence of Premier Jawaharlal Nehru of India, the Egyptian leaders inclined toward a neutralist position; above all they regarded Israel and not the U.S.S.R. as the immediate and principal threat to the Arab world.

In spite of Egypt's bitter opposition, the Iraqi government signed the treaty with Turkey on Feb. 24. The United States promised to supply arms to Iraq, but by the fall of 1955 hardly a trickle of these had been delivered. Britain welcomed the new treaty and joined it on April 4, thereby abandoning its old bilateral alliance with Iraq and merging its own middle east defense arrangements into an enlarged setup. The royal air force stations maintained in Iraq under the British-Iraqi alliance were to be turned over to the royal Iraqi air force, but British ground crews would continue to base there for maintenance and training purposes, while R.A.F. squadrons would pay visits there. Forward British supply dumps would be established in Iraq for ground forces, and joint Turkish-British-Iraqi staff talks on middle east defense arrangements would be organized. Thus with a much strengthened and modernized Iraqi army, the mountains in northern Iraq guarding the access to the oil fields could be defended. But meanwhile serious developments in the Balkans and in Egypt threatened in 1955 to undermine the whole middle eastern defense system.

Crisis in the Balkan Alliance.—In the Balkans the Yugoslav-Turkish-Greek alliance was in the second half of 1955 at the verge of disintegration. On March 2, 1955, the foreign ministers of the three Balkan nations, meeting in Ankara, Turk., had decided to set up a joint Balkan consultative assembly, made up of members of parliament from Greece, Turkey and Yugoslavia. This assembly had not met by the end of October. On the contrary, Yugoslavia was stressing more and more its neutralist attitude, especially after the reconciliation between Yugoslavia and the Soviet Union in the wake of the visit of the Soviet leaders to Belgrade, Yugos., at the end of May. An even more dangerous obstacle to the functioning of the Balkan alliance in 1955 than the growing coolness of Yugoslavia toward Turkey and Greece, both of which were members of NATO, was the open hostility which developed between these two NATO members as a result of the Cyprus dispute.

The Graeco-Turkish Dispute.—The island of Cyprus had long been regarded as the anchor of the defense of the eastern Mediterranean and of western Asia. It was for that reason that the Turkish government allowed in its treaty of defensive alliance with Great Britain on June 4, 1878, the British occupation of the Turkish island of Cyprus against the British promise to protect Asian Turkey against Russian expansion. The island is situated near the Asian coast, only 40 mi. from Anatolia, whereas it is five times as distant from the nearest Greek isle. After the outbreak of hostilities between Turkey and Britain in World War I, Britain annexed the island, and this annexation was recognized by Turkey in the peace treaty of Lausanne. The island is inhabited by a population of which four-fifths is Greek and one-fifth Turkish.

In 1954 the Greek population under the leadership of Archbishop Makarios III vigorously renewed its demand for union with Greece. The Communist party, which had shown considerable strength among the Greek population of Cyprus, supported the demand. The Turks opposed it, not only in order to protect the Turkish minority but principally because of the

strategic importance of Cyprus and its proximity to the Turkish coast. After the evacuation of the Suez canal the British intended to make Cyprus their chief defensive base in the Mediterranean against Soviet expansion, thus fulfilling the original purpose for which Turkey had ceded the island to Britain. The Turks were afraid that a cession of Cyprus to Greece might mean a dangerous weakening of the defenses against a possible Soviet expansion. Remembering the Greek invasion of Turkish Asia Minor in 1919 and the costly struggle for Turkey's liberation, the Turks were afraid that Greek claims to Cyprus might presage another era of Greek expansion into Asian Turkey. For strategic and historic reasons the Turks claimed a right to participate in any Cyprus settlement and opposed the transfer of the island to Greece. When the United Nations general assembly decided at the end of 1954 not to discuss the Cyprus question, Turkish Premier Menderes expressed the hope that the Cyprus problem was now permanently disposed of and that Turkish-Greek friendship would thus be preserved and even further developed.

But Greek agitation for the union of the island with Greece continued and increased during 1955, and after the Greek government under popular pressure submitted the Cyprus question again to the United Nations, mutual distrust and recrimination between the two allied peoples reached such a height that Greek demonstrators in Salonika, formerly a Turkish city, damaged the birthplace of Kemal Ataturk, the revered founder of the Turkish republic, and the Turkish consulate, and Turkish crowds in Istanbul and in Izmir destroyed and looted many Greek-owned shops and churches. The Turkish government proclaimed martial law and expressed its deep regrets over the incidents. Premier Menderes declared that Turkey considered the alliance with Greece as a guarantee of their mutual existence, but Greek public opinion left no doubt that the friendship with Turkey was, at least for the time being, dying. In spite of the efforts of the two governments, popular feelings on both sides were so strong that the Balkan pact had suffered a serious blow by the fall of 1955. And the deterioration did not confine itself to the Balkans. It was as bad at the other end of the middle eastern region.

Egypt's Neutralism.—Whereas the year 1954 had brought a *rapprochement* between Egypt and the west, the year 1955 found Egypt in an effort to lead the middle east in the direction of neutralism. Turkish President Celal Bayar issued an invitation to Iran during his visit there at the end of Sept. 1955 to join the Turkish-Iraqi-Pakistan pact. This invitation was officially accepted on Oct. 11, 1955, but this western success was offset by Egypt's decision to buy arms from countries in the Soviet orbit. The Czechoslovak government offered to supply arms to Egypt and perhaps also to Syria and Saudi Arabia in exchange for Egyptian cotton and other raw material. Egypt had applied for United States arms earlier in the year, but the protracted negotiations had not led to any concrete results. Nor had the United States supplied Iraq to any considerable degree with promised arms. The Arab states felt that Israel was far superior to them in military strength and equipment; they argued that France and other western nations were supplying Israel with heavy equipment but would sell none to the Arab countries. Thus they declared that they had to procure further armaments wherever they could in order to establish a balance of military power in the middle east. This feeling was especially strong in Egypt after Israeli attacks on Egyptian positions in the Gaza territory in southern Palestine. The United States government sent Assistant Secretary of State George V. Allen to Cairo at the end of September to discuss the question of arms supply to Egypt. (H. Ko.)

Middle East Defense Organization.—The first meeting of

the powers concerned took place in Baghdad, Iraq, Nov. 21-22. It was attended by Nuri es-Said, Chaudry Mohammed Ali Hussein Ala and Adnan Menderes, respectively premiers of Iraq, Pakistan, Iran and Turkey, and by Harold Macmillan, British foreign secretary. The delegates were accompanied by the chiefs of general staff of the member countries. The U.S. ambassador to Iraq and the commander in chief of the U.S. forces in the eastern Atlantic and Mediterranean attended the council as political and military observers respectively.

It was agreed to set up a permanent council which would be deemed to be in continuous session; each government would appoint a deputy representative to the council with ambassadorial rank. The permanent seat of the organization was Baghdad and a secretariat was established there. A permanent military committee and an economic committee were also established.

(B. A. C. S.-E.)

Migration: see IMMIGRATION, EMIGRATION AND NATURALIZATION; REFUGEES.

Milbank Memorial Fund: see SOCIETIES AND ASSOCIATIONS, U.S.

Milk: see DAIRY PRODUCTS.

Mineral and Metal Production and Prices.

The decline in output of essential minerals and metals in the United States in 1954 was clearly a reflection of the general world economic situation. In 1955, the U.S. achieved a remarkable recovery and toward the close of the year the economy of the country reached an all-time high peak. Table II gives prices for two parts of 1955. Quotations for some sensitive commodities have been averaged for several days because they varied so much, influenced by world events. During 1955, silver hit its highest price since Oct. 1920. Exact data on 1955 mineral production were not available at the close of the year, but the 1954 data, recently available, are shown in Table I. Spotlights of the world situation in minerals and metals in 1955 follow:

Most spectacular was uranium, coupled with the rapid advance toward commercial utilization of atomic energy. A tremendous mining boom in Canada was opening up its northern wilderness, giving the world several new major producing districts. There was a significant increase of U.S. imports of iron ore. The abnormally high price of copper brought threats to consumers to use less copper and to find substitutes. The worldwide shortage of aluminum stimulated the expansion of production facilities, especially where low-cost hydro-electric power was available. Primary aluminum output in the U.S. rose to a new high. In Sept. 1955, the director of the Office of Defense Mobilization announced that no additional government aid would be granted to firms entering the primary aluminum industry or expanding their existing capacity. Coal output had not shared proportionately in the increased productive activity, largely because of continued inroads of oil and gas into the coal markets, especially in the United States and Great Britain.

Two important contributions to literature on minerals were the Malone subcommittee report, *Accessibility of Strategic and Critical Materials to the United States in Time of War and Peace*, and *Our Expanding Economy*, published by the U.S. government printing office in the last half of 1954; and *Mineral Facts and Problems*, Bulletin no. 556, prepared by the U.S. bureau of mines in 1955—a useful source of information on minerals.

The data in the tables on mineral production in other countries were supplied by the foreign minerals staff of the U.S. bureau of mines.

(See also GEOLOGICAL SURVEY, U.S.; and separate articles on the various mineral commodities for further details.)

(F. E. H.; B. B. M.)

Table 1.—World Mineral and Metal Production in 1954
Metric tons unless otherwise specified; Th. indicates thousands, Mi. millions of units)

Country	Alu- minum (Th.)	Bauxite (Th.)	Anti- mony ^a	Arsenic ^b	Asbestos ^c	Barite (Th.)	Beryl	Bismuth	Cad- mium	Cement (Th.)	Chromite (Th.)	Coal (Ml.)	Coke (Ml.)	Cobalt	Copper (In ore)	Copper (Smelter)	Diamonds (Th. carats)	Feld- spar (Th.)	Fluor- spar (Th.)	Fuel briquets (Th.)	Gold (Th. oz.)	Graphite (Th. oz.)	Gypsum (Th.)	Immerite (Th.)	Iron ore (Th.)	Pig iron (Th.)	Steel (Th.)
North America																											
United States	1,375.0	1,936.9	693	11,945	43.7	858.9	582	7	4,332.6	46,267 ^d	148.2	380.22	54.13	1,007	798.67	858.1	—	416.67	222.27	1,544	1,899.0	5.7 ^e	8,112.8	496.9	79,114 ^f	54,706	80,115
Canada	508.8	3,562	544	2,011	838.3	201.9	—	361.0	465.9	3,562	13.52	2.80	2.80	990	274.6	229.8	—	14.0	108.6	754	4,386.9	1.3	3,431.1	111.6	6,400	4,108	2,488
Mexico	—	4,182	—	2,427	—	—	—	—	675.07	1,374	0.1	1.31	0.40	p	94.8	44.0	—	—	120.07	—	260.0	21.3	26.5	—	5,522	2,269	490
Central America		2,030.2	—	—	—	4.43	—	—	—	520	64.07	—	—	—	15.9	—	—	—	—	—	0.7	—	198.6	—	25	—	—
West Indies		—	—	—	—	—	—	—	—	—	—	—	p	—	—	—	—	—	—	—	—	—	15.0	—	5,389	—	—
South America																											
Venezuela	—	—	—	—	0.7	9.0	—	—	—	962	—	1.50	—	—	—	—	—	—	—	—	377.5	—	—	—	—	—	—
British Guiana	2,336.9	—	—	—	—	—	—	—	—	—	—	0.03	—	—	—	—	—	—	—	—	56.1	—	—	—	—	—	—
Surinam	3,425.8	—	—	—	—	—	9	—	—	—	—	—	—	—	—	—	—	—	—	—	26.9	—	—	—	—	—	—
Ecuador	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	6.8	—	—	—	—	—	—
Brazil	1.87	15.07	—	373 ^g	0.777	7.07	1,366	312.8	—	2,403	2.77	2.007	0.347	—	—	—	2007	—	—	—	18.07	p	28.43	—	3,4007	1,105	1,171
Peru	—	—	—	—	—	12.07	—	46.0	30.1	2,403	—	0.20	—	—	38.0	25.3	—	—	—	—	147.3	p	—	—	3,4007	1,105	1,171
Chile	—	5,217	—	—	p	15.07	—	—	—	403	—	p	—	—	3.7	338.2	—	2.33 ^h	0.2	—	14.4	p	75.07	—	1,989	305	321
Argentina	—	407 ⁱ	—	p	p	—	—	1.04 ^j	—	775	p	2.27	0.27	—	363.7	—	—	p	7.57	—	125.0	p	160.07	—	1,989	39	321
Europe																											
Portugal	—	—	—	6007	0.13	0.33	301	—	—	785	—	0.49	—	—	—	—	—	p	—	—	15.8	—	46.43	0.5	83	—	—
Spain	4.7	—	1607	543 ^k	p	23.07	—	23.07	5.57	3,812	14.15	1.22	—	p	7.2	5.8	—	—	35.07	1,116	8.33	—	—	—	3,406	905	1,097
France, incl. Saar	120.17	1,270.0	3003	5,640 ^l	10.7	43.6	—	72.0 ^m	141.8	9,646	73.13	12.82	—	—	0.57	p	62.0	58.6	58.6	6,728	5	—	—	—	43,804	11,307	1,097
United Kingdom	32.1	—	—	p	—	70.0 ⁿ	—	—	143.0	12,156	18.14	12.82	—	—	—	p	—	—	—	1,378	58.03	—	—	—	15,874	11,307	1,097
Belgium	—	—	—	1,795	—	—	—	p	500.07	4,137	84.0	3.36	—	—	—	—	—	—	p	1,000	—	—	2,800.07	—	4,619	4,927	18,917
Germany, West	—	—	—	—	—	—	—	—	—	972	—	12.24	—	—	—	—	—	—	—	1,378	—	—	—	—	81	4,619	4,927
Italy	129.2	7.07	503	217	23.5	376.1	—	—	280.5	16,260	8.712	218.57	35.02	p	2.2	234.3	—	140.5	165.0	22,697	6.43	9.5	673.5	673.5	13,036	12,512	17,434
Switzerland	57.6	295.1	3507	1,070 ^o	p	71.9	—	—	203.4	1,811	0.017	1.70	2.62	—	0.6	0.8	—	30.9	77.1	1007	5.2	3.8	621.6	1,065	1,346	4,207	
Austria	27.0	17.3	360	p	—	4.4	—	—	—	1,622	26.8	6.46	1.35	—	3.1	9.4	—	2.2	—	—	p	—	—	138	1,065	1,346	4,207
Greece	48.0	—	5507	62 ^s	p	22.97	—	—	—	1,622	26.8	6.46	1.35	—	3.1	9.4	—	2.2	—	—	p	—	—	138	1,065	1,346	4,207
Yugoslavia	6.5	680.6	1,552	—	3.3	81.2 ^t	—	—	—	1,393	124.5	13.65	0.40	—	30.3	30.3	—	23.07	0.4	8	—	—	586.62	2,171	1,394	1,687	1,687
Sweden	—	—	—	15,594 ^u	—	p	—	p	80.9	784	—	0.27	0.11	p	14.0	12.9	—	37.9 ^v	4.3	2007	36.63	3.6	—	—	1,111	368	628
Finland	10.9	—	—	p	7.1	p	—	p	—	2,371	—	—	—	—	21.0	21.3	—	12.3	—	61	110.3	—	p	—	1,210	930	1,839
Africa																											
French Morocco	—	—	389	—	0.5	9.3	15	—	—	654	—	0.49	—	736	0.8	—	—	—	1.1	15	3.6	—	—	—	335	—	—
Spanish Morocco	—	—	3007	—	—	—	—	—	—	—	—	—	—	—	0.2	—	—	—	—	29	—	—	—	—	591	—	—
Algeria	—	—	2,300	—	—	13.6	—	—	—	631	—	0.30	—	—	—	—	—	—	—	147	—	—	—	—	2,850	—	—
Tunisia	—	—	—	—	—	270	—	—	—	270	15.17	—	—	—	—	—	—	—	—	—	23	—	—	—	891	—	—
Sierra Leone	—	—	—	—	—	83	—	—	—	—	—	—	—	—	—	—	—	—	—	—	46.4	—	—	—	—	—	—
Sierra Leone	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	787.1	—	—	—	—	—	—
Gold Coast	—	166.1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Gambia	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Nigeria	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Belgian Congo	—	—	—	—	—	45	—	—	—	361	—	0.65	—	8,609	220.8	220.8	—	—	—	—	365.5	p	—	—	1,893	1,197	1,431
Angola	—	—	—	—	—	—	—	p	62.8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
South-West Africa	—	—	—	—	—	512	—	p	734.8	29	—	—	—	—	1.7	—	—	—	2.8	—	p	—	—	—	—	—	—
South Africa	—	—	8,600	—	99.0	2.1	184	1,037	—	2,162	641.3	29.32	1.38	—	42.3	41.0	—	3.6	20.0	—	13,237.1	1.3	154.8	—	64	45	—
Northern Rhodesia	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2.7	—	—	—	—	—	—
Southern Rhodesia	—	—	—	—	—	83	—	—	—	259 ^s	401.4	2.75	0.157	—	0.3	—	—	—	0.1	—	535.9	—	—	—	—	—	—
Tanganyika	—	—	65	416	72.5	977	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Kenya	—	—	—	—	0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Uganda	—	—	—	—	—	70	—	0.2	—	—	—	p	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Madagascar	—	—	—	—	0.23	p	588	—	—	—	0.5	—	—	—	—	—	—	—	—	—	—	—	—	—	p	—	—
Malawi	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Ethiopia	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Asia																											
Cyprus	—	—	—	—	18.5	—	—	—	—	—	9.2	—	—	—	27.3	—	—	—	—	—	—	—	101.5	—	—	—	—
Israel-Jordan	—	—	—	—	—	626	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	28.07	—	—	—	—
Turkey	—	—	980	p	p	679	—	—	—	626	561.5	7.81	0.51	—	15.0	24.5	—	—	—	90	—	—	—	—	586	196	170
Iran	—	81.07	2403	0.6 ^s	—	356	—	—	—	653	18.07	97.327	p	—	7.5	7.3	p	3.07	—	—	240.7	0.83	31.7	—	169.3	1,968	1,712
India	—	—	—	—	—	—	—	—	—	4,453	22.3	0.56	—	—	—	—	—	—	—	127	—	—	—	—	3,786	1,968	1,712
Pakistan	—	—	—	—	—	61	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.1	—	—	—	—	—	—
Japan	—	—	507	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	237.3	4.0	337.6	2.4	1,631	4,751	7,750
Korea, Rep. of	—	—	264	1,430 ^s	6.3	18.9	—	58.07	227.2	10,675	32.5	44.16	4.39	—	65.2	68.9	—	25.07	6.1	2,471	52.4	13.9	—	—	31	—	—
Philippines	—	—	—	0.2	0.2	0.3	4	115.0	—	310	401.2	0.89	p	—	0.5	0.2	—	8.9	—	73	416.1	—	—	—	1,425	—	—
Malaya	—	158.3	—	—	—	—	—	—	—	54	—	0.12															

Table 1.—World Mineral and Metal Production in 1954—Continued

Country	Lead (in ore) (th.)	Lead (smelter) (th.)	Copper Magne sulfate (th.)	Magne sulfate (th.)	Manganese ore (th.)	Mer cury (flasks)	Mica (th.)	Molyb- denum (th.)	Nickel (th.)	Niob- ium (th.)	Peat (th.)	Petro- leum (M bbl.)	Phos- phate (th.)	Plati- num (th oz.)	Potash, Natron (th oz.)	Pyrite (th.)	Salt (th.)	Silver (th oz.)	Sulphur (th. tons)	Talc (th.)	Tanta- lum (lb. lb.)	Tin (on ore) (tons)	Tin (smelter) (tons)	Tung- sten (conc.)	Vanad- ium (th.)	Zinc (in ore) (th.)	Zinc (smelter) (th.)		
North America	289.47	441.5	257.7	63,257	192.07	18,343	84,665	76,612	2.4	1,374.0	721	2,316.37	14,043	24.27	1,767.8	931.53	18,487.9	35,585	5,515.5	537.1	47.8	2007	71,407	12,4407	1,513	4,472	427.1	727.9	
United States	198.9	150.9	150.9	6,0007	252.2	14,755	682	266	145.1	178.0	79	82.65	370.4	325.67	209.8	370.4	873.9	30,680	38,896	6.07	23.6	—	2407	545	—	—	338.2	194.0	
Mexico	216.6	209.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	233.6	54.9	
Central America	3.8	0.17	—	—	269.3	—	—	—	13.2	—	—	23.65	127	—	—	120.0	224.0	4,1117	—	—	—	—	—	—	—	—	4.7	—	
South America	—	—	—	—	—	—	—	—	—	—	—	40.55	—	25.27	—	—	202.8	113	5.1	—	—	—	—	—	—	—	—	—	
Colombia	—	—	—	—	—	—	—	—	—	—	—	691.31	—	—	—	—	83.4	—	—	—	—	—	—	—	—	—	—	—	
Venezuela	—	—	—	—	—	—	—	—	—	—	—	3.15	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
British Guiana	—	—	—	—	—	—	—	—	—	—	—	17.16	157	—	—	—	800.07	35	—	—	—	—	—	—	—	—	—	—	
Surinam	—	—	—	—	—	—	—	—	—	—	—	3.15	—	—	—	—	20.07	—	—	—	—	—	—	—	—	—	—	—	
Ecuador	3.0	3.07	10.07	—	200.07	—	1,0007	—	—	3.57	—	17.16	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
Brazil	110.0	57.7	—	—	4.57	77	—	—	—	30.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
Bolivia	3.27	—	—	—	53.0	1003	1,240	1,200	—	251.2	—	29.65	557	—	1.40	—	45.07	1,489	39.1	—	—	—	—	—	—	—	—	—	
Chile	1.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	500.07	1,640	17.07	—	—	—	—	—	—	—	—	—	
Argentina	19.0	23.07	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
Europe	2.0	1.07	—	—	9.5	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
Portugal	55.3	55.7	31.4	1,128	39.1	43,400	8	—	—	38.0	17	—	—	—	—	583.4	2.3	64	—	—	—	235.0	935	617	4,283	—	—	88.07	22.8
Spain	55.3	55.7	31.4	1,128	39.1	43,400	8	—	—	38.0	17	—	—	—	—	583.4	2.3	64	—	—	—	235.0	935	617	4,283	—	—	88.07	22.8
Spain Incl. Sear	10.4	61.4	—	5,059	—	—	—	—	—	316.0	207	3.60	84	1,234.8	1,234.8	6,913.7	3,461.8	1,313.3	10.07	—	—	—	—	—	—	—	—	10.07	110.9
United Kingdom	6.9	6.9	—	—	—	—	—	—	—	316.0	207	3.60	84	1,234.8	1,234.8	6,913.7	3,461.8	1,313.3	10.07	—	—	—	—	—	—	—	—	10.07	110.9
Belgium	71.9	—	—	—	—	—	—	—	—	316.0	207	3.60	84	1,234.8	1,234.8	6,913.7	3,461.8	1,313.3	10.07	—	—	—	—	—	—	—	—	10.07	110.9
Netherlands	—	—	—	—	—	—	—	—	—	316.0	207	3.60	84	1,234.8	1,234.8	6,913.7	3,461.8	1,313.3	10.07	—	—	—	—	—	—	—	—	10.07	110.9
Germany, West	67.5	10.2	—	82	48.8	54,477	—	—	—	254.8	17	19.01	6.54	1,936.0	1,936.0	586.3	3,160.3	2,402	200.2	—	48.8	305.4	—	—	30	—	98.2	167.5	
Italy	43.0	37.3	3.0	1,666	—	—	—	—	—	11.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	107.8	67.5	
Ireland	—	—	—	—	—	—	—	—	—	107.8	507	21.007	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4.7	—	
Austria	4.9	12.1	839.2	—	16.07	27	—	—	—	107.8	507	21.007	—	—	—	—	—	—	—	—	—	—	—	—	—	—	7.2	13.6	
Greece	5.3	2.97	76.5	—	3.2	—	—	—	—	245.6	258	1.56	—	—	—	—	—	—	—	—	—	—	—	—	—	—	53.3	44.2	
Yugoslavia	84.1	66.7	108.0	4,702	—	14,446	1,0007	152	0.2	28.6	3507	—	67	—	—	—	—	—	—	—	—	—	—	—	—	—	53.3	44.2	
Norway	29.7	20.1	—	—	—	—	152	—	—	16.5	2057	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3.6	—	
Sweden	0.3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
Switzerland	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
Africa	82.6	26.7	—	—	400.4	—	13	—	0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
French Morocco	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
Spanish Morocco	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
Algeria	0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
Tunisia	10.2	26.3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
Libya	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
Sierra Leone	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
Sierra Leone	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
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Sierra Leone	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
Sierra Leone	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
Sierra Leone	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
Sierra Leone	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
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Sierra Leone	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
Sierra Leone	—	—	—	—	—	—	—	—	—																				

Table II.—Mineral and Metal Prices in 1955

New York market as reported by F. & M. J. Metal and Mineral Markets				London market as reported by the Metal Bulletin								
January	October	Grade	Units	Commodity	Grade	Units	January			October		
							£	s.	d.	£	s.	d.
22.2	24.4	99% ingot	Pound	Aluminum	99.5%	Long ton	156	..	..	156	..	..
3.375	3.65	50-55% Sb	S.T. unit	Antimony, Ore	50-55% Sb	Unit	..	21	..	..	21	..
31.97	36.47	Domestic, cased	Pound	Antimony	Domestic, 99%	Long ton	210	..	6	210	..	10
5.50	5.50	White oxide	"	Arsenic	Foreign, 99%	"	47	10	..	47	10	..
(e)	(e)	4% Be	"	Beryllium-copper alloy	4% Be	" (d)	..	22	11	..	22	11
2.25	2.25	Ton lots	"	Bismuth	..	"	..	16	..	..	16	..
1.70	1.70	Commercial sticks	"	Cadmium	99.9%	"	..	11	7	..	11	7
43.50	43.50	48% Cr ₂ O ₃ , 3 Cr:1 Fe	Short ton	Chromium, Ore	Rhodesian, 1st grade	Long ton	12	12	6	12	8	..
1.25	1.25	97% spot	Pound	Metal	98.99%	Pound	..	6	7½	..	6	7½
24.75	26.25	4-9% C, 65-69% Cr (a)	"	Ferroalloy	4-6% C, 60% Cr	Long ton	77	10	..	87	10	..
2.60	2.60	97-99% Co	"	Cobalt	..	Pound	..	21	..	..	21	..
44.339	43.500	Domestic	"	Copper	Fire ref., high grade	Long ton	..	(e)	..	..	(e)	..
44.052	43.411	Export	"	"	Wire bars	Long ton	296	251	4½	292	251	2
15.00	35.00	"	Ounce	Gold	Official	Ounce	..	11	3	..	11	3
2.25	2.25	99.9% In	"	Iridium	Sponge, powder	"	41	..	..	47	10	..
12.50	105.00	Sponge, powder	"	Iron, Ore	Foreign, soft	Long ton	106	2	3	107	2	3
9.90	10.10	Mesabi, nonbessemer	Long ton	Lead, Ore	Bars	Pound	..	2	7½	..	2	7½
17.85	195.05	80% Joplin, Mo.	Short ton	Magnesium, Ingots	48% Mn	Unit	..	67	..	..	67	..
5.00	15.50	New York	Pound	Manganese, Ore	96-98% Mn	Long ton	243	10	..	243	10	..
17.00	32.50	99.8% car lots	"	Metal	78% Mn, 1% C	"	54	15	..	54	15	..
(e)	(e)	48% Atlantic ports	L.T. unit	Mercury	20% Mn	Flask	28	2	6	28	2	6
5.00	45.00	95.5% Mn, 2% Fe	Pound	Molybdenum, Ore	85% MoS ₂	Unit	110	106	8	102	12	..
10.00	190.00	74-82%	net ton	"	Powder	Pound	..	35	..	40	..	..
16.00	86.00	19-21% Mn	Long ton	Ferroalloy	65-75% Mo	" (a)	..	10	6	..	11	..
3.00	278.50	(76 lb.)	Flask	Nickel	Refined	Long ton	519	..	483	..	..	..
1.05	1.05	Mo, Climax, Colo. (b)	Pound	Palladium	20-25% P	Long ton	7	2	6	7	2	6
3.00	3.00	99% Mo	"	Phosphorus, Ferro-	..	Long ton	32	10	..	32	10	..
1.57	1.57	55-65% Mo	" (a)	Platinum	..	Ounce	30	10	..	30	10	..
4.5	64.5	Cathodes	"	Rhodium	..	Ounce	43	10	..	43	10	..
9.00	23.00	24% P, car lots	Gross ton	Selenium	99.5%	Pound	..	43	..	35	9	..
0.00	90.00	Wholesale	Ounce	Silicon	98% Si	Long ton	134	10	..	137	10	..
9.50	95.50	99.5%	Pound	"	25% Si	"	36	..	..	39	..	..
5.00	121.50	97-1% Si, spot	" (a)	Ferroalloy	75% Si	"	63	..	74¼	..	79¾	..
5.00	9.50	50% Si	" (a)	Silver	Official, spot	Ounce	..	..	..	..	..	..
8.50	20.50	75% Si	" (a)	Tantalum, Ore	60 65% Ta ₂ O ₅	Unit	62	..	62	..	..	..
2.00	11.75	Foreign, New York	Ounce	Tellurium	Powder	Pound	..	(e)	..	..	(e)	..
4.40	12.95	Sheet	Pound	Tin	99%+	Pound	..	15	6	15	6	..
0.804	91.625	Straits	Pound	Titanium, Ferroalloy	20-25% Ti	Long ton	696	..	733	..	..	..
3.40	1.88	20-25% Ti	Short ton	" Ilmenite	52-54% TiO ₂ , Malayan	Long ton	167	10	..	230	..	..
3.00	93.00	59.5% TiO ₂	Gross ton	" Rutile	95% TiO ₂ , Australian	Long ton	8	5	..	8	10	..
1.75	1.75	Domestic	Pound	Tungsten, Ore	65% Wolframite (f)	Unit	48	199	..	87	..	..
8.125	96.000	Foreign	S.T. unit	" Ferroalloy	65% Scheelite	Pound	..	14	3	..	18	7
1.50	1.50	72-82% W	" (a)	Powder	80-85% W	" (a)	..	17	3	..	20	2
9.00	20.00	98.8% W	" (c)	Vanadium, Ore	98-99% W	" (a)	..	11	10	..	11	10
7.25	12.50	"	" (a)	Ferroalloy	90-95% Fused Oxide	Unit	..	24	4	..	24	4
3.00	63.00	60% Joplin, Mo.	Short ton	Zinc, Ore	50-60% V	Pound	..	(e)	..	..	(e)	..
5.00	33.75	St. Louis	Pound	Metal	G.O.B., foreign	Long ton	83	15	2	91	2	..
3.00	3.45											
4.00	4.50											
11.00	31.00											
13.00	3.10											
18.00	80.00											
1.50	13.00											

Per pound of base metal contained. (b) Per pound of contained Mo, f.o.b. Climax, plus cost of containers. (c) Per pound of V₂O₅ contained. (d) Per pound Be plus 3s.6d. per pound by. (e) Not quoted. (f) Premium for U.K. Government, ex-stock standard material delivered U.K. consumers' works—10/-d. per long ton unit on mean of range.

Mineralogy. New minerals continued to be discovered. The following were described during the year 1955: pittite, uranyl carbonate, from the Lucky Strike No. 2 mine, Piute county, Utah, by M. E. Thompson, A. D. Weeks and M. Sherwood (*American Mineralogist*, 40:201-206); navaite, hydrated vanadium pentoxide, from the Monument No. 2 mine, Navajo Indian reservation, Apache county, Ariz., by A. D. Weeks, M. E. Thompson and A. M. Sherwood (*ibid.*, 40:207-210); goldichite, hydrous potassium ferric sulphate, from the Lucky Strike No. 7 mine, Calf Mesa, San Rafael Swell, Utah, by A. D. Weeks and E. B. Gross (*ibid.*, 40:469-480); hawleyite, hydrous cadmium sulphide, from the Hector-Calumet mine, Pinal County, Arizona, by R. J. Trail and R. W. Boyle (*ibid.*, 40:555-559); cerianite, dioxide of cerium, from Lackner mine, Sudbury district, Ontario, by A. R. Graham (*ibid.*, 40:560-564).

"Jade Story—European" Elsie Ruff gave the history of the use of jade, especially as tools, in Europe (*Journal of Gemmology*, vol. iv, pp. 336-347 [London, Eng.]). R. J. Barber discussed the composition and the means of identification of the various varieties of jade in "The Nature of Jade" (*Gems and Gemmology*, vol. viii, pp. 38-46 and 67-77). The history and the successful production of cultured pearls by K. Mikimoto were discussed by Jeanne G. M. Martin in the well-illustrated article "Kikichi Mikimoto, a Tribute" (*ibid.*, vol. viii, pp. 108-122). "Some Unusual Structures in Pearls and Cultured Pearls" (*Journal of Gemmology*, vol. iv, pp. 325-334), Robert Webster described the techniques used in their detection.

For more than a century numerous attempts had been made to produce the diamond in the laboratory. However, time and improved methods of identification had shown that no incontrovertible proof had ever been given that the various attempts had been successful. Because of the importance of the diamond as a gem and its ever-increasing use in industry, many intensive research programs had been carried on in recent years to produce the diamond in the laboratory. For over four years a team of research scientists at the laboratory of the General Electric company, Schenectady, N.Y., worked on this problem and on Feb. 15, 1955, announcement was made that processes and apparatus had been developed whereby diamonds could be made in the laboratory. The comprehensive and well-illustrated report "Man-Made Diamonds" by the General Electric company described the methods involving high pressures up to 1,500,000 lb. per square inch and temperatures up to 5,000° F. and the means for the positive identification of the product. The material produced thus far was very small and of no commercial value, but the results obtained were extremely important in that they would probably lead to significant achievements in other studies in the area of ultrahigh pressures and temperatures.

Strontium titanate was a recent laboratory product which has optical properties quite similar to those of the diamond but is much softer and heavier. It was expected that it would soon be marketed as *starilian*. Leon Merker discussed its production and properties in "Synthesis and Properties of Large Crystals of Strontium Titanate" (*Mining Engineering*, 7:645-648). Other articles about this new gem were by R. T. Liddicoat, Jr., and

C. R. Crowningshield (*Gems and Gemology*, vol. viii, pp. 148 and 156) and by D. E. Mayers (*Journal of Gemmology*, vol. v, pp. 98-99).

Alexander N. Winchell was designated as the 14th recipient of the Washington A. Roebling medal of the Mineralogical Society of America.

The fourth award of the Mineralogical Society of America for meritorious achievement by a younger scientist was made to Hatten S. Yoder, Jr., of the Geophysical laboratory, Washington, D.C., in recognition of his studies on the synthesis and stability range of two constituents of metamorphic rocks. (See also MINERAL AND METAL PRODUCTION AND PRICES.) (E. H. Kr.)

Mining: see MINERAL AND METAL PRODUCTION AND PRICES. See also under various minerals.

Minnesota. A north central state, admitted to the union on May 11, 1858, Minnesota includes the northernmost land in the United States—the northwest angle. Minnesota is variously known as the "land of sky-blue waters," "land of 10,000 lakes," "North Star state" and "Gopher state." The water area covers 4,059 sq.mi. of its total area of 84,068 sq.mi. Population: (July 1, 1955 est.) 3,169,000; (1950 census) 2,982,483, of which 54% lived in cities of 2,500 or more. The three largest cities were (1950 pop.): Minneapolis, 521,718; St. Paul, the capital city, 311,349; Duluth, 104,511.

History.—Minnesota's economy, both industrial and agricultural, continued to grow, though falling farm prices caused some concern. Manufacturing and commerce related to agriculture were affected somewhat more than in previous years. Personal income in 1955 reached \$5,148,000,000 and nonagricultural employment increased from the previous year's total to 879,992 in Sept. 1955. Manufacturing continued to strengthen its position as the major part of the Minnesota economy. An entirely new city, Silver Bay, was completed in Minnesota in 1955 at the site of the new taconite industry on the north shore of Lake Superior. The E. W. Davis Taconite plant, named for the University of Minnesota geologist who developed the processes for profitable mining of taconite, began full-scale operation. Another major addition to the Minnesota industrial economy during 1955 was the increase of manufacture of by-products from the oil refineries recently established as a result of the Williston basin and Alberta oil fields. An ammonia plant was built and began operation near the refineries close to St. Paul. Major legislative accomplishments during the 1955 session included a major reorganization bill dedicated to making more efficient and intelligible the machinery of state government. A Fair Employment Practices bill making illegal job discrimination on the basis of race, colour or creed was also passed.

State constitutional officers serving during 1955 were with one exception members of the Democrat-Farmer Labor party. They were: governor, Orville L. Freeman; lieutenant governor, Karl Rolvaag; attorney general, Miles Lord; secretary of state, Joseph L. Donovan; state treasurer, Arthur Hansen, and clerk of the supreme court, Frank Larkin. State Auditor Stafford King was the lone Republican. U.S. senators were Hubert H. Humphrey (D-F.L.) and Edward Thye (R.). William P. Murphy of St. Paul was appointed by Governor Freeman to the Minnesota supreme court to fill the vacancy created by the death of Justice Theodore Christianson.

Education.—Approximately \$265,061,850 was spent for education by the 4,261 public school districts in Minnesota for 1954-55. This amount provided for 366,211 pupils in 3,711 elementary schools, 216,762 in 655 secondary schools, 1,560 in 9 junior colleges and 86 in 6 teacher training departments. These pupils were taught by 13,464 elementary teachers, 10,804 secondary teachers, 123 teachers in junior colleges and 6 in teacher training departments. In addition, five teachers' colleges were operated from public funds. For the support of these public elementary and secondary schools, the state contributed \$73,209,951 revenue from trust

funds and the state income tax. Dean M. Schweickhard was commissioner of education.

Social Insurance and Assistance, Public Welfare and Related Programs. In the fiscal year ending June 30, 1955, a monthly average of 99,488 persons received financial assistance amounting to \$57,777,412. Of those years of age and over, 46.9% or 144,000 were receiving either old-age assistance or old-age and survivors' insurance or both in June. As of March 31, there were 16,617 children receiving services from public welfare agencies. Children receiving services from physicians under Minnesota Crippled Children's program during 1954 totalled 4,782.

About 885,224 workers were covered by the Minnesota Employment Security law during 1954. Their wages amounted to \$2,210,026,861 the year. An estimated \$26,698,183 was paid in unemployment compensation benefits during 1954.

In Sept. 1955, the state prison and two reformatories had a total of 1,973 inmates. June counts showed the eight state mental hospitals having 11,167 patients, the unit for alcoholics 230 inmates, and the units for mentally deficient and epileptic, 4,818 patients. Gillette Hospital for Crippled Children had 181 patients. As of April 30 (enrollment term) the two special schools for the blind and deaf had 100 pupils.

The Youth Conservation commission is responsible for delinquency prevention and control. As of June 30, 1955, the commission had 186 wards in correctional institutions, 186 in diagnostic centres and 960 under probation or parole supervision.

Communications.—The systems of highways and streets maintained by various governmental units as of Jan. 1, 1955, totalled 122,726 mi. included 11,821 mi. of state trunk highways, 43,560 mi. of county roads, 55,586 mi. of township roads, 9,076 mi. of municipal streets in addition to those on the trunk highway system, and 2,683 mi. of state and national park, forest and institutional roads. Fiscal year (ending June 30, 1955) expenditures for construction and maintenance of the trunk highway system totalled \$63,363,212.85. There being no indebtedness, the amount of available encumbered cash brought \$548,263 in interest to highway funds.

As of Dec. 31, 1954, railroad main-line trackage totalled 8,328 mi. and 22 railroads operating in the state. Another 4,350 mi. was reported for other tracks—second main line, siding, yards and switching tracks.

Of the 134 airports in the state, 91 were municipally owned, 18 public seaplane bases, 25 were public airports privately owned, and 1 was a military airport at Camp Ripley. There were also 300 private landing fields.

Banking and Finance.—Minnesota's 681 state and national banks reported total resources of \$3,873,249,500 on June 30, 1955, compared with \$3,780,365,000 for 680 banks on June 30, 1954. Represented were 1 state bank, 1 mutual savings bank and 3 trust companies reporting total assets of \$1,256,239,000, an increase of \$48,719,000, and resources of \$1,367,322,000, an increase of \$56,373,000. Deposits for the 178 national banks were \$2,289,710,400, an increase of \$19,233,400, with resources totalling \$2,505,927,500, an increase of \$36,511,500.

The 76 state- and federal-chartered savings and building and loan associations reported resources of \$754,298,245 in 1955 as compared with \$627,437,000 the previous year. This represented 40 state-chartered associations with resources of \$181,550,864 and 36 federal savings and loan associations with resources of \$572,747,381.

The 338 state-chartered credit unions reported assets of \$54,800,000 as of Dec. 31, 1954, and the 49 federal credit unions had \$3,668,000 assets.

Net disbursements of the state government (exclusive of public debt redemption, stores for resale, annuities and pensions, land and interest on land) totalled \$503,546,522 for the fiscal year ending June 30, 1955, compared with \$433,599,101 in 1954. Total state indebtedness in 1955 and certificates was lowered by a net \$11,198,765 during the year. The \$83,509,566 as of June 30, 1955. The four principal state trust funds totalled \$262,486,282 as compared with \$251,058,041 in 1954. Individual balances were as follows: internal improvement land \$390,623.84; swamp land \$23,279,024.02; permanent school \$199,393,629.87; permanent university \$39,422,904.38.

Agriculture.—Minnesota farmers received \$1,256,497,000 during 1955 from crops, livestock and livestock products, thereby retaining the

Table I.—Principal Crops of Minnesota

Crop	Indicated 1955	1954	Average 1941-54
Corn, bu.	279,120,000	277,043,000	236,300
Oats, bu.	202,734,000	181,685,000	189,900
Barley, bu.	30,855,000	28,050,000	26,100
Wheat, bu.	11,975,000	9,828,000	19,500
Flaxseed, bu.	8,104,000	8,432,000	12,100
Potatoes, bu.	14,056,000	16,605,000	15,100
Soybeans for beans, bu.	45,532,000	42,294,000	15,100
Hay, all, tons	6,876,000	6,683,000	6,200
Rye, bu.	1,590,000	1,334,000	2,100
Apples, bu.	323,000	230,000	1,000

Source: U.S. Department of Agriculture.

of fifth among states. Of this total cash income \$879,119,000 came from the sale of livestock and livestock products, while the remainder of \$378,000 was derived from the sale of crops. Cash farm income for the first six months of 1955 totalled \$621,897,000, or 1% more than same period of 1954.

Manufacturing.—Minnesota's estimated manufacturing employment was 219,055 in Sept. 1955, a slight increase over 1954. Weekly earnings averaged about \$80.25. Wages in manufacturing industries covered by employment compensation totalled \$861,498,000 in 1954. Value added in manufacturing in 1953 was \$1,554,405,000. (O. L.)

Mineral Production.—Table III shows the tonnage and value of

Table II.—Principal Industries of Minnesota

	All employees 1953	Salaries and wages 1953 (in 000s)	Value added by manu- facture 1953 (in 000s)	Value added by manu- facture 1952 (in 000s)
and kindred products	44,330	\$169,319	\$356,578	\$360,997
clay and glass	4,510	16,246	28,213	—
ry metal industries	5,519	25,306	35,545	31,640
ated metal products	12,612	51,148	88,182	80,191
ery (except electrical)	27,536	112,213	190,124	194,792
cal machinery	7,501	32,008	45,640	—
aneous manufactures	19,838	86,520	119,176	154,355

Source: U.S. Department of Commerce, *Annual Survey of Manufactures, 1953*.

Table III.—Mineral Production of Minnesota

Mineral	1952 (Short tons)		1953	
	Quantity	Value	Quantity	Value
Iron ore	113,000	\$ 160,000	91,000	\$ 149,000
Iron	869,000	14,615,000	862,000	15,363,000
Iron	71,575,000	375,765,000	90,198,000	517,851,000
Iron	601,000	?	644,000	?
Iron	912,000	?	1,091,000	?
Iron	19,825,000	6,809,000	19,774,000	7,304,000
Iron	2,394,000	5,498,000	2,271,000	6,587,000
Iron . . . . .	...	9,209,000	...	10,656,000
Iron . . . . .	...	\$397,441,000	...	\$542,547,000

Values for processed materials are not included in the totals.
Value included in other minerals.

Mineral commodities produced in Minnesota in 1952 and 1953 (preliminary) whose value exceeded \$100,000. In 1953, Minnesota led the states in the production of iron ore and was fifth in output of stone. It stood fourth among the states in the value of its mineral output in 1953, 3.77% of the U.S. total.

United States: see COINAGE.

Miquelon: see FRENCH UNION; ST. PIERRE AND MIQUELON.

Missiles, Guided: see MUNITIONS.

Missions, Foreign (Religious). In a survey of Christian foreign missions in 1955 certain general features stand out. On the Roman Catholic side was the growing share of the Catholics of the United States and Canada in the world-wide enterprise of their church. Examples were the facts that the Roman Catholics of the United States contributed more money to foreign missions than before and that the number of "Maryknollers" (of the Holy Foreign Mission Society of America) ordained was more than in any previous year. On the Protestant side were the increasing share of the younger churches of Asia and Africa in the "world mission of the church" and the giving of concrete expression to the slogan of "Mission and Unity." One of the chief indications of these trends was the interdenominational (ecumenical) co-operation formalized in a conference in Hong Kong through which, with the aid of funds from more than one denomination in the United States, several churches of Asia were assisted in sending missionaries to neighbouring lands. Another was a great gathering at the end of the year at Athens, O., of the Student Volunteer movement, in which a large proportion of those present were from countries outside the United States and Canada, and the purpose of which was to have students of the entire world consider other means of meeting the challenge of the world-wide mission.

A rapid survey, region by region, of the areas in which Christians were still minorities revealed the continuation of earlier trends and some changes as against the preceding year. In Japan general interest in Christianity was less marked than it was immediately after World War II, but the numerical growth of the Christian community, while slow, was steady. In South America, in spite of acute divisions within the Protestant forces, missionary activity and increase in numbers were striking. On the mainland of China, under communist control, the situation was still grim. Missionaries from abroad were forbidden to enter, and those few who remained at the beginning of the year, chiefly Roman Catholics, were in prison or under other disabilities and

their number was further reduced by death or withdrawal. Although accurate statistics were lacking, it seemed clear that since the communists had obtained the mastery of the country the churches had declined sharply in membership. Yet conversions and baptisms of adults as well as children were registered, clergy were being trained and ordained, and some new church buildings were erected.

On Formosa, under the Nationalists, missionaries, both Roman Catholic and Protestant, were numerous and Christians continued to multiply. The control by the communist Vietminh of the north of Indochina led to an extensive exodus to Vietnam, in the south. Thousands of those who sought refuge from communist rule were Christians, most of them Roman Catholics, and their relief posed a problem to their church and to others. The restrictions on the admission of missionaries to India persisted. Some missionaries were granted visas, either to enter for the first time or to return after furlough, but many were refused. This was true of both Roman Catholics and Protestants.

In many parts of Africa south of the Sahara the increase in the number of Christians was again marked. This was in spite of the advance of Islam, chiefly southward into Nigeria and the Gold Coast. The status of missions in the Union of South Africa was rendered peculiarly difficult by the intensification of the government's policy of *apartheid*. Under that policy financial aid was withdrawn from mission schools for Africans. Handicapped though they were, many of these schools survived.

(K. S. L.)

Mississippi. A southern state of the U.S., admitted to the union in 1817, Mississippi is popularly known as the "Magnolia state." Area: 47,716 sq.mi. (47,248 sq.mi. land and 468 sq.mi. water); pop.: (1950) 2,178,914, (July 1, 1955, est.) 2,085,000. Capital: Jackson (98,271). Other cities of more than 20,000 population (1950 census): Biloxi (37,425); Greenville (29,936); Gulfport (22,659); Hattiesburg (29,474); Laurel (25,038); Meridian (41,893); Natchez (22,740); Vicksburg (27,948). Of the state's population in 1950, 607,162 or 27.9% were urban.

History.—For 1956–60 the elected officials of the state were: governor, J. P. Coleman; lieutenant governor, Carroll Gartin; secretary of state, Heber Ladner; attorney general, Joe E. Patterson; state treasurer, Robert D. Morrow; auditor of public accounts, E. B. Golding; superintendent of public education, J. M. Tubbs; commissioner of agriculture and commerce, S. E. Corley; commissioner of insurance, Walter Dell Davis; state tax collector, Mrs. Thomas L. Bailey; state land commissioner, Robert E. Graham; supreme court clerk, Tom Q. Ellis.

In Sept. 1954 a special session of the legislature was convened to consider the school segregation problem growing out of the decision of the U.S. supreme court. It adopted a proposal in the form of an amendment to the state constitution which as a referendum was voted on and adopted in an election held Dec. 21, 1954. This amendment to abolish the public schools was not adopted by the legislature with the idea of abolishing the public schools as the first step in solving the question. It was announced that it was to serve as a last resort in the effort to maintain segregation of races in the public schools. The amendment gave the state legislature authority to: (1) on a two-thirds vote, abolish public schools state-wide; (2) on a majority vote, empower local school districts to abolish their schools (local option); (3) make funds available directly to children to attend schools of their choice, privately or otherwise; (4) sell or lease existing school buildings, obviously to private groups for operation of private institutions.

The new four-year school of medicine of the University of Mississippi, located at Jackson, was opened in Sept. 1955.

under the jurisdiction of, but separate from, the university at Oxford.

Education.—In 1954-55 there were 813 white elementary schools in Mississippi and 1,748 Negro elementary schools, a total of 2,561. The enrollment in elementary schools was 448,780 of whom 211,262 were white and 237,518 Negroes. The state had 473 approved white high schools and 162 approved Negro high schools. The enrollment of these approved high schools plus enrolments in nonaccredited schools gave a total enrollment of 93,158 in 1954-55. There were 10,008 white elementary and high school teachers (including superintendents and principals), and 7,028 Negro elementary and high school teachers (including superintendents and principals), a total of 17,036 teachers. The total enrollment in white elementary and high schools was 273,722; in Negro elementary and high schools, 268,216.

Social Insurance and Assistance, Public Welfare and Related Programs.—From July 1, 1954, to June 30, 1955, the state department of public welfare in Mississippi paid \$22,654,915 to 77,445 recipients of old-age assistance; \$1,382,413 to 3,880 recipients of aid to the blind; \$4,650,553 to 19,717 families for aid to dependent children; and \$845,399 to 3,976 recipients of aid to the permanently and totally disabled.

The state-county program of foster home care for children maintained 521 children in 226 foster homes at a cost of \$151,657.13.

Communications.—As of June 30, 1955, the state maintained 8,152.9 mi. of highways; the counties maintained approximately 53,187.9 mi. In the fiscal year 1954-55 the state maintenance expenditures were estimated at \$5,129,043.94. The maintenance expenditures on county highways was \$23,172,248.33. The total mileage of railroads in the state on Dec. 31, 1954, was 3,838.28.

Banking and Finance.—On June 30, 1955, there were 171 state banks in Mississippi with 24 branch banks and 55 branch offices; there were 25 national banks. The resources of state banks were \$707,117,217.46 and the total deposits were \$648,053,925.62; the resources of the national banks were \$280,067,877.83 and the total deposits were \$259,304,612.04.

As of June 30, 1955, the full faith and credit debt of the state of Mississippi had been paid entirely and the outstanding highway bonds payable from gasoline tax amounted to \$72,317,000, making a total debt of \$72,317,000.

Agriculture.—The 1954 census reported 215,915 farms of a total 20,702,412 ac. In 1954 the total harvested acreage of principal crops was 5,423,000 ac. In 1954 receipts from farm marketings were \$520,060,000 of which \$375,019,000 were from crops and \$145,041,000 were from livestock products; the value of farm products consumed in farm households was \$86,434,000.

Manufacturing.—The value of manufactured products in Mississippi for the year 1954 was approximately \$655,000,000. Income from payrolls and profits totalled approximately \$18,000,000 in 1954. (A. B. Bu.)

Mineral Production.—Table III shows the tonnage and value of those mineral commodities produced in Mississippi in 1952 and 1953 (preliminary) whose value exceeded \$100,000. In 1953 Mississippi ranked 25th among the states in the value of its mineral output, with 0.75% of the U.S. total.

Table I.—Principal Crops of Mississippi

Crop	Indicated 1955	1954	Average, 1944-53
Cotton (500-lb. bales)	1,850,000	1,571,000	1,693,000
Corn, bu.	46,620,000	27,234,000	40,087,000
Hay, tons	930,000	618,000	913,000
Oats, bu.	17,280,000	17,080,000	8,402,000
Potatoes, bu.	360,000	560,000	1,158,000
Sweet potatoes, bu.	1,805,000	1,083,000	3,363,000
Soybeans, bu.	11,424,000	4,930,000	3,479,000
Pecans, lb.	5,500,000	4,600,000	8,385,000
Peaches, bu. . . . .	...	276,000	572,000
Pears, bu. . . . .	...	110,000	220,000
Rice (100-lb. bags)	1,510,000	2,214,000	...

Source: U.S. Department of Agriculture.

Table II.—Principal Industries of Mississippi

	All employees 1953	Salaries and wages 1953 (in 000s)	Value added by manu- facture 1953 (in 000s)	Value added by manu- facture 1952 (in 000s)
Food and kindred products	*	\$ *	\$ *	\$38,884
Textile mill products	5,237	11,986	15,557	*
Apparel and related products	19,081	34,982	47,996	31,451
Lumber and products (except furniture)	25,903	51,722	95,011	74,698
Paper and allied products	7,995	29,716	76,953	67,809
Stone, clay, and glass products	2,618	8,765	19,854	15,542
Administrative and auxiliary	215	844	...	...

Source: U.S. Department of Commerce, *Annual Survey of Manufactures, 1953*.

*Withheld because the estimate did not meet publication standards, either on the basis of the associated standard error of estimate or on the basis of a consistency review.

Table III.—Mineral Production of Mississippi

(In short tons, except as noted)

Mineral	Quantity 1952	Value 1952	Quantity 1953	Value 1953
Clays	560,000	\$ 3,158,000	509,000	\$ 2,682,000
Natural gas (000 cu.ft.)	154,254,000	12,340,000	174,100,000	10,620,000
Natural gasoline (000 gal.)	32,214	2,295,000	33,726	2,606,000
Petroleum (bbl.)	35,620,000	84,060,000	36,310,000	80,970,000
Petroleum gases (000 gal.)	17,724	713,000	19,614	777,000
Sand and gravel	2,654,000	2,174,000	2,297,000	1,833,000
Other minerals . . . . .	...	3,128,000	...	2,387,000
Total		\$107,868,000		\$101,875,000

Missouri. A west north central state of the United States. Missouri was admitted to the union in 1821; popularly known as the "Show Me" state. Area: 69,674 sq. mi. of which 448 sq.mi. are water. Pop.: (1950 census) 3,954,000 (61.5% urban, 38.5% rural; 90.2% white, 9.8% nonwhite) (July 1, 1955, est.) 4,094,000. Capital: Jefferson City (1950 census) 25,099. Largest cities (1950 census): St. Louis 856,000; Kansas City 456,622; St. Joseph 78,588; Springfield 66,000; University City 39,892; Joplin 38,711; Independence 36,900.

History.—The 68th general assembly convened on Jan. 12, 1955, and adjourned on May 31, 1955. There were 19 Democrats and 15 Republicans in the senate, and 97 Democrats and 60 Republicans in the house. Among laws passed at this session were those reorganizing the department of corrections to meet more modern conditions which led to the penitentiary riots (July 22, 1954), and those improving the state mental health program.

In addition, the general assembly passed four measures which were to go into effect if approved by the people at the polls (1) an act levying a mill tax on each cigarette sold in the state, all the revenue thus produced to go to the support of the state public schools, and, if approved, to become effective on Jan. 1, 1956; (2) an act creating a school foundation program to establish a new system of distributing state aid to the public schools and to set up new financing goals calling for increased educational grants; (3) a proposed constitutional amendment to provide for a \$75,000,000 bond issue, the proceeds to be used for repairing and rebuilding present state buildings and for construction of the penal and correctional institutions, mental hospitals and institutions of higher learning; and (4) a proposed constitutional amendment providing for annual sessions of the state legislature. The first and second measures were approved at the polls on Oct. 4, 1955, and the third was to be submitted to the voters on Jan. 24, 1956. No date had been set as of Jan. 1, 1956, for an election to approve the fourth measure.

The major state officers at the close of 1955, all Democrats: Phil M. Donnelly, governor; James T. Blair, Jr., lieutenant governor; Walter H. Toberman, secretary of state; William H. Holman, auditor; G. H. Bates, treasurer; John M. Darr, attorney general.

Education.—For the school year ended June 30, 1955, the public school system consisted of 2,923 districts operating elementary schools, 563,771 pupils and 17,604 teachers; 579 districts operating secondary schools, with 160,968 pupils and 6,802 teachers. Hubert Wheeler was state commissioner of education.

On Nov. 30, 1955, 16,122 veterans were enrolled in universities, colleges and other schools in the state, 2,274 were receiving training on the farm and 1,610 were gaining on-the-job training.

Social Insurance and Assistance, Public Welfare and Related Programs.—For the year ended June 30, 1955, unemployment insurance totalled \$73,400, paid to about 136,928 persons. For the year ended June 30, 1955, old-age assistance amounted to \$79,420,974, aid to dependent children \$17,360,112, general relief \$2,705,460, pensions for the blind \$684, aid to the blind \$2,335,630 and aid to the disabled \$8,885,730. In June 1955, 132,983 persons received old-age assistance; 22,100 families (57,623 children) aid to dependent children; 6,125 general relief blind pensions; 3,751 aid to the blind; and 14,154 aid to the disabled.

During the year ended June 30, 1955, the state penitentiary had an average of 3,388 inmates per day; the intermediate reformatory (A. J. J. J.) 555; and the expenditures of these institutions amounted to \$2,340,000. For the year ended June 30, 1955, the three state training schools (Chillicothe and Tipton) had an average population per day of 1,000 boys (white) and 121 girls (95 white, 26 Negro); and for the period their expenditures totalled \$773,407, in addition to \$86,500 for the office of the state director and placement department of the training schools.

Communications.—On Dec. 31, 1954, Missouri had 22,945 mi. of highways and 76,706 mi. of rural roads. During 1954 the state highway commission spent \$83,184,326 (state and federal funds), of which \$446,887 was for construction and \$15,689,686 for maintenance. In 1954 railroad mileage totalled 6,739. On June 1, 1955, there were 100 airports. There were 1,397,000 telephones in use on Dec. 31, 1955.

Banking and Finance.—On June 30, 1955, Missouri had 508 state banks with deposits of \$2,747,388,000 and resources (loans and investments) \$2,622,552,000; 77 national banks with deposits of \$1,576,721,000 and resources (loans and investments) of \$1,559,117,000. On June 30, 1955, there were 116 state chartered savings and loan associations with resources of \$322,309,995; and on June 30, 1955, 40 federal savings and loan associations with resources of \$415,495,236.

During the fiscal year ended June 30, 1954, receipts in all state

lled \$345,910,549, plus transfers of \$131,955,488; disbursements, 2,538,627. On June 30, 1954, the balance in the state treasury was \$2,466,715. The state debt (road bonds) on July 1, 1953, was \$500,000, and on June 30, 1954, \$10,500,000.

Agriculture.—During 1954 cash income from crops and livestock was \$35,635,000 and cash income from government payments was \$9,068,715. The value of Missouri's 1954 crops, harvested from 12,837,800 ac., \$493,246,600, the value of the 1955 crops was estimated at \$608,715.

Table I.—Principal Crops of Missouri

Crop	Indicated 1955	1954	Average, 1944-53
bu.	169,440,000	69,201,000	149,188,000
at, bu.	43,488,000	40,114,000	25,825,000
all, tons	4,036,000	2,786,000	4,188,000
n, bales	405,000	450,000	478,000
bu.	60,080,000	59,843,000	35,789,000
eans, bu.	34,740,000	27,340,000	19,214,000
bu.	1,020,000	1,020,000	412,000
cco, lb.	3,520,000	5,698,000	5,801,000
oes, Irish, bu.	1,188,000	1,080,000	1,989,000
oes, sweet, bu.	80,000	75,000	414,000
um for grain, bu.	1,725,000	1,056,000	682,000
es, bu.	780,000	1,000,000	1,135,000
es, bu.	231,000	500,000	575,000
r, bu.	92,000	125,000	155,000
es, tons.	2,500	2,700	3,980

Source: U.S. Department of Agriculture.

600. In 1955 the production of corn was the largest since 1952, the production of wheat and oats the second largest on record, and the soybeans the largest on record.

Manufacturing.—The average number of persons employed in manufacturing industries in 1953 was 405,061, an increase of 26,803 over 1952 (revised figures). Salaries and wages in 1953 totalled \$1,552,445,000; in 1952 (revised figures), \$1,360,676,000. The value added by manufacture products in 1953 totalled \$2,786,829,000, compared with \$2,422,709,000 in 1952 (revised figures).

Mineral Production.—The estimated total value of all mineral produc-

Table II.—Principal Industries of Missouri

Industries	All employees 1953	Salaries and wages 1953 (in 000s)	Value added by manufacture 1953 (in 000s)	1952
Food and kindred products	47,414	\$183,473	\$433,171	\$419,172
Apparel and related products	35,407	94,957	146,498	137,884
Paper and allied products	9,309	33,481	60,762	54,186
Printing and publishing industries	—	—	—	178,308
Chemicals and allied products	19,239	83,950	227,340	190,509
Leather and leather products	38,387	96,848	169,867	163,003
Stone, clay and glass products	14,613	62,330	112,894	114,599
Primary metal industries	14,651	61,542	92,555	84,302
Fabricated metal products	27,563	114,500	198,277	176,059
Machinery (except electrical)	25,611	103,668	179,711	146,693
Electrical machinery	21,406	84,190	128,927	117,798
Transportation equipment	52,068	236,115	509,554	344,590
Miscellaneous manufactures	34,423	137,829	180,265	157,046

Source: U.S. Department of Commerce, *Annual Survey of Manufactures, 1953*.

Table III.—Mineral Production of Missouri

Mineral	Value 1954	Value 1953	Value 1952
Barite	\$ 2,440,147	\$ 3,338,395	\$ 2,919,795
Cement	31,334,650	26,238,460	25,523,038
Clays	5,374,178	10,875,800	11,226,794
Bituminous Coal	12,254,970	11,918,851	12,048,141
Copper	1,135,750	1,362,676	1,246,784
Lead	34,318,500	32,984,490	41,616,890
Lime	11,172,600	12,084,130	11,326,941
Sand and gravel	10,343,627	5,231,099	6,122,195
Silver	319,457	325,620	468,302
Stone	18,409,393	20,364,635	20,676,958
Zinc	1,125,360	2,295,630	4,643,352

Source: United States Bureau of Mines, *Region IV, December, 1955*.

tion in Missouri for 1955 was \$144,437,000. The total value of all mineral production in the state for 1954 was \$133,118,000, for 1953, \$129,726,000, and for 1952, \$140,977,000. (R. P. Br.)



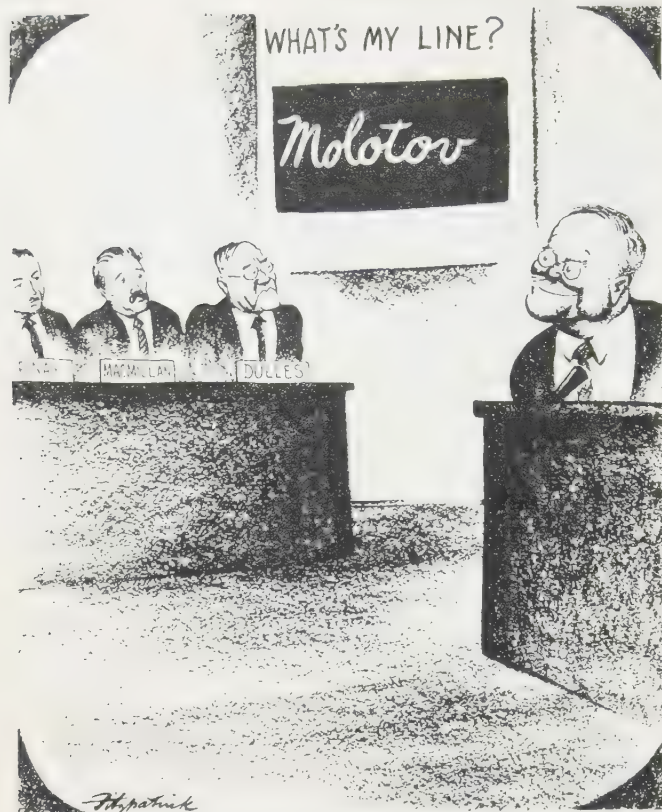
TOWER RESCUE at Grandview, Mo., in June 1955. Shown on the left is a maintenance man who had fallen from the top of the tower to a narrow catwalk below and remained there four hours until he could be rescued.

Mitchell, James Paul (1902—), U.S. government official, was born at Elizabeth, N.J., on Nov. 12. He attended New York university but did not graduate, beginning work instead with the Western Electric company at Kearny, N.J., and becoming personnel manager of that company in 1936. Later he was named a special labour adviser to the director of the Works Progress administration in New York state, and from 1942 to 1945 he was director of the U.S. army service forces' division of industrial personnel in Washington, D.C. He then returned to private business, as director of personnel and industrial relations for R. H. Macy & Co., New York city department store. In 1947 he was elected vice-president of Bloomingdale Brothers department store in New York city. On April 6, 1953, Pres. Dwight D. Eisenhower appointed Mitchell assistant secretary of the army in charge of manpower and reserve affairs. On the following Oct. 8 Eisenhower named him secretary of labour.

In a speech before the annual convention of the American Federation of Labor at Los Angeles, Calif., on Sept. 20, 1954, Mitchell berated the A.F. of L. for its failure to make "an objective appraisal of the Eisenhower administration's achievements" in behalf of U.S. labour. Relations between Mitchell and the A.F. of L. and the Congress of Industrial Organizations were somewhat strained thereafter. On Feb. 1, 1955, the A.F. of L. executive council accused him of tolerating violations of minimum wage rates on government construction projects—a charge Mitchell promptly denied. Mitchell also urged a 90-cent hourly national minimum wage, against the \$1.25 minimum asked by A.F. of L. and C.I.O. officials.

Mohammedanism: see ISLAM.

Molotov, Vyacheslav Mikhailovich (1890—), Soviet politician, was born at Kukarka (Sovetsk), in the Vyatka (Kirov) province, March 9. He was educated at St. Petersburg Polytechnic institute and joined the Russian Social Democratic party in 1906. In 1915 he was exiled to Siberia, but was back in St. Petersburg in time to play a part in the Revolution. Closely associated with Lenin and Stalin from that time on, he was appointed a member



"INTERNATIONAL TV SHOW," a cartoon of 1955 by Fitzpatrick of the St. Louis Post-Dispatch (Mo.)

of the committee which planned and directed the communist coup d'état of Nov. 7, 1917. In Nov. 1920 he was appointed secretary of the central committee of the Ukrainian Communist party. In March 1921 he was elected to the central committee of the All-Union Communist party and appointed a member of the secretariat and candidate-member of the Politburo; he became a full member of the Politburo in 1926. From 1928 to 1934 he was a member of the executive committee of the Comintern. On Dec. 19, 1930, he was chosen by Stalin to preside over the council of people's commissars. He succeeded Maxim Litvinov as commissar for foreign affairs on May 3, 1939, and two years later, when Stalin assumed the premiership, Molotov was made first deputy premier. On March 4, 1949, he handed down the post of minister for foreign affairs to A. Y. Vyshinsky, but continued to be second in importance among the Kremlin leaders. On March 6, 1953, the day after Stalin's death, he once again received the foreign affairs portfolio in the council of ministers. On May 15, 1955, he was one of the cosignatories of the Austrian peace treaty in Vienna. In June he took part in the tenth anniversary meeting of the United Nations in San Francisco. He was present at the meeting of the heads of state of the Big Four Powers in Geneva (July 18-23). The October issue of the *Kommunist* published a letter in which Molotov confessed to an ideological error in a speech made to the supreme soviet on Feb. 8, 1955. Although this aroused some speculation as to his future in the Soviet hierarchy, Molotov was present at the October meeting at Geneva of the four foreign ministers.

Molybdenum: see MINERAL AND METAL PRODUCTION AND PRICES.

Monaco. A sovereign principality on the Mediterranean coast, 9 mi. east of Nice, Fr., Monaco is bounded on all land sides by the French department of Alpes Maritimes,

and is united to France by customs union. Area: 0.6 sq. mi. Pop. (1946 census): 19,242, including 1,975 Monégasques, 10,522 French and 6,745 other foreigners: (1951 census) 202, wholly divided between the three communes, Monaco-Ville (1,860), Monte Carlo (8,484) and La Condamine (9,898) (1954 est.) 22,000. Language: French. Religion: Roman Catholic. Sovereign, Prince Rainier III; minister of state in 1955, Henri Soum, a French civil servant.

History.—On Oct. 10, 1955, Prince Rainier said in a broadcast to the Monégasque people that the question of his marriage, which rightly preoccupied them, interested him just as much and more, and that he hoped that the human, as well as the political, aspect of this question would not be forgotten. Under a treaty signed in 1918, Monaco was to be annexed to France if the prince died without an heir. The prince arrived in the United States for a visit on Nov. 24.

On Aug. 1 the Société Monégasque de Banque et Métiers Précieux (S.M.B.M.P.), the largest bank of the principality (founded in 1948), was declared bankrupt. The bank reopened on Nov. 14, a Paris financial group having acquired 97% of its bank holdings. It agreed to pay out small creditors in full and larger creditors in full in 15 years.

The bankruptcy of the S.M.B.M.P. provoked a political crisis in Monaco. Arthur Crovetto, secretary of state for finance, Césaire Solamito, private counsellor to Prince Rainier and chairman of the board of the Radio Monte Carlo, were suspended on July 1. They were held responsible for the financial crisis and their resignation was demanded by the 18-member national council—a consultative assembly elected by Monégasque citizens. On Sept. 5, however, Crovetto and Solamito were reinstated. In protest, 13 out of 18 members of the national council resigned. New elections were held on Nov. 27. Out of 18 electors 940 voted. As a result 11 out of 18 seats went to L'Aureglia's Action démocratique, i.e., the critics of Crovetto and Solamito and their friends.

Finance.—Budget (1954 est.): revenue 2,121,371,000 fr.; expenditures 2,512,555,000 fr.

Monetary Units: see EXCHANGE CONTROL AND EXCHANGE RATES.

Money Markets: see BANKING.

Mongolian People's Republic. This people's republic is located in the north of eastern Asia, bounded north by the U.S.S.R. and east, south and southwest by China. Area (1954 Soviet est.): 591,119 sq. mi. Population (census ever taken; 1953 est.): 920,000. Language: Mongolian. Religion: lamaistic Buddhism. Capital: Ulan Bator, pop. (1953 est.) 100,000. First secretary of the Mongolian People's Revolutionary (Communist) party in 1955, D. Damba; chairman of the presidium of the Great Khural, Zh. Sambu; chairman of the council of ministers, Yumzhaghiyin Tsendenbal.

History.—The year 1955 was the third of the second five-year (1953-57) development plan. According to T. Bavudorj, minister of industry, the total value of industrial production rose by 15.9% during 1954. In 1954 capital investments were two-thirds higher than in the previous year. Three wind shafts were sunk in the coal basins and four electric power stations started production.

The second five-year plan aimed to increase the number of cattle, sheep, horses and camels to 27,500,000 by 1957, no easy task, for, according to a Soviet source, the number of livestock at the beginning of 1955 amounted only to "more than 22,000,000." Haymowing machine stations were helping breeders to build up stocks of fodder. There were also many veterinary centres. Many wells were sunk in arid areas.

the plan also aimed to increase agricultural production, a branch of Mongolian economy, and to provide at least 5 of the bread supply. The areas devoted to wheat, barley, maize, potatoes and vegetables were extending, but strong winds and small precipitation were a great challenge to culture.

In the summer of 1955 the railway line from Ulan Bator to the Chinese border was completed and junction was established on the new Chinese Tsining-Dzamyin line. This railway link was particularly important to the Soviet Union and Communist China because it cut the Moscow-Peking journey by nearly 1,000 mi. (K. Sm.)

Education.—Schools (1953): primary 377, higher primary 31, secondary vocational 16, pupils (all schools) 80,000. Teachers' training colleges 2, secondary teachers' training institute at Ulan Bator. Mongolian State University at Ulan Bator with 1,300 students.

Economy.—Livestock (1955): more than 22,000,000 head of cattle, sheep, horses and camels. Coal extraction at the Nalaikha basin, 27 mi. from Ulan Bator (1953): about 300,000 metric tons.

Finance.—Monetary unit: tugrik, at par with the rouble. Budget (1953; in parentheses): balanced at 436,700,000 (38,900,000) tugriks; 25 per cent of expenditure invested in national economy and cultural development.

Transport and Communications.—Railways (1955): about 1,180 mi. of track (1955): about 3,000 mi.

Montana. A northwestern state of the United States, popularly known as the "Treasure state," Montana was admitted to the union on Nov. 8, 1889, as the 41st state. It is the largest of the northwestern states and the third largest in the United States, with an area of 147,138 sq.mi., including a water area of 1,260 sq.mi. The population by the 1950 official census was 591,024. The urban population was 258,034 or 43.7% compared with 37.8% in 1940. Of the state's total population, 90,038 or 96.8% were white, of whom 528,919 were native-born. Other racial groups totalled 18,986, with 16,606 Indians and 1,232 Negroes. The July 1, 1955, U.S. bureau of the census estimate of population was 628,000. The population of the principal cities (1950 census) was: Helena, the capital, 17,581; Great Falls 39,214; Butte 33,251; Billings 31,834; Missoula 18,851; Bozeman 11,325; Anaconda 11,254; Kalispell 9,737; Great City 9,243; Havre 8,036.

History.—Incumbents in the principal elective state offices in 1955, whose terms were to expire in Jan. 1957, were: J. Hugo Aronson (Rep.), governor; George M. Gosman (Rep.), lieutenant-governor; Sam W. Mitchell (Dem.), secretary of state; Harold H. Olson (Dem.), attorney general; Edna Hinman (Rep.), treasurer; John J. Holmes (Dem.), auditor; Mary M. Gordon (Dem.), superintendent of public instruction; and W. T. Smith (Dem.), railroad and public service commissioner. In June 1955 Mitchell died at the age of 83, after having served continuously as secretary of state for 23 years. S. C. Gordon, previously in the state senate for four terms, was appointed by Governor Aronson to serve as acting secretary of state until the general election of 1956.

The 34th legislative assembly convened in regular biennial session on Jan. 3, 1955. Appropriations of \$48,689,000 from the general fund for the 1955-57 biennium established a new level of state spending—\$8,756,000 above the previous biennium—with two-thirds of this increase earmarked for education. Seven laws were enacted increasing the salaries of state officials, including members of future legislatures. Six new state agencies or commissions were established, including a second "Hoover commission" which was given an appropriation of \$40,000 and charged primarily with studying the state's tax structure during the interim between the 1955 and 1957 sessions. An act was passed providing for referendum votes permitting public school teachers and state employees to come under the federal old-age social security program if they so desired. Social security payments would be in addition to retire-

ment programs already in force for these groups. State tax legislation for increased revenue was highlighted by a new state income tax withholding 1% on wage and salary payments exceeding withholding exemptions; by an increase from six to nine cents per gallon on diesel fuel used in motor vehicles operating on the public highways; and by an increase in the state gasoline tax from six cents per gallon to seven cents, despite the fact that such an increase in the gasoline tax had been defeated when submitted to the voters in the Nov. 1952 election. With local gasoline prices reported the highest in the nation, an appropriation of \$20,000 was made to investigate its high cost in the state.

Education.—During the school year 1954-55 there were 1,296 public elementary schools in the state with 4,452 teachers and an enrolment of 91,635 pupils. The number of public high schools was 178 with 1,754 teachers and 29,794 students. The total cost of operating public elementary and secondary schools for the fiscal year 1954-55 was \$35,159,209, not including expenditures for debt service and school building construction.

Social Insurance and Assistance, Public Welfare and Related Programs.—Approximately 22,000 persons received public assistance in Montana during the fiscal year 1954-55. Grants totalling \$13,048,607 were distributed as follows (figures in parentheses indicate the average number of recipients per month): old-age assistance (9,280) \$6,431,559; aid to dependent children (families 2,154, children 5,714) \$2,664,909; aid to needy blind (451) \$347,767; aid to disabled (1,438) \$1,087,015; general assistance (1,133) \$513,561; medical care \$451,666; hospitalization \$1,494,185; burials \$57,945. Unemployment benefits of \$3,463,083 were paid to 18,369 persons, an average of \$21.28 per week for 11.2 weeks, or \$188.53 per claimant. Correctional institutions with their average populations and total expenditures for 1952-53 were: Montana state prison, 582 inmates, \$533,419; state industrial school, 73 inmates, \$213,219; vocational school for girls, 28 inmates, \$98,673.

Communications.—As of July 1, 1955, the total road mileage of Montana was 71,798, of which the state maintained 9,586. The local road system, rural and municipal, totalled 62,212 mi. with 13,786 mi. surfaced with oil or gravel. During the fiscal year 1954-55 the state highway commission spent \$24,625,336, including federal aid funds, of which \$16,533,913 was for construction and \$8,091,423 for maintenance and administration. Municipal, military and forest service airports totalled 139, and there were 321 privately owned airfields used by farmers and ranchers within the state. There were 1,215 registered aircraft and 1,415 registered air pilots. Motor vehicle registrations on June 30, 1955, amounted to 203,975 passenger cars, 89,128 trucks and 16,590 trailers. The railway mileage was 5,241. The number of telephones as tallied for June 30, 1955 was 187,595. There were 82 weekly newspapers and 15 dailies.

Banking and Finance.—On June 30, 1955, Montana had 71 state banks with deposits of \$330,304,113 and assets of \$349,515,129. There were 40 national banks with resources of \$347,064,000 and liabilities of \$329,702,000. Building and loan associations numbered 15 with resources of \$45,981,905, a gain of \$6,585,853 over the previous year. For the fiscal year 1954-55 treasury receipts totalled \$111,827,440 and disbursements \$109,358,260. The state's bonded debt on Sept. 30, 1955, was \$36,780,250 as compared with \$35,261,000 a year before.

Agriculture.—The Montana crop year in 1955 was very favourable through July, with moderate temperatures and good rainfall. Warm and exceptionally dry weather in August, however, and early frosts in Sep-

Table I.—Principal Crops of Montana

Crop	Indicated 1955	1954	Average 1944-53
Wheat, bu.	97,615,000	76,557,000	80,013,000
Hay, tons	3,163,000	2,863,000	2,574,000
Barley, bu.	41,160,000	33,332,000	16,861,000
Sugar beets, tons	686,000	683,000	709,000
Oats, bu.	14,965,000	11,151,000	11,307,000
Potatoes, bu.	2,548,000	2,401,000	2,410,000
Corn, bu.	3,876,000	2,813,000	2,698,000
Dry beans, 100-lb. bags	306,000	270,000	222,000
Flaxseed, bu.	825,000	670,000	728,000
Dry peas, 100-lb. bags	66,000	56,000	170,000
Rye, bu.	285,000	138,000	173,000

Source: U.S. Department of Agriculture.

tember cut down earlier forecasts considerably, but Oct. 1 indications pointed to a higher production for all crops than in 1954. The wheat crop was estimated at 97,615,000 bu., the second largest on record as compared with the largest harvest of 114,174,000 bu. in 1953. Agricultural net income in Montana in 1954 was \$197,000,000 or 18.4% of the total net income of \$1,070,000,000 of all individuals in Montana, as compared with 5.3% nationally.

Table II.—Industrial Products of Montana

Products	1954	1953	1952
American cheese, lb.	4,450,000	4,005,000	2,780,000
Cottage cheese, lb.	1,255,000	1,255,000	1,255,000
Butter, lb.	6,370,000	6,616,000	5,970,000
Ice cream, gal.	2,465,000	2,930,000	3,020,000
Other frozen dairy desserts, gal.	338,000	338,000	338,000
Beef sugar, cwt.	2,038,666	1,806,025	1,495,709
Beer, bbl.	229,088	217,805	230,502
Gasoline, gal.	295,919,407	271,485,695	262,016,625
Electric power generated, kw.hr.	4,616,507,000	3,750,235,000	3,234,500,000

Manufactures.—The total value added by manufacture (1953 annual survey of manufactures) in approximately 900 manufacturing plants in the state was \$142,045,000, compared with \$138,952,000 in 1952 and \$149,776,000 in 1951. Estimates of the Montana unemployment compensation commission indicated that manufacturing industries employed an average of 19,100 covered employees during the fiscal year 1954-55, a slight gain from the preceding year. Salaries and wages of these employees totalled \$81,208,586 as compared with \$76,629,905 for 1953-54. Total employment for all Montana, aside from agriculture, during the same period was 151,800. Manufacturing payrolls gained slightly in 1954-55 but constituted only 7% of aggregate incomes in Montana as compared with 23% nationally. (E. E. B.)

Table III.—Mineral Production of Montana
(Short tons, except as noted)

Mineral	1952		1953	
	Quantity	Value	Quantity	Value
Coal	2,069,000	\$ 5,812,000	1,873,000	\$ 4,978,000
Copper	62,000	29,983,000	78,000	44,552,000
Gold (oz.)	24,000	846,000	25,000	867,000
Lead	21,000	6,852,000	20,000	5,227,000
Manganese ore	100,000	?	113,000	?
Natural gas (thousand cu. ft.)	28,714,000	1,752,000	27,889,000	1,645,000
Natural gasoline (bbl.)	?	?	?	?
Petroleum (bbl.)	9,606,000	21,610,000	11,920,000	26,020,000
Petroleum gases (bbl.)	?	?	?	?
Phosphate rock	?	?	?	?
Sand and gravel	6,766,000	3,580,000	6,203,000	2,994,000
Silver (oz.)	6,138,000	5,555,000	6,690,000	6,054,000
Stone	690,000	793,000	803,000	1,125,000
Zinc	82,000	27,285,000	80,000	18,462,000
Other minerals . . . . .	...	17,332,000	...	20,261,000
Total		\$121,649,000		\$132,185,000

*Value included with other minerals.
†Phosphate rock now figured on mined production, not sold or used basis. Figures are concealed, value included with other minerals.

Mineral Production.—Table III shows the tonnage and value of those mineral commodities produced in Montana in 1952 and 1953 (preliminary) whose value exceeded \$100,000. In 1953 Montana was first among the states in the production of vermiculite and zinc; third in copper, pyrite and silver and fourth in clay and lime; and ranked 22nd in the value of its mineral output, with 0.92% of the U.S. total.

Montreal. A city in the province of Quebec, and metropolis of Canada, first called Ville Marie, Montreal was founded in 1642. The census of 1951 gave the city proper a population of 1,021,520, and that of greater Montreal 1,395,400.

The port of Montreal is the largest in Canada. Deep-sea arrivals (commercial) during 1954 numbered 1,294, with a net tonnage of 4,480,597. The total of water-borne cargo tonnage which passed through the port during 1954 was 16,158,423; this consisted of 8,859,959 inward and 7,298,464 outward. There were 33,697 arrivals at Dorval airport during 1954, and the same number of departures, involving a total of 801,316 passengers carried.

The assessed value of real estate in 1954 was \$1,889,985,903, of which \$1,493,318,973 was taxable, and \$396,666,930 was exempt from taxation. During the year 1954, building permits were issued for 5,301 new buildings having a value of \$93,945,025 and for 2,697 repairs having a value of \$16,934,095.

Budget appropriations for the fiscal year ended April 30, 1954, were \$112,149,648. The enrolment in public schools during 1952-53 was: Protestant 37,003; Catholic 121,223. Gross value of industrial production of greater Montreal during 1954 was estimated at \$2,918,119,449, with 4,883 establishments and 244,556 employees.

A serious riot took place in March 1955 outside Montreal's Forum Hockey arena, arising out of a severe penalty given by the Hockey league president to a popular hockey player. With police badly outnumbered, the mob, made up largely of young men in their teens, surged along the main thoroughfares breaking windows and looting stores. Although no people were seriously injured, property damage ran into tens of thousands of dollars.

In one of the most hotly contested municipal elections in many years, Jean Drapeau was elected mayor of the city in Oct. 1954. Drapeau was the candidate of a newly formed Civic Action league whose purpose was the elimination of corruption in Montreal politics. The league also won sufficient seats on the municipal council to give it control over the civic administra-

tion. The new regime inaugurated an investigation and clearing of several municipal departments, including the police department. As a result, a number of police officers were demoted or dismissed on charges of collusion with gambling houses and other organized rackets. (See also MUNICIPAL GOVERNMENT.) (H. F. Q.)

Montserrat: see LEeward ISLANDS.

Moose, Loyal Order of: see SOCIETIES AND ASSOCIATIONS, U.S.

Moral Re-Armament, World Assembly for: see WORLD ASSEMBLY FOR MORAL RE-ARMAMENT.

Mormons. During 1955, the Church of Jesus Christ of Latter-day Saints went forward on a number of projects.

A temple was dedicated in Berne, Switzerland, the first to be built and dedicated in Europe. David O. McKay, president of the church, officiated at the ceremonies. Ground was broken for plans drawn for the building of a temple at Newchapel, London, England. The temple at Los Angeles, Calif. (the largest yet erected) was expected to be completed and dedicated in the year's end. A temple in process of building in New Zealand near Hamilton, was to serve the southern Pacific area. Temples are for the use of church members in "good standing" and who therein perform special ordinances for the living, and certain ordinances for the dead, vicariously performed.

The former Australian mission was divided into two missions—the Australian mission (including New South Wales and Queensland), and the South Australian mission (including South of Victoria, South Australia, West Australia and Tasmania).

In the far east, the territory formerly comprising the Japanese mission was divided into the Northern Far East mission, including Japan, Korea and Okinawa, and the Southern Far East mission, including Hong Kong, the Philippines, Guam and Formosa.

The church was establishing or enlarging (adding buildings and equipment) schools in Samoa, Tonga, New Zealand and Hawaii. The church schools in the Rocky mountain area (Brigham Young university at Provo, Utah, and the Ricks college at Rexburg, Ida.) were adding substantial school buildings and dormitories to their installations. The university at Provo is now the largest denominational school in America.

The Salt Lake Tabernacle choir completed a successful concert tour of Europe, performing before large and enthusiastic audiences in twelve of the principal cities in Europe, including Berlin. (See also CHURCH MEMBERSHIP.) (J. R. CL.)

Morocco, French. A sultanate of northwest Africa, between both Mediterranean and Atlantic coasts, Morocco is divided into a French protectorate (to which the historical section below refers), the Spanish protectorate (see SPANISH COLONIAL EMPIRE) and the international zone of Tangier (*q.v.*). Areas and populations are shown in the table.

French protectorate, pop., mostly Arabs and Berbers who are Moslem and speak Arabic (64%) or Berber (22%) or are bilingual (14%); Europeans (1951 est.) 362,800, including French; Jews 199,200. Chief towns (pop., 1952 census): Rabat (cap.) 156,209; Casablanca 682,388; Marrakesh 215,312; Tangier, 179,372; Meknès 140,380. Reigning sultans, Mulay Mohammed V and (from Nov. 5) Mohammed V Ben Youssef. French residents general in 1955: Francis Lacoste, Gilbert Gran-

	Area (in sq. mi.)	Population
French protectorate	154,054	8,340,000
Spanish protectorate	20,282	1,020,000
Places of Spanish sovereignty†	661	17,000
Tangier	135	180,000
Total	175,132	9,730,000

*1954 est. †1953 est. ‡Alhucemas, Ceuta, Chafarinas, Melilla, Peñón de Vélez de la Gomera and the Ifni territory (579 sq.mi.). §1950 census.

from June 20), Gen. Pierre Georges Boyer de Latour du Poulain (from Aug. 31) and André Dubois (from Nov. 9).

History.—Morocco in 1955 suffered from an outbreak of terrorism and insurrection. But the political dilemma was eventually resolved and Sultan Mohammed V returned to his throne. From March to May there was intermittent bomb throwing and a series of murders in Casablanca, the pro-French sheriff Moulay Idriss being among those killed. This Moroccan terrorist activity provoked certain elements of the French population to a spirited campaign of counterterrorism. On June 11 Jacques Maigre-Dubreuil, an industrialist sympathetic to Moroccan Muslims, was assassinated; and an inquest on his death led to the arrest of certain French police officers.

On June 20 Gilbert Grandval, a former high commissioner in the Saar, was appointed resident general. Welcomed by the Moroccan townspeople who were demanding the return of the deposed sultan Ben Yusef, Grandval soon found himself in trouble with the French extremists; he dismissed most of the heads of the various public services. On July 14 a bomb exploded in Casablanca and killed several Europeans; whereupon bands of Europeans sacked the Arab town. The Moroccans retaliated by setting fire to buildings and by erecting barricades, from which they were not easily dislodged. Seraphim Causse, leader of the movement known as *Présence Française*, was expelled, while an amnesty was accorded to certain Moroccan nationalist leaders. Grandval's visits to Marrakesh and to Meknès, at the end of July, were the occasion of demonstrations and rioting. Moulay Idriss a lieutenant trying to soothe the mob was torn to pieces.

In August Grandval submitted to the French government a plan for solving the political crisis. This involved the departure of the reigning sultan Ben Arafa and the establishment of a Moroccan government in which the nationalists would be represented. As the right wing opposed Grandval's solution, a preliminary request to form a government was made to Ben Arafa; this ended in failure. On Aug. 20 insurrection broke out at Khenifra and at Oued Zem in the Middle Atlas, culminating in the massacre of about 100 Europeans. Khenifra was for a time in rebel hands but surrendered promptly, and a few days later the insurgent tribes made formal submission.

Conversations between the French government and the Moroccan parties were opened at Aix-les-Bains on Aug. 22 and continued until Aug. 26. Agreement was reached on principle, but disagreement on methods of implementation led to Grandval's resignation (Aug. 29). General Boyer de Latour, resident general in Tunisia, was appointed to succeed Grandval.

On Sept. 10, at Antsirabé, Madagascar, Gen. Georges Catroux, the government's delegate, induced the deposed sultan Ben Arafa to approve the agreements. On Sept. 11, the right to self-union organization was extended to Moroccans. The French extremists in Morocco worked up an agitation against the agreements, while from Cairo the titular chief of the Istiqlal (Independence) party, Allal el-Fassi, incited his countrymen to resistance. At the beginning of October there were risings in the north of the Middle Atlas and in the Rif near the border with the Spanish zone.

On Oct. 1 the sultan Ben Arafa laid down his authority and went to live in Tangier. On Oct. 6 the Gaullist ministers in the French government, who had objected to the enforcement of the agreements of Aix-les-Bains, resigned. The national assembly then gave its approval to the new policy, by 477 votes against 140. On Oct. 15 a council of guardians of the throne was constituted, comprising the grand vizier, Haj Mohammed el-Khatib; the pasha of Salé, Haj Mohammed ben Haj Taib; the former pasha of Sefrou, M'Barek ben Mustafa el-Khatib; and the caid of the Ait Alham tribe, Tahar ou-Ali ou-



NATIVE TROOPER in Casablanca, Mor., peering around a corner and hoping to attract the fire of rock-throwing native nationalists during the rioting of Aug. 1955

Assou Ludyi. This council then set about forming a government.

So strong, however, was the general demand for the return of Sultan Mohammed V, that Haj Thami el-Mezuari el-Glaoui, pasha of Marrakesh, who played the leading part in the sultan's deposition in 1953, declared on Oct. 25 that Mohammed's return alone "can ensure an orderly unification of spirits and hearts." The deposed sultan arrived from Antsirabé to Nice on Oct. 31, and the next day took residence at Saint-Germain-en-Laye, near Paris. On Nov. 2 the council of guardians of the throne resigned and the following day Ben Arafa did the same. On Nov. 5 the French government decided that Mohammed V was the legitimate sultan of Morocco. He returned to Rabat on Nov. 16. (See also FRENCH UNION; UNITED NATIONS.) (HU. DE.)

Education.—Pupils (1953): primary 262,558; secondary 21,163; vocational 15,035. Institutions of higher education (1955 excluding private Moslem) 8, students about 5,500.

Foreign Trade.—(1954) Monetary unit: Moroccan franc=metropolitan franc; 350 metropolitan francs=U.S. \$1. Imports 167,933,000,000 fr., including 89,000,000,000 fr. from France, 16,000,000,000 fr. from the United States; exports 100,459,000,000 fr., including 42,000,000,000 fr. to France, 9,300,000,000 fr. to the U.K. Principal products and exports (metric tons): phosphates (1953) 4,156,004; manganese (1953) 375,594; iron ore (50% metal content, 1954) 335,000; citrus fruit (exports, 1954) 96,800; fish (total landed, 1953) 128,000.

Morocco, Spanish: see SPANISH COLONIAL EMPIRE.

Mortgages, Farm: see FARM CREDIT SYSTEM; FARMERS HOME ADMINISTRATION.

Mortgages, Home: see BANKING; HOUSING.

Motion Pictures. The key to continued advances by the U.S. motion-picture industry in 1955 over the preceding year was the increase in foreign income from film rentals. By mid-November it appeared that foreign revenue in 1955 would top even the record-breaking gross of \$175,000,000 reached in 1954. The increase was made in the face of new and tighter restrictions on U.S. and other foreign motion-picture imports. The increase in foreign revenue served to offset the general decrease in attendance in the U.S. and a corresponding drop in domestic theatre box-office returns.

Industry Statistics.—Weekly attendance at motion-picture theatres in the United States by the end of the third quarter of 1955 was averaging about 41,000,000, compared with an average weekly attendance of 49,200,000 for all of 1954. However, there was evidence that business in the final quarter of 1955 might bring the total closer to the figures for the preceding year. United States theatre grosses, including taxes, were estimated by the U.S. department of commerce to be \$1,275,000,000 in 1954. The expected 1955 total was about 8% to 10% less.

Industry surveys showed that by July 1955 there were 19,108 theatres in operation in the U.S., composed of 14,724 indoor theatres and 4,384 drive-in theatres. This total represented a small increase since the previous year, largely in the number of drive-in theatres.

On Jan. 1, 1955, an estimated 108,537 theatres were exhibiting 35-mm. films in approximately 120 countries and territories throughout the world. This was an increase of 9% over a 1951 estimate of 99,543 theatres.

According to the U.S. department of labour, employment in the U.S. motion-picture industry was averaging about 237,200 during the first seven months of 1955. The annual average for 1954 was 231,500 and for 1953 it was 234,000.

Industry sources estimated total capital invested in the industry at \$2,738,700,000, broken down as follows: studios (production), \$142,000,000; distribution, \$25,700,000; theatres, \$2,550,000,000; nontheatrical, \$21,000,000.

Profits for most motion-picture corporations were running markedly higher than those of previous comparable periods.

Production.—By the end of Oct. 1955 the American Production Code administration had approved 216 feature pictures, including 191 domestic and 25 foreign. For the same period of 1954 it had approved 226 pictures. The total for the entire year 1954 was 303 pictures.

For 1955, 12 national distributors had scheduled for release a total of 277 features and 19 reissues. This compared with 292 actual releases plus 90 reissues for 1954.

As of the end of Oct. 1955 the number of feature films produced in colour was running just under 50% of the total. During this period a total of 177 films, or 48.6%, were in colour. This compared with 58.4% for all of 1954.

Foreign Sales of U.S. Films.—Although domestic revenues in 1955 fell off somewhat compared with the previous year, foreign sales increased. It was estimated that foreign revenue would go as high as \$225,000,000 in 1955. It amounted to \$210,000,000 in 1954, with actual dollar receipts around \$175,000,000. This

increasing importance of the foreign market was shown by the fact that U.S. companies were receiving from 42% to 45% their total revenue from abroad.

World film rentals for U.S. pictures rose from \$620,000,000 in 1953 to \$650,000,000 in 1954. Popularity of U.S. films abroad continued high, approximately 68% of the world's screen time being devoted to them. The world-wide weekly audience for U.S. films was estimated at 260,000,000.

Exports of motion-picture films and equipment from the U.S. in the first six months of 1955 were more than 20% ahead of the first half of 1954, reaching an estimated valuation of \$237,794 against \$18,457,874 (258,884,781 linear feet against 191,977,153 linear feet).

Foreign Exports of Films to the U.S.—Film industry journals reported that a total of 174 foreign features were released in 1954, compared with 190 during 1953. While top foreign films continued to enjoy wide success in the U.S. market, the number of imports from abroad fell off in 1954 from the preceding year. Leading film exporters to the U.S. in 1954 were Great Britain, Hong Kong, Japan, Mexico and Italy. Among the outstanding foreign features released in the U.S. during 1955 were:

Holiday For Henrietta (French); *Innocents in Paris* (British); *Doctor in the House* (British); *The Wages of Fear* (French); *To Paris With Love* (British); *The Great Adventure* (Swedish); *The Court Martial* (British); *The Sheep Has Five Legs* (French); *One Summer of Happiness* (Swedish); *Gate of Hell* (Japanese); *The Game of Love* (French); *Berto D* (Italian).

New Developments and Organizational Changes. Throughout 1955 the debate over "toll" or "pay-as-you-see" television waxed hotter and hotter. Involved were the already tested systems—Phonevision, Skiatron and Telemeter—whereby viewers would pay for motion-picture programs telecast. Having in mind that the most desirable programs for these systems would inevitably be new motion pictures, the theatre owners throughout the country joined together in a common front to oppose approval of any pay-as-you-see system by the Federal Communications commission. Equally vocal were the representatives of the toll TV companies, and, as a result the FCC asked all interested parties to file opinions or briefs. The TV networks joined the movie exhibitors in expressing opposition. The volume of printed material filed with the FCC reached staggering proportions, and it looked as though a decision would be a long time away.

Meanwhile, the major Hollywood studios began to follow Walt Disney's lead in the establishment of their own TV programs. Warner Bros. began a weekly show, as did 20th Century-Fox and Metro-Goldwyn-Mayer.

In July RKO Radio Pictures, Inc., was purchased from Howard Hughes by Thomas O'Neil, president of General Tire & Rubber Co., Inc., a subsidiary of General Tire & Rubber Co., for a cash payment of \$25,000,000. It was later announced that veteran producer David Selznick had concluded a long-term deal to produce for RKO distribution.

The U.S. department of justice's antitrust suit against dominated motion-picture companies, charging conspiracy to withhold 16-mm. pictures from television and other nontheatrical outlets, went to trial in California in October. Meanwhile, Republic Pictures corporation entered into a consent decree with the government whereby it was required to make available to TV at least 80% of pictures released prior to 1948 and at least half of its newer releases three years after theatrical release. This was not regarded as a significant change, since Republic had been selling old pictures to TV for some time.

Wide-screen developments continued apace, with Metro-Goldwyn-Mayer announcing a new 65-mm. photography process and 20th Century-Fox placing into production a film version of *Carousel* in 55mm. CinemaScope. The latter studio predicted that this wider-

CinemaScope would be even more effective than CinemaScope, which swept the field in 1954 and 1955. As of Oct. 22 there were 133 theatres in the United States and Canada equipped with CinemaScope.

National Theatres, Inc., announced the coming introduction of a new wide-screen system called Cine-Miracle that would rival Cinerama, already established with its second production, *Cinerama Holiday*, paying off well. Cine-Miracle would be a three-strip (three projectors) system projected from a single screen, circumventing by means of mirrors the use of three screens as required for Cinerama. It was claimed that the line distortion seen in the latter was completely suppressed in the new system.

Republic Pictures also announced that Republic Pictures would enter the field of CinemaScope-type production with CinePanorama, a new anamorphic lens origination.

The big headline of the year in technological innovations was the opening of *Oklahoma!*, filmed and projected in the Todd-AO process after three years of preparation. This "bugeye" process, which employs a 70-mm. camera lens and projects its images on a screen about 65 ft. wide with a curvature 13 ft. deep, was developed by the American Optical company under the original sponsorship of Michael Todd. Subsequently, the Magna Theatre Corporation was formed to produce and distribute films made in the process. The October opening at the Rivoli theatre in New York City received critical acclaim, although some early technical defects were noted in the new method.

On April 12, the Supreme Court repealed its censorship statute, which had been in effect since 1913. The attorney general succeeded in having the repeal ruled unconstitutional by the Kansas supreme court. However, when the Kansas ban on *The Moon Is Blue* was brought up to the United States supreme court by the American Motion Picture Producers and Distributors Association in October, the high court declared the Kansas censorship law unconstitutional.

Massachusetts court actions were brought by the Brattle Street Theatre and the Times Film Corp. against the Sunday censorship law following bans placed on *Miss Julie* and *One Summer of Love*, both Swedish pictures, and *The Game of Love* (French). The state supreme court declared this 47-year-old law unconstitutional and void.

Trend in Film Subjects.—While CinemaScope pictures dominated the wide-screen field in 1955 (52 approved by the Production Code administration as of Nov. 2), the emphasis on adventure and spectacle films which characterized the previous year continued, and the trend turned more toward adult drama. Many of the year were of the latter variety, including: *Love Me or Leave Me*, *The Cobweb*, *Not as a Stranger*, *Summertime*, *A Desperate Hours*, *The Barefoot Contessa*, *Désirée*, *The Time I Saw Paris*, *Battle Cry*, *East of Eden*, *Bad Day at Black Rock*, *The Bridges at Toko-Ri*, *The Blackboard Jungle*, *Interrupted Melody*, *A Man Called Peter*, *Marty*, *The Country Girl* and *On the Waterfront*.

In addition to the 52 CinemaScope pictures, there were seven VistaVision and nine in Superscope for the same period.

Outstanding musicals of the year included: *It's Always Fair Weather*, *Guys and Dolls*, *Hit the Deck*, *Deep in My Heart*, *Seven Bridges* and *There's No Business Like Show Business*.

Another notable trend was the accent on military themes. These included such outstanding films as: *To Hell and Back*, *For the Boys*, *Strategic Air Command*, *The Bridges at Toko-Ri*, *The Long Gray Line* and *Battle Cry*.

Other outstanding hits for the year included *The Seven Year Itch*, *To Catch a Thief*, *The Seven Little Foys*, *The Man From Nowhere*, *Cinerama Holiday*, *The Glass Slipper*, *20,000 Leagues Under the Sea*, *The Prodigal*, *Lady and the Tramp* and *Daddy Long Legs*.



GRACE KELLY AND MARLON BRANDO, voted the best actress and actor of 1954, shown with their "Oscars" at the 1955 Academy of Motion Picture Arts and Sciences award presentations

Documentaries and Short Subjects.—Documentaries and short subjects, the quality and quantity of which had slipped somewhat in past years, again came into their own. Choice documentaries of the year were Disney's *The African Lion* and the Italian productions *Green Magic*, *Wakamba* and *Hunters of the Deep*. As in feature films, a growing number of short subjects were filmed in the new wide-screen processes. Some of 20th Century-Fox's outstanding CinemaScope short subjects of the year were *The Living Swamp* (the Okefenokee swamp in Georgia), *Tears of the Morn* (pearl fishing off Japan), *Volcanic Violence* (erupting volcano in Hawaii), *Jet Carrier* (the "Yorktown" on a training mission), *El Toro* (Spain and bullfighting) and *Far East Bastions* (a tour of far eastern democracies).

Paramount's VistaVision process contributed such memorable short subjects as *VistaVision Visits Mexico* and *VistaVision Visits Norway*.

Unusual cartoon subjects produced during the year were *Baby Boogie* (UPA-Columbia), *Spare the Child* (UPA-Columbia) and *The Peppermint Tree* (Arias). Other outstanding examples of short subjects were *The King's Secret* (Universal), *Siam* (Buena Vista), *Fortress of Freedom* (Universal), *Thursday's Children* (British Information services), *Switzerland* (Buena Vista) and *Devil Take Us* (RKO).

Polls and Awards.—The Academy of Motion Picture Arts and Sciences announced in March 1955 the following awards for 1954:

BEST PRODUCTION.—*On the Waterfront* (Horizon-Columbia).
 ACTOR.—Marlon Brando (*On the Waterfront*).
 ACTRESS.—Grace Kelly (*The Country Girl*).
 SUPPORTING ACTOR.—Edmond O'Brien (*The Barefoot Contessa*).
 SUPPORTING ACTRESS.—Eva Marie Saint (*On the Waterfront*).
 DIRECTION.—Elia Kazan (*On the Waterfront*).
 MOTION-PICTURE STORY.—Philip Yordan (*Broken Lance*).
 SCREENPLAY.—George Seaton (*The Country Girl*).
 STORY AND SCREENPLAY.—Budd Schulberg (*On the Waterfront*).
 SCORING, MUSICAL.—Adolph Deutsch and Saul Chaplin (*Seven Brides for Seven Brothers*).
 SCORING, COMEDY OR DRAMA.—Dimitri Tiomkin (*The High and the Low*).

Mighty).

SONGS.—"Three Coins in the Fountain" (*Three Coins in the Fountain*); music, Jule Styne; lyrics, Sammy Cahn.

SHORT SUBJECTS.—One-reel: *This Mechanical Age* (Warner Bros.). Two-reel: *A Time Out of War* (Carnival productions). Cartoon: *When Magoo Flew* (UPA-Columbia).

ART DIRECTION.—Black and white: Richard Day (*On the Waterfront*). Colour: John Meehan (*20,000 Leagues Under the Sea*).

SET DECORATION.—Black and white: Richard Day (*On the Waterfront*). Colour: Emile Kuri (*20,000 Leagues Under the Sea*).

CINEMATOGRAPHY.—Black and white: Boris Kaufman (*On the Waterfront*). Colour: Milton Krasner (*Three Coins in the Fountain*).

COSTUME DESIGN.—Black and white: Edith Head (*Sabrina*). Colour: Sanzo Wada (*Gate of Hell*).

FILM EDITING.—Gene Milford (*On the Waterfront*).

DOCUMENTARIES.—Short subject: *Thursday's Children* (World Wide British Information services). Feature: *The Vanishing Prairie* (Walt Disney-Buena Vista).

SOUND RECORDING.—Leslie I. Carey (*The Glenn Miller Story*).

SPECIAL AWARDS.—Greta Garbo, Danny Kaye, Jon Whitley and Vincent Winter, Bausch & Lomb Optical Co.; *Gate of Hell*, a Daiei production, Edward Harrison (Japanese).

(No Irving Thalberg Memorial award was made.)

TECHNICAL AWARDS.—Class one: Loren L. Ryder and John R. Bishop for developing VistaVision. Class three: David S. Horsley; Karl Freund and Frank Crandell; Wesley C. Miller; J. W. Stafford and K. M. Frieron; John Livadary and Lloyd Russell; Roland Miller and Max Goepfinger; Carlos Rivas and G. M. Sprague; Fred Wilson; P. C. Young, Fred Knoch and Orien Ernest.

SPECIAL EFFECTS.—*20,000 Leagues Under the Sea* (Walt Disney-Buena Vista).

The *Motion Picture Herald* annual poll of top money-making stars of 1954, exhibitor selections, was as follows: John Wayne, James Stewart, Dean Martin and Jerry Lewis, Gary Cooper, Marilyn Monroe, Alan Ladd, Jane Wyman, William Holden, June Allyson and Bing Crosby.

The *Motion Picture Daily* box-office hits of 1954 were (listed alphabetically): *Apache* (United Artists), *The Caine Mutiny* (Columbia), *Dragnet* (Warner Bros.), *The Egyptian* (20th Century-Fox), *The Glenn Miller Story* (Universal-International), *Gone With the Wind* (reissue) (M-G-M), *The High and the Mighty* (Warner Bros.), *Hondo* (Warner Bros.), *How to Marry a Millionaire* (20th Century-Fox), *Living It Up* (Paramount), *Magnificent Obsession* (Universal-International), *Mogambo* (M-G-M), *On the Waterfront* (Columbia), *Rear Window* (Paramount), *The Robe* (20th Century-Fox), *Seven Brides for Seven Brothers* (M-G-M), *Three Coins in the Fountain* (20th-Century-Fox) and *White Christmas* (Paramount).

Film Daily's ten best pictures of 1954 (poll of critics and reviewers) were: *The Caine Mutiny* (Columbia), *On the Waterfront* (Columbia), *Rear Window* (Paramount), *The Country Girl* (Paramount), *The High and the Mighty* (Warner Bros.), *Seven Brides for Seven Brothers* (M-G-M), *Sabrina* (Paramount), *Executive Suite* (M-G-M), *The Glenn Miller Story* (Universal-International), and *Three Coins in the Fountain* (20th Century-Fox).

The New York Film Critics' awards for 1954 were: best motion picture: *On the Waterfront* (Columbia); best male performance: Marlon Brando, *On the Waterfront* (Columbia); best feminine performance: Grace Kelly, *The Country Girl* and *Rear Window* (Paramount); best direction: Elia Kazan, *On the Waterfront* (Columbia); best foreign film: *Gate of Hell* (Daiei-Edward Harrison). (M. LN.)

Educational Motion Pictures.—In 1955 the field of instructional, factual and documentary motion pictures shared the growing pains of U.S. education generally. California schools announced state-wide audio-visual budgets approximating \$3,500,000; Los Angeles public schools inventoried nearly \$2,500,000 worth of educational films in the audio-visual library of the system; an estimated 50,000 16-mm. sound motion-picture projectors were in daily use among the principal school systems of city and county schools, both elementary and secondary, all over the U.S.

Production of films to serve the nation's rapidly expanding school population, aimed to ease overloaded teacher staffs, was shared by such companies as Coronet Films, Encyclopædia



ERNEST BORGNINE AND BETSY BLAIR in a scene from *Marty*, winning film of the 1955 Cannes (Fr.) festival

Britannica Films Inc., the Text-Film division of McGraw-Hill Book Co., Young America Films and many others, which contributed to the total of nearly 300 new motion pictures, hundreds of film strips issued during the year. Coronet, with motion pictures released during the year, and Britannica Films with a total of 60 motion pictures and 78 film strips, led the field in output; Young America increased the total with the lease for school use of numerous documentary television programs obtained by special agreement with the Columbia Broadcasting system.

Notable titles of the year were Britannica Films' *The Pilgrims* and *String Quartette*; a British Information services *Thursday's Children*; and several Coronet series, including films on the *Geography of Europe and the Middle East*. National Education association issued the challenging *Freedom to Learn* for town meeting use.

The nation's expanding industrial plant was reflected in annual statistics of business motion-picture production, which registered a 12% increase over the previous year. Total sales of 162 producers of business-sponsored motion pictures and slide films were \$56,000,000 in 1954. Films honoured at numerous film festivals and emanating from business sources during the year included such widely varying titles as General Motors' *ABC of Jet Propulsion*; *All I Need Is a Conference* sponsored by General Electric; *On Stream*, a notable example of industrial relations, sponsored by the Socony Mobil Oil Company; *Production 5118*, a thoughtful film on communication offered by the Champion Paper & Fibre Co.; and *Horizon of Hope*, a picture on cancer research, financed by the National Cancer Foundation.

The influence of U.S. affairs in the world-wide scene was reflected in educational and training film activity. Britannica Films sent producer John Barnes to England for such productions as *The Pilgrims*, *William Shakespeare* and *Captain Smith*; another producer from the same company, Milan Zog, originated films on the middle ages during extensive travels in France and Italy during the year. Greater authenticity in the common goal in these efforts. Pan-American World Affairs Council emulated this mission with the production in Japan of a film, *So Small My Island*, which was honoured at the Buffalo, Cleveland and Stamford film festivals. *The Story of Light*, a General Electric film produced in the Netherlands, traced the evolution of artificial illumination in another "film of the year." The U.S. Information service motion pictures, *The Story of Helen Keller*, *Symphony of the Air* and others, played to

ences throughout the free world.

The medical motion-picture field also set several marks in a rising year of unusual progress. An audience of 1,500 doctors of the American College of Surgeons attended medical films during that body's annual meeting in Chicago in the fall. The college also made news with the announcement of a new permanent film library.

At the federal government the most active user of films was the department of defense, which continued the production of training films. An active program in civil defense, launched during the year, resulted in 4,731 prints of eight civil defense films being completed and released within a single four-month period. Other films were in production and 11 additional scripts had been approved. Each of the film productions of the Federal Civil Defense Administration was sponsored by a fund grant from a business source, thus enabling the government to expand its program considerably.

The evidence of the popular interest in factual documentary films is given through numerous sustaining showings on most of the nation's television stations; such programs as *Omnibus* included reports or complete educational motion pictures, both sponsored and nonsponsored. The total of 16-mm. sound projectors in use throughout the U.S., owned by schools, churches, clubs, business organizations and community groups, was reliably estimated to exceed 500,000 during the year. (O. H. C.)

Technical Developments.—Developments in the motion-picture industry in 1955 were directed toward the improvement of pictorial quality on large screens by the use of camera negatives with larger areas than formerly used.

Todd-AO.—The Todd-AO system, first used to produce and release the production *Oklahoma!*, has a negative 65 mm. wide and the negative image five perforations high. This provides a positive film area approximately $3\frac{1}{2}$ times the area of a standard 35-mm. negative. The film runs at 30 frames per second, rather than the usual 24, to reduce light flicker on the screen. The picture has an aspect ratio of approximately 2 to 1 on the screen. A typical screen is approximately 50 ft. wide and 25 ft. high, with a depth of 13 ft. in at the centre. The actual length of the screen from the curve is about 65 ft. The sound is six-track magnetic stereophonic with five speakers behind the screen and surround speakers in the auditorium. Special projectors for the Todd-AO system were developed by the Phillips company. These projectors accept either 65-mm. or 70-mm. film at 30 frames per second, and can project CinemaScope or wide-screen releases on 35-mm. film at 24 frames per second. They are capable of playing six-track magnetic stereophonic sound for the wide film and four-track magnetic or optical stereophonic sound for 35-mm. film.

SuperCinemaScope.—20th Century-Fox started photographing its first SuperCinemaScope production in September. This system utilizes a film 55.625 in. wide with the image on the negative approximately 1.8 in. \times 14.4 in. The negative picture area is approximately 2 to 1; that is, at the same ratio as the regular CinemaScope. A direct print from this negative results in a picture on the screen with an aspect ratio (width to height) of 2.5 to 1, which is again the same aspect ratio as regular CinemaScope. From this negative it was anticipated that both the wide-screen SuperCinemaScope print, as well as a regular 35-mm. CinemaScope reduction print, would be made. With the wide-film negative, six magnetic sound tracks and one magnetic control track would be used to provide stereophonic sound. Five of the tracks would furnish sound to five speakers behind the screen.

The sixth track would provide sound for the auditorium speakers, with the control track determining which of these speakers were in operation.

Lighting.—The National Carbon company developed a



ON THE SET of *War and Peace*, stars Henry Fonda and Audrey Hepburn relaxing between shootings of the film in Rome, It., in 1955

16-mm. 225-amp. carbon which produces light with a colour temperature close to that of an incandescent lamp. This was the first such carbon, as previously the light from all carbon arcs matched daylight rather than incandescent light. After evaluation by the Motion Picture Research council this carbon was used by all the studios for productions photographed in colour, as the colour negative is balanced to incandescent illumination. This new carbon in its proper lamphouse gives twice as much light as any set lighting unit previously available and is extremely valuable on the set to match sunlit exteriors, as it is a point source.

Background Process Projection.—In production of motion pictures it is often difficult or costly to photograph the cast at a distant location. Instead of this, prints of the scene are projected on the stage through a translucent screen, with action taking place in front of the screen. This composite scene is then rephotographed on the set, giving the appearance and illusion that the scene is actually photographed at the location. The set illumination for colour had increased with the use of large area negatives, which necessitated a more powerful projector. Paramount Pictures corporation, Pacific Optical company and the Motion Picture Research council co-operated in designing a completely new triple-head projector, which by means of a new condenser relay system, modifications in the lamphouse and special lenses gave more than four times the light formerly available.

Plastics.—The motion-picture studios are constantly increasing their use of plastic materials, particularly the so-called foaming resins for casting lightweight breakaway props and set units. These developments culminated in an exhibit of studio-made plastic units arranged by the Motion Picture Research council and participated in by the major Hollywood studios at the World Plastics Fair and Trade Exposition held in Los Angeles in October. (W. F. Kv.)

Canada.—There were signs in 1955 that the spread of television in Canada might result in the establishment of a Canadian entertainment film industry. The considerable achievements of Canadian film makers had been entirely in the field of short subjects. The demand for at least a modest percentage of native film production for TV distribution was sparking a story search which it was believed might result in launching a modest development in the entertainment field by way of TV series, which could perhaps later blossom into feature film production.

The continuing expansion of the world market for TV films in 1955 (as for instance the establishment of sponsored TV

in Great Britain) was a factor in the growing conviction that quality Canadian film production in the TV field could take place only if the product were tailored for the world market.

In 1955 Canadian film production for television consisted entirely of documentary shorts and "commercial spot" films up to one-minute screening time. One high light of the year was the virtual removal of the federal government sales tax on Canadian

Summary Statistics of Canadian Motion-Picture Production

Year	(Private industry)		
	Salaries and wages	Gross revenue Production	Printing and laboratory
1952	\$1,006,918	\$1,331,393	\$1,274,137
1953	1,150,890	1,592,779	1,230,493
1954	1,549,233	2,106,131	1,456,405

domestic film production on July 1, 1955. This tax had been 10% on the full cost of production.

A tabulation from the report of the Canadian government bureau of statistics, covering Canadian motion-picture production by private industry for all purposes, is shown in the table. It was estimated by industry leaders that the 1955 figures would show an increase of about 25% over these. (F. R. Cy.)

Other Countries.—British films maintained a steady output and consistently presentable standard. *The Dam Busters* and *The Colditz Story* (both black and white) were the two best of a new series rather surprisingly treating episodes of World War II perfectly straightforwardly, almost without a "ten years after" slant. The first dealt impressively with the royal air force raid on the Moehne and Eder dams from the early back-room research, with Richard Todd as Wing-Commander Guy Gibson, leader of the raid, and a notable performance by Michael Redgrave as Dr. Wallis, a scientist working on the bomb. *The Colditz Story* reconstructed life in Colditz castle as a German punishment camp for Allied prisoners of war. Ivan Foxwell and Guy Hamilton, respectively producer and director, made it a film of considerable style and dignity, though adding little to film lore on prisoner-of-war camps.

A powerful impression was made both by Peter Glenville's first essay at film direction and Alec Guinness' moving portrayal of the cardinal on trial in Bridget Boland's adaptation of her own drama *The Prisoner*. Jack Hawkins also played effectively against his usual type as the cardinal's interrogator. Another ambitious but less satisfactory adaptation was made by Lenore Coffee and directed by Edward Dmytryk of Graham Greene's *The End of the Affair*. For all its solemnity the film seemed lacking in sympathy with the original and in the imagination or momentum which might have brought to life on the screen this story of a modern sinner who becomes a saint. Peter Cushing gave a brilliant portrait of the wronged husband, Stephen Murray a reasonably convincing one of the priest. But Van Johnson was oddly cast as a typically Graham Greene hero, while the heroine's character had been so mutilated that Deborah Kerr could revive her only spasmodically.

A Kid for Two Farthings aroused interest as a film by Sir Carol Reed and his first in colour. Wolf Mankowitz' story of Petticoat lane Jewry had a whimsical bias out of Reed's usual style, though the little boy is a familiar central figure in Reed films. On this occasion, in spite of all his master touches in the evocation of the colourful atmosphere, a pack of brilliant performances (notably David Kossoff's as the old tailor) and an exciting wrestling bout, Reed did not succeed in making an integrated film of the picturesque community.

David Lean fell similarly short of success in *Summertime*. With Katharine Hepburn and Venice as costars, Lean seemed understandably reluctant to balance the superb travelogue he achieved, with Hepburn as an eager American tourist, by a comparably sensitive treatment of her romantic entangle-

ment with an Italian married adventurer, very well played by Rossano Brazzi. Lean and H. E. Bates, who together made adaptation from Arthur Laurents's play *The Time of the Cuckoo*, failed to choose first between Venice and the bribe counter, and again between sentimental or cynical treatment of the latter. The result was a beautiful but broken-backed picture.

With one exception, British comedies did not reach so high a level. *Touch and Go* kept up Ealing Studios' high reputation for comedies both very fresh and very British. Jack Hawkins carried the picture, as a frustrated furniture designer determined on an impulse to emigrate to Australia. But he was splendidly supported by Margaret Johnston as his wife and June Brown and John Fraser as their daughter and her friend. The mildly amusing British comedies were *The Constant Husband* (starring Rex Harrison) and *Geordie*, both by Frank Launder and Sidney Gilliat, and *Doctor at Sea* (a sequel to *Doctor in the House*). *Raising a Riot* was an agreeably unpretentious comedy showing naval methods applied to the nursery and starring Kenneth More, who won the actor's award at the Venice festival for his performance in *The Deep Blue Sea* in the part he played on the stage. Another British award at Venice was won by William Fairchild, director of *John and Julie*, which showed charming use of coronation scenes for a story of two children who played truant to see the coronation.

One of the most interesting experiments of the year was Halas and Batchelor cartoon of George Orwell's *Animal Farm*, the first use of cartoon film for a serious subject. Opinions differed as to whether the plain, poster-style drawing was suited to Orwell's grim fable, but there can be little doubt that the cartoon made the book's points.

Two new experiments were made with grand opera. An extraordinary enterprise was the filming of a performance of *Giovanni* from the Festspielhaus Salzburg, of interest only for recording. An Italo-Japanese version of *Madam Butterfly* with Japanese players and Italian singers came much nearer a satisfactory solution of the perennial problems of opera. Still another intriguing film opera was the Chinese opera *Liang Shou and Chu Ying-Tai*.

Continental films were not outstanding, with few exceptions. Vittorio de Sica's plaint for a lonely old man, *Umberto D.*, was at last publicly shown. It provoked sharp controversy but was generally acknowledged a sad masterpiece. Jean Renoir's *Les Can-Can* was a riot of colour and gaiety and music, with a camera seeing with a painter's eye. *Rififi* was a beautifully filmed French gangster film made by the Franco-American director Jules Dassin. It contained one memorable sequence of silent suspense while the gang of crooks drilled through the ceiling of Mappin and Webb's in Paris.

The victory in the battle of the projection systems was won by the wide screens. Cinerama retained its enormous popularity with the public, but the multiplicity of its equipment and, without doubt, its cost continued to limit the number of its installations. This did not mean, of course, that the moviegoer no longer saw films in the conventional dimensions; many films were still produced in the old shape in 1955, not only to provide for unconverted theatres but also because producers often found that this was more suitable for the particular picture or position they wanted. In order to cope with the variously sized product available to them, exhibitors installed adjustable projection systems. For example, the Rank organization, which owned two of the three major circuits in the United Kingdom, equipped its 594 theatres with wide screens and variable anamorphic lenses so that films of all shapes—Cinerama, VistaVision, conventional, etc.—could be screened as the occasion arose.

A film could be made to appear ludicrous if it was sub-



THE START of a 57-mi. outboard race—twice around Manhattan island—Sept. 11, 1955. Thirty of 74 starting boats finished

an unsuitable form of projection. On the other hand, no filmmaker could afford to limit his market by restricting the audience value of his film to one particular type of projection. In endeavour to resolve this difficulty the British Film Producers' association adopted a resolution that the "composition pictures in the studio camera (other than for proprietary processes such as CinemaScope and VistaVision) should be standardized at a ratio of 1.75:1 tolerable for both 1.65:1 and 1.1."

In 1955 the British Film Institute in conjunction with Associated-British Pathé sponsored a film, produced by Howard Thomas and directed by Glenn Alvey, which demonstrated the "dynamic frame." *The Hole in the Wall* was shot in VistaVision colour, and during the action the screen shape was varied to produce the desired effects. The aim was that of selecting a screen shape most suitable to the mood, setting or action of a particular scene. Its method, the director believed, was "sufficiently subtle and unostentatious not to make the audience over-conscious of technical devices." (See also PHOTOGRAPHY.)

(F. B. L.; D. Cw.)

Motor-Boat Racing. Motor-boat racing during 1955 saw the breaking of the 200-m.p.h. speed mark and increased interest and activity in all classes of motor-boat competition. Donald Campbell of England, son of the former record holder Sir Malcolm Campbell, established on Nov. 24 an average of 202.32 m.p.h. in the first practical jet-powered hydroplane. This mark was officially recognized by the F.I.M. (international governing body for motor boating) as the jet-boat speed record. Stanley S. Sayres of Seattle, Wash., held the propeller-driven record of 178.497 m.p.h. with the "Slo-Mo-Shun IV," which boat, in contrast with Campbell's "Bluebird," was used in closed course competition. On Nov. 16 Campbell again broke the world record in the "Bluebird," on Lake Mead, Nev., with an average mark of 216.2 m.p.h. The activity of the unlimited inboard hydroplanes brought forth several new and extremely fast boats, the most successful of which was Guy Lombardo's "Tempo VII," piloted to victories in the Silver cup, the President's cup and the International cup. In winning the International cup, Danny Foster averaged 199 m.p.h. to set a new record for three-mile courses. The same cup, raced for in Seattle, saw the "Gale V," owned by Ralph Schoenith of Detroit, Mich., and driven by his son Lee, take the trophy by the scant margin of 4.53 sec. from Willard Jones's newcomer "Miss Thriftway" driven by Bill Muncy. The five-year stranglehold of the Sayres fleet of "Slo-Mo-Shuns" was broken when "Slo-Mo-Shun IV" caught fire while competing in the final heat and withdrew, and when Lou Fageol

at the wheel of the "Slo-Mo-Shun V" did a 360° loop during a qualifying trial while travelling faster than 150 m.p.h. Fageol was seriously injured, and the boat was withdrawn. Winner of the Seafair trophy was Ray Gassner of St. Petersburg, Fla., in his "Sunshine Baby."

Winners at the Stock Outboard national championships, held at Devil's lake, Ore., were: Class JU runabout, Bill Schumacher, Seattle; AU runabout, Schumacher; BU runabout, Don Baldaccini, Miami, Fla.; CU runabout, Ron Loomis, Santa Barbara, Calif., the only driver to repeat from 1954; DU runabout, Paul Woodroffe, Salem, Ore.; EU runabout, Dean Mahaffey, Salem; A stock hydro, Don Benson, Seattle; B stock hydro, Baldaccini; and D stock hydro, Bill Holloway, Tipp City, O. (L. EL.)

Motor Transportation. Motor transportation in the United States continued its 60 years of growth at an accelerated rate during 1955. Exceeding all past records, automobile production soared above the 8,000,000-unit mark for the year. In addition, more than 1,000,000 motor trucks and motor coaches were produced, bringing the estimated 1955 grand total to more than 9,000,000 motor vehicles of all types. The figure was about 1,000,000 above the previous record of 8,003,000 set in 1950. It topped the 1954 total by nearly 2,500,000.

The number of vehicles in use rose at a comparable rate. Preliminary estimates by the bureau of public roads placed total U.S. motor vehicle registrations in 1955 at 61,334,000—51,000,000 passenger cars and more than 10,000,000 trucks and buses—an increase of approximately 2,700,000 during the year.

In a year's time, the 72,182,000 drivers and 61,334,000 motor vehicles of the United States travelled a grand total of more than 561,000,000,000 mi., for averages of approximately 9,200 mi. per vehicle and 7,800 mi. per driver. During 1955, road and street mileage in the nation totalled 3,366,000. Sixty-two per cent of rural mileage was surfaced.

The speed with which motor transportation had grown during the last decade was dramatically illustrated by comparing current motor vehicle registration and mileage figures with those of 1946. In that first post-World War II year, there were 34,373,002 registered motor vehicles in the United States, or about 56% of the 1955 total. Vehicle miles of travel reached what was then a record high of 340,655,000,000, climbed past 500,000,000,000 in 1952 and continued climbing to the 1955 level—an increase of 65%. Passenger cars accounted for 81% of the 1955 mileage total.

Annual motor fuel consumption by motor vehicles rose to a record high of 44,365,465,000 gal. in 1954, which represented a 4% increase over 1953.

As motor vehicle mileage soared higher, efforts increased throughout the nation to reduce traffic accidents. The result was a steady lowering of the motor vehicle fatality rate. Since 1945, the number of traffic deaths per 100,000,000 motor vehicle miles declined from 11.3 to a record low of 6.4 in 1954. In the 1920s and 1930s the rate ranged as high as 16.3. It dropped below 12 for the first time in 1939.

The United States continued in 1955 to lead the world in motor transportation by a wide margin. The nation accounted for 71% of world passenger car production and 73% of world passenger car registrations.

More than 46% of the trucks in the world were owned and operated in the United States.

An estimated total of 88,000,000 motor vehicles were in use throughout the world in 1954, operating on about 10,500,000 mi. of highways. There were about 29 people in the world for every motor vehicle. In the United States, the ratio was 2.7 to each motor vehicle—by far the lowest of any country. Tied for second place were Canada and New Zealand, each with a ratio of 4.2 persons per vehicle. In less motorized parts of the world, the ratio ran far to the other extreme. For example, the China ratio was estimated as 7,524 people per motor vehicle; the U.S.S.R. 74 to 1; Hungary, 600 to 1; Haiti, 383 to 1, and Pakistan, 1,973 to 1.

Half of U.S. passenger car registrations were concentrated in eight states, led by California with 4,879,210.

Western states had the highest car ownership rate, with 82% of families owning cars, as compared with 78% in the midwest, 70% in the south and southwest and 67% in the New England states. Farmers of the nation owned about 7,000,000 cars and trucks, and 4,600,000 tractors.

A recent survey showed that 85.5% of all vacation trips in the United States were by automobile. The average mileage travelled per trip was 1,018 and the total amount spent for automobile transportation by vacation travellers per year was estimated at \$586,800,000.

During 1955, motor transportation provided jobs for 9,831,773 persons in the United States, or one out of every seven employed persons in the nation. This included employment in motor vehicle and automotive parts and equipment manufacturing, crude and refined petroleum industries, automotive sales and service businesses, and employment by trucking, bus and taxi companies. In addition, motor transportation created countless jobs in other industries. About one-fifth of the nation's steel output, for example, was being consumed by the automotive industry. Most businesses depended upon motor vehicles for transportation of supplies, finished products and customers.

Motor trucks hauled a high percentage of the nation's freight. For example, 91% of dressed poultry, 99.9% of live poultry, 99.8% of shell eggs, 52% of fruits and vegetables and 80% of livestock were shipped to major wholesale markets by truck. Eighty per cent of new motor vehicles were shipped from the factories over the highways.

Highway users contributed a large share of government revenue through special taxes. In 1954, special automotive taxes in the United States totalled \$6,235,517,000. Of the total, \$1,771,483,000 was contributed by truck operators. It was estimated that taxes took nearly one quarter of every dollar spent for new automobiles.

The rapid growth in motor transportation since World War II and lagging highway building caused a serious road deficiency in the United States. Highway experts estimated in 1955 that expenditures totalling more than \$100,000,000,000 would be

needed to meet all the nation's highway construction, maintenance and administrative needs over the next 10 years.

They predicted that motor vehicle registrations and traffic mileage would increase one-third by 1965 and that half of traffic growth would be on the 40,000-mi. interstate highway system.

(See also ROADS AND HIGHWAYS.)

(H. A. Ws.)

Motor Vehicles: see ACCIDENTS; AUTOMOBILE INDUSTRY; FEDERAL BUREAU OF INVESTIGATION; MOTOR TRANSPORTATION; URBAN TRANSPORTATION, U.S.

Mountain Climbing: see EXPLORATION AND DISCOVERY; GEOGRAPHY.

Mozambique: see PORTUGUESE OVERSEAS TERRITORIES.

Mules: see LIVESTOCK.

Municipal Government. Metropolitan Areas.—The problems of metropolitan areas created by the expansion of urbanism far beyond the borders of the central cities of the United States received considerable attention in 1955. Many years' effort in the Miami-Dade county area in Florida was rewarded in 1955 by enactment by the state legislature of a constitutional amendment, to be submitted to all voters of the state at the Nov. 1956 elections, authorizing adoption of a home rule charter providing a metropolitan form of government for the county, to which certain area-wide functions would be transferred; provision was also made for creation of a charter commission, subject to approval by the voters of the county in 1956. In the Pittsburgh, Pa., area, the Metropolitan Study commission issued its report to the governor's general assembly entitled "An Urban Home Rule Charter for Allegheny County," which likewise recommended a new framework of government for the county which would take over various countywide urban services. Here again a constitutional amendment would first be requisite, followed by appointment of a charter commission. The Illinois legislature enacted a law authorizing creation of the Northeastern Illinois Metropolitan Area Local Governmental Services commission, consisting of representatives of state and local governments, to facilitate a comprehensive study of the problems of the Chicago metropolitan area.

In Canada, the Commission for the Study of the Metropolitan Problems of Montreal, Que., following the pattern set by metropolitan Toronto, Ont., recommended creation of a metropolitan body of 29 members, 14 appointed by the suburban municipalities, 14 by the city of Montreal, and 1 by the provincial government, to administer a variety of intermunicipal services for the area, as well as a uniform system of property assessment, sales tax, and other administrative matters, autonomy in local affairs remaining vested in the municipalities.

Progress study reports were issued by the Metropolitan Problems committee of the Municipal League of Seattle and King county (Wash.) and by the Toledo Area Study committee (Ohio). A citizens' committee was incorporated in Missouri to work for co-ordination of the St. Louis city and county government in the regional planning field, at least five states, Arkansas, Georgia, Indiana, Maine and Massachusetts, enacted legislation either permitting or requiring the establishment of metropolitan planning agencies; at the local level, new regional planning agencies were created in the Denver, Colo., area and the Little Rock-Pulaski county area in Arkansas, steps toward such agencies were taken in the areas of Columbia, S.C., and Cape Cod, Mass., and Monroe county, Mich., joined the Detroit Regional Planning commission.

Early in 1955 a group of planners at Yale university, headed by Christopher Tunnard, reached the conclusion that the

from Portland, Me., to Norfolk, Va., because of its almost daily urban character, constituted in fact one continuous regional city" 600 mi. long and with a population of 34,000,-. Charlton E. Chute of the Institute of Public Administration, New York, developed the thesis that in fact the entire continental United States could be broken down into 19 "urban regions" consisting of adjacent metropolitan areas (as defined by the U.S. census bureau) scattered throughout the country including about 40% of its population. These revolutionary concepts marked the first new approach in decades to the study of the problem of metropolitan areas in the United States.

Traffic and Transportation.—Rapid transit or mass transportation claimed the spotlight in 1955 as providing a possible solution to the urgent problems of urban traffic congestion and consequent parking difficulties which were widely prevalent throughout the nation. Studies of urban mass transportation were either completed, under way, or authorized in Baltimore, Md.; San Francisco bay, Calif., area; Milwaukee, Wis.; Detroit, Mich.; Oklahoma City, Okla.; Philadelphia and Wilkes-Barre, Pa.; the Washington, D.C., area, the south Jersey area; Akron, Barberton and Cuyahoga Falls area in Ohio; and the St. Louis-St. Louis county, Mo., area. In Washington, D.C., the chairman of the House Public Works committee offered to hold hearings on proposals for federal aid to cities for the construction of municipal transit systems on a matching fund basis. Innovations proposed to speed transit included adoption of a monorail rapid transit system, because of its economy, to supplement surface or bus transportation. Ground was broken in 1955 for a test half-mile project in Houston, Tex., financed by state capital of \$50,000,000. Los Angeles, Calif., established a transit authority with jurisdiction limited to monorail transportation over an 8-mi. zone. Possibly the most striking proposal for relief of the transit problem was made by Henry K. Norton, former member of the New York City Transit authority, to the New York Metropolitan Rapid Transit commission for the establishment of a tri-state authority (New York, New Jersey, Connecticut) to construct an "aerial transit" using electric high-speed rubber-tired trains running on narrow overhead structures, estimated to cut commuting time within a radius of 50 mi. as much as half, and to eliminate 40% to 60% of existing vehicular traffic from the suburbs to the city.

Municipal Finance.—The census bureau's latest available annual report on the finances of the 481 cities with populations exceeding 25,000 covering their 1954 fiscal years, showed a substantial rise to record high levels in revenue, expenditure and debt. These cities accounted for approximately four-fifths of all city government revenue and expenditure in the nation. Total revenue reached \$7,533,000,000, an increase of 6% over 1953, and general revenue (which excluded income from utilities, employment retirement systems) amounted to \$5,968,000,000, an increase of 5%. Property taxes continued to constitute about three-fourths of all tax revenues. Total expenditure amounted to \$7,856,000,000, an increase of 8% over 1953; general expenditure totalled \$6,107,000,000, also an 8% increase. Outlay for all major municipal functions increased in 1954, particularly for sanitation. New city borrowing reached a record of \$1,542,000,000, which was 26% over 1953; but \$728,000,000 in existing debt was redeemed, or 21% more than in 1953. Outstanding gross debt rose 7% to a total of \$12,162,000,000.

More state legislation than usual relating to local finance was enacted in 1955; while much of it pertained to revenues, a greater quantity was concerned with the improvement of fiscal procedures. Broader grants of local taxing powers in the tax field were made in California, which extended the tax authority to counties, gave cities the priority in levying the tax and

provided for a co-ordinated state-administered state, county and city tax. New Mexico authorized a state-administered sales tax of up to 1% in cities of over 75,000 population, and Albuquerque, the only qualifying city, imposed a tax on April 15. Mississippi removed the referendum previously required for its one-half cent city sales taxes, except where protested by 20% of the voters. Illinois removed a similar requirement, which had previously prevented the adoption of local sales taxes, but also required abandonment of local cigarette taxes if sales taxes were imposed; by September, more than 140 Illinois cities, including Chicago, had imposed a sales tax collectible by the state. There was less activity in the income tax field: Ohio, where numerous city income taxes were in effect, adopted a law defining the income to be considered, prescribing a uniform rate, and regulating the allocation of new income of corporations between municipalities; voters in Canton, O., in late 1954 approved two income tax measures amounting to six-tenths of 1%; Cincinnati, O., reimposed its earned income tax in 1955, for the period of March 1 to Nov. 30; Pittsburgh, Pa., reduced its earned income tax from 1% to one-half of 1% for 1955, and its suburbs imposed reciprocal income taxes in such number as to create a serious problem from the administrative standpoint.

New or increased shares in state collected taxes were granted in 1955 in about a dozen states, including Mississippi, which adopted its first permanent municipal aid program providing for the allocation of gasoline tax funds to its 267 incorporated communities. In New York, the governor and the mayor of New York city appointed jointly a 10-member citizens' committee to consider the tangled fiscal relations between the city and the state.

State and municipal bond sales for the first nine months of 1955 totalled \$3,900,000,000, or about \$1,000,000,000 less than for the corresponding period in 1954. Similarly, the aggregate of bond issues submitted to voters for approval at the November election by three states and 272 municipalities, amounting to \$1,400,000,000, fell short of the 1954 figure by about \$139,000,000.

Housing and Urban Redevelopment.—The deterioration in housing characteristic of major cities throughout the nation had prompted enactment of the original Housing act of 1949 by the federal government for provision of aid to cities in attacking the problem on a comprehensive scale through costly slum clearance and urban redevelopment programs. Developments under the act moved slowly, and while by July 1, 1955, capital grant reservations totalled nearly \$445,000,000 out of the original \$500,000,000 authorized, covering 302 approved projects in 198 communities, actually not more than 10 projects were fully or practically completed, including some in Baltimore, New York city, Chicago and Detroit. New features and programs incorporated in the Housing act of 1954 were expanded and liberalized in 1955. As finally approved, the new legislation increased capital grant authorizations for slum clearance and urban renewal projects by an additional \$500,000,000 for the next two fiscal years, and authorized loans and advances for the redevelopment of predominantly open land for industrial and other nonresidential uses. In public housing, 45,000 units were approved for fiscal 1955-1956, and 1954 requirements limiting such units to families displaced by slum clearance and calling for an approved "workable program" by cities, which had greatly impeded the letting of contracts in early 1955, were dispensed with. Other measures included authorization of substantially increased advance planning loans, up to a total of \$48,000,000 over the next three years, to be held in a revolving fund and to be continually available for establishment of a genuine reservoir of planned public works, with previous limitations on type and cost of individual projects removed; a public works loan pro-

gram of up to \$100,000,000, which gave priority to communities of less than 10,000 population; and an additional \$2,000,000 appropriation for planning aid grants to small communities and metropolitan and regional areas. By midyear, seven such planning aid grants had been made, to the states of Rhode Island, Tennessee, Alabama and New Hampshire, and to the metropolitan areas of Atlanta, Ga., Little Rock, Ark., and Detroit, Mich.

As of Sept. 1955, 36 states had adopted urban redevelopment or urban renewal laws, four of them in 1955. More than 60 communities had complied with the "workable program" requirement for slum clearance and urban redevelopment aid under the 1954 Housing act. By October, 35 cities had adopted housing codes providing minimum standards—prescribed in connection with their "workable programs"—more than half of which were put into effect during the preceding six months.

Chicago early in 1955 received a federal grant of \$6,000,000 to be used in its Hyde Park redevelopment program involving rehabilitation of the greatly deteriorated area in the vicinity of the University of Chicago. Mayor Robert F. Wagner of New York city announced in October a multimillion dollar plan for the rehabilitation of an enormous area on Manhattan's west side under the urban renewal provisions of the Housing act of 1954, estimated to take from four to five years to complete. (See also HOUSING.)

Air Pollution Control.—Air contamination of differing types loomed as a serious threat to the public health and safety in many cities in 1955. Attention centred on conditions in Los Angeles, Calif., which in September experienced some of the worst "smog" attacks in its history. Main causes there were attributed to fumes from industry, automobiles and backyard incineration. An "alert" system instituted in July called for bans on all three in varying degree, though only the restrictions on incinerator burning were actually utilized. Many governmental and other agencies were engaged in efforts to ameliorate this major threat to the city's progress. The states of New York and New Jersey each appropriated \$30,000 for a survey of air pollution in that area to be undertaken by the Interstate Sanitation commission. A nationwide federal program of research and technical assistance in air pollution control, under the direction of the surgeon general, was authorized by congress, under which appropriations of up to \$5,000,000 a year over a five-year period would be available to support and aid technical research by state and local government or other agencies or to provide technical assistance. In August, the Louisville, Ky., City-County Air Pollution Control commission approved a one-year \$137,000 air pollution study to be financed jointly by federal and local funds.

Civil Defense.—Nationwide civil defense exercises were held in about 50 critical target cities from coast to coast on June 15-17. At least 12 cities conducted evacuation tests, including Washington, D.C., where about 15,000 federal employees moved out to relocation sites. Portland, Ore., in October held the biggest evacuation test up to that time, involving about 200,000 people working or shopping in a 1,000-block downtown area which was cleared in 34 min. by the use of 90,000 autos and trucks. Congress voted \$10,000,000 for grants to cities to prepare for H-bomb evacuation tests by studies of such pertinent factors as population, communications, transportation, shelter availability and co-ordination of public jurisdictions, and under the Civil Defense administration's national survival plan 15 critical target cities were initially selected to make such studies. Additional studies were contemplated near important military establishments.

Water Supply.—The problem of future water supplies for rapidly mounting municipal needs was particularly stressed in 1955. A summary analysis issued by the U.S. department of commerce in March 1955, covering 552 of the country's major

public water supply facilities as of the close of 1953, found that only 58%, serving a population of 40,700,000, were deemed adequate for present demands with satisfactory reserve capacity above a maximum day's demand. A 1955 survey by the U.S. public health service, made in conjunction with American Municipal association activities, revealed that out of 1,555 water supply systems serving more than 95,000,000 people, and including nearly 2,000 municipalities, 815 systems, or 52%, serving nearly 65,000,000 people, required improvements to provide "reasonable, adequate service." (See also CIVIL DEFENSE, U.S.; TOOLS AND REGIONAL PLANNING; URBAN TRANSPORTATION, U.S.; and under individual large cities.) (L. GU.; A. M. DS.)

Canada.—The current expenditures of Canada's organized municipalities, comprising 13,000,000 of the country's population, were \$922,000,000 in 1953; their revenues from all sources were \$933,000,000. Education was the principal expenditure item, \$255,000,000, followed by debt charges, \$149,000,000, public works, \$128,000,000, protection to persons and property, \$112,000,000, health, \$43,000,000, sanitation and waste removal, \$57,000,000, social welfare, \$36,000,000. Taxes, mainly on property, yielded \$698,000,000 of the revenues of which \$340,000,000 were collected for general municipal and \$292,000,000 for school purposes. The remaining municipal revenue derived from grants and subsidies by other governments, from municipal enterprises, licences and miscellaneous sources. Capital expenditures out of capital funds amounted to \$306,000,000 during 1953. The aggregate outstanding debenture debt of all municipalities at the end of 1953 came to \$1,802,000,000.

On Jan. 1, 1954, the Metropolitan Corporation of Toronto embracing 13 heretofore separate municipalities comprised of 1 city, three villages, four towns and five urban townships with a population of 1,250,000, became responsible for water supply, sewage disposal, housing, education, arterial highways, metropolitan parks, certain welfare services, certain administration of justice expenses, public transportation and the over-all planning of the area of greater Toronto. The corporation's first budget provided for revenues and expenditures of about \$65,000,000.

Canada's municipalities continued to press, notably through the Canadian Conference of Mayors and Municipalities, for additional sources of revenue. The demand that the scope of the Dominion-Provincial conference which convened in the fall of 1955 be enlarged so as to provide for municipal representation was not met because, as Prime Minister L. S. St. Laurent stated, "there are no constitutional grounds for direct negotiations between the federal government and the municipalities." But the suggestion that it was open for every province to include representatives of its municipalities in its delegation had the result that for the first time more than 20 municipal representatives took part in the Dominion-Provincial conference of Oct. 1955 which laid the groundwork for further studies of the financial relationships of the three levels of government. (R. RR.)

Munitions. **U.S. Army.**—A listing of the United States armaments and munitions items of interest for the year 1955 follows:

Radar Island.—A Texas tower (man-made island) established about 100 mi. off the New England coast, as a key link in the nation's defense against surprise attack, was completed late in 1955. The estimated cost was between \$5,000,000 and \$10,000,000.

Packaged Atomic Power.—Fort Belvoir, Va., was chosen as the site for an experimental, full-scale but small nuclear power plant to be designed and built jointly with the Atomic Energy commission. Locating the army package power reactor at the government-owned Fort Belvoir would provide a training facility that could be used in the regular program of the army engineering school.

hool located there.

Mobile Howitzer.—The M-44 self-propelled howitzer, a new 10-ton, full-tracked, armoured vehicle, had a top speed of 35 mi. per hour and a cruising range of 76 mi.

Compact Radar.—This new, compact airborne Sperry radar, that assured greater safety for troop-carrying transports and essential cargo planes, was announced by the Air Research and Development command of the air force.

Mechanical Rhino.—This new amphibious vehicle could successfully traverse mud flats, marshes and rough terrain, and could also cruise in water.

Giant Electronic Tube.—A powerful giant electronic tube, said to pave the way for super radars reaching far beyond present limits, was announced by the Air Research and Development command. Known as a megawatt klystron, the tube was eight feet tall and was the first to produce millions of watts of precisely controlled radar power for military systems as yet undiscovered.

Maintenance Shelter.—A new-type portable maintenance shelter for B-29, B-50 and C-97 aircraft that would greatly speed engine maintenance work and enable personnel to perform around-the-clock servicing in any kind of weather or climate was adopted by the U.S. air force.

Signal Instruction.—By installing six vehicular mounted AN/RC-9 radios in a room, TES's Communications section was able to overcome many of the problems relative to teaching signal communications. Power was supplied by regular storage batteries located outside the building.

Jet Reconnaissance Plane.—Republic Aviation corporation developed the first jet photoreconnaissance fighter plane. RF-84F Thunderflashes were being delivered to the 363 Tactical Reconnaissance Wing of the Tactical Air command, Shaw Air Force Base at Sumter, S.C.

Barracks for Polar Icecap.—The corps of engineers designed and constructed a unique type of military installation, the first permanent barracks ever built for use on the polar icecap.

Vehicle-Bridge Signs.—The engineer school had developed a system by which drivers could quickly tell whether or not their vehicles could safely cross any given bridge. Numbers were fixed on vehicles and bridges and the driver could cross if his vehicle's number was lower than that of the bridge. This system had been adopted by all NATO countries.

Battlefield X-Ray Unit.—The army Medical Research laboratory developed a portable x-ray unit for use on the battlefield. Weighing only 48 lb., the complete unit could be carried on the back of a medical aid man. It was powered by a tiny piece of radioactive thulium, and a ¼-in. lead plate protected the user from accidental radiation exposure. The x-ray could produce a picture without electricity, water or a darkroom. The thulium is effective for about a year, after which it could be rejuvenated in an atomic reactor.

Helicopter.—The army contracted with Bell Aircraft corporation for a new medium-sized helicopter to be used for evacuation, general utility and instrument training. Designated by Bell as the Model 212, the helicopter carried 800 lb. of cargo, had a cruising speed of 100 knots and a ceiling of 6,000 ft. Its rate of climb was 1,500 ft. per minute.

Germ Counter.—An instrument which could give instant warning of a germ warfare attack was developed by an army medical corps engineer at Camp Detrick, Md. It measured and counted microscopic airborne germs, dust and moisture particles at the rate of 100 per second.

Shoes.—New footwear were designed on a new system of interchangeable lasts which reduced the number of shoe sizes from 15 to 113.

Electrical Radiation Device.—An improved device for check-



TRACK OF THE FALCON, 6-ft. guided missile of the U.S. air force, as it was about to score a direct hit on an "enemy" plane during tests in March 1955. Developed by Hughes Aircraft Co., the missile had its own guidance system, permitting it to follow a moving target

ing instruments that measure radiation was invented by an army private at Fort Benning, Ga., late in 1955; he was completing experiments on an electrical device that could align radiometers with a 1% margin of error.

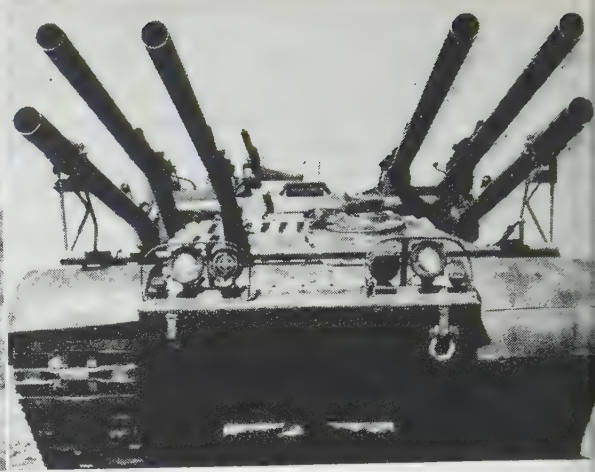
Explosion Stopper.—A tiny new electronically controlled device that would protect aircraft in combat from fuel tank explosions was developed by the Fireye division of Electronics Corp. of America. The heart of the new device was a miniature, rugged, lightweight photoconductive cell mounted inside the fuel tank of an aeroplane.

106-mm. Recoilless Rifle.—The .50-cal. spotting rifle was used to bring the BAT (Battalion Antitank 106-mm. recoilless rifle system) on target during tests of the new 106-mm. recoilless rifle at Aberdeen Proving Ground, Md.

Lightweight Truck.—An experimental all-aluminum army truck, weighing 6,000 lb. less than the conventional model and



TANK AND ANTI-TANK VEHICLE of 1955. Left: British Conqueror, 65-ton tank with long-barreled gun shown during trials at Chobham, Eng., in March; right: Ontos ("The Thing"), U.S. marine corps armoured anti-tank vehicle equipped with six 106-mm. recoilless rifles, four .50 calibre spotting rifles and one .30 calibre machine gun



utilizing a fuel injection system, hydraulic disk brakes, and ball-joint suspension, was developed by the Chrysler Corp. The truck had a waterproof 6-cyl., 200-h.p., air-cooled engine and was capable of speeds of more than 60 mi. per hour.

Missile Tracker.—The new equipment would record time, position, and attitude of the tracking target on 35-mm. film at rates of 10 or 30 frames a second.

Plastic Barge.—This army cargo barge, 51 ft. long, that could transport five tons of cargo with a draft of only two feet, or could carry a full load of 10 tons, was built of plastic in a sandwich construction and was made in 15 sections for ease of transport. It was powered by two 165-h.p. Diesel engines.

Countermortar Radar.—With the help of this electronic locator, front-line forces could detect and "lock on" the path of an enemy mortar shell, automatically track its trajectory, and obtain computer range data revealing its position. Counterbattery fire could then be placed on the hostile weapons.

Audio-Visual Nurse Call System.—As a result of co-ordinated planning and efforts by the office of the surgeon general and the signal corps Plant Engineering agency, a new-type electronic communication known as the Audio-Visual Nurse Call system was adopted and was being utilized in seven U.S. army hospitals.

Power Jack.—A self-propelled hydraulic power jack for the surfacing of military railroad tracks was developed by the corps of engineers' Research and Development laboratories and the Kershaw Manufacturing Co. of Montgomery, Ala. Propelled by a hydraulic motor with a two-speed transmission, the unit could travel 12 mi. per hour.

Nuclear Battery.—A nuclear battery that would convert nuclear energy into electrical energy was developed by the Patterson-Moos Research division of the Universal Winding Co.

Xenon Lamps.—Xenon lamps for special military applications were being produced by Westinghouse Electric Corp., East Pittsburgh, Pa.

Hydraulic Press.—Air Force Secy. H. E. Talbott on May 5, 1955, put huge 35,000- and 50,000-ton hydraulic forging presses into production at Aluminum Co. of America's Cleveland works. The \$40,000,000 installation became the first complete plant of the air force's \$279,000,000 heavy-press program to begin operation.

Dynamic Tester.—Development of a tester to measure dynamic performance of antiaircraft fire-control systems was initiated by army ordnance under contract with Melpar, Inc.

(R. S. T.)

U.S. Navy.—Production and procurement of naval armament

continued at a substantially reduced pace during 1955, primarily because of further levelling off in requirements from the termination of the Korean conflict. The greatest reduction occurred in connection with expendable ordnance, such as ammunition, mines and torpedoes. The policy of placing maximum reliance upon an adequate production base rather than accumulation of inventories was also an important factor in this decrease.

There was, however, a marked increase in procurement of the "push-button" variety of ordnance, notably guided missiles, completely automatic guns and mounts, and advanced types of fire control equipment, as programs completed the research and development stage and entered the procurement stage.

In research and development, the trend was away from conventional weapon programs to greater emphasis on guided missiles and atomic weapons.

A spectacular advance in the striking power of the U.S. navy was achieved with the commissioning of the world's first guided missile cruiser, the "Boston," late in 1955 after completing conversion to carry the navy's new supersonic rocket-propelled Terrier. In the conversion, the after 143-ton 8-in. gun turret was removed and two twin launchers, each capable of firing two Terriers simultaneously, were mounted.

The Terrier successfully completed operational test firing in the fleet from the "Mississippi" and the "Norton Sound" before installation in the "Boston." The needle-nosed missile was designed to intercept aircraft under any weather conditions at a longer range and higher altitudes than conventional antiaircraft guns. It could be fired either singly or in salvo and would be effective for night firing as well as day time.

Storage of Terriers on board ship is below deck in two magazines nicknamed "coke machines," which are completely automatic loading devices. The "Boston" also carries the most modern radar and electronic equipment for detecting targets and for missile guidance.

New methods of bonding fibreglass with metals and inorganic substances, or combinations of both, were developed. The new method produces laminates and tubular products of superior strength and possessing high resistance to usual corrosion agents, elements very important in the field of guided missiles.

A high-altitude guided missile target, the Pogo, was developed by Convair. Consisting of a parachute packed into the nose of a small rocket which is fired vertically from a portable launcher to the desired altitude, Pogo was the first inexpensive high-altitude target for research and development testing of guided missiles.

A simple lightweight handle-bar type gun fire control system completed evaluation and was accepted for service in small ships and auxiliaries. The system was highly reliable and had excellent

performance capabilities against aircraft targets under good visibility conditions.

The reliability and maintenance of new fire control systems are improved considerably through the use of two new types of fire control radar equipments which utilized long-life components, subminiature tubes and units of the plug-in type.

The navy's first completely automatic gun, the 5 in. 54 cal., is mounted in new construction ships, including the first two destroyers of the Forrestal class, "Forrestal" and "Saratoga."

Programs aimed to provide weapons of improved kill-probability for high-speed aircraft, and to increase performance and accuracy in bomb and fire control systems were accelerated to keep pace with the new emphasis on air operations in defense planning. Continued emphasis was placed on underwater ordnance to counter the substantial buildup in Soviet naval strength. Recognizing that the torpedo is still one of the most effective and strategic antisubmarine or prosurface weapons, programs to modernize older type torpedoes and to expedite production of new types for launching from aircraft, submarines and surface vessels were accelerated. Torpedo workshops were designed for installation aboard submarine tenders, destroyer tenders and aircraft carriers to provide facilities for servicing new torpedoes as they were issued to the fleet, as well as the older type inventory torpedoes.

The first family of "drill mine kits" was made available to the fleet in quantity. These kits enabled service units to convert inert loaded service mines into drill mines which gave positive indication of actuation and could be recovered without divers.

Two new naval reserve ordnance plants were completed and placed in operation. The plant at Mishawaka, Ind., for the production of guided missiles, is operated for the navy by the Bendix Aviation corporation. The plant at Hayes, Pa., operated by the Mullins Manufacturing company, manufactures projectiles, rocket heads and other ammunition items by the cold-chambering process for the army and the navy. (F. S. W.)

U.S. Air Force.—Guided Missiles.—The year 1955 saw considerable progress in the guided missile field, as new missiles came far enough advanced to be ordered into full production and new advances were made toward development of the "ultimate weapon," the intercontinental missile.

At the end of the year, the U.S. military services had eight separate types of missiles in production. These included the Glenn L. Martin Co.'s Matador, Chance Vought's Regulus, the Redstone Corporal, Convair Terrier, Douglas Honest John, Sperry Sparrow, Western Electric Nike and Hughes Falcon. The Terrier was also ordered into second-source production with Philco Corp. as the contractor.

Three of these missiles were in actual service with first-line units in Germany. The U.S. army had two units operating Corporals and Honest Johns, while the air force had two more equipped with the Matador on constant alert duty.

The Convair division of General Dynamics Corp. continued work on its intercontinental ballistic missile (IBM), the Atlas, which was not yet ready for test firing. Actual firings were conducted on the Northrop Snark and North American Navaho, intercontinental missiles of the pilotless bomber rather than of the ballistic variety, those which follow the flight path of a bomber rather than the artillery shell trajectory of the ballistic missile. The Snark was a jet-propelled missile which had employed several different power plants, most recently the powerplant of the Pratt and Whitney J-57 engine. The Navaho was powered by a combination of liquid rockets and ramjet engines, the latter developed by Curtiss-Wright Corp.

At the end of 1955 the air force was planning a new emphasis on development of the intercontinental type missile, which

travels at far greater speeds than the pilotless bomber types and against which no defense had yet been developed. The U.S. air force planned to contract for a parallel development to the Atlas, as insurance against development delays, but no contractor was announced.

The following is a roundup of U.S. missile types in service, production or development:

Surface-to-Surface.—The Glenn L. Martin Co. continued production of the Matador, a winged pilotless bomber, jet powered, which was in its third year of production status. Chance Vought also continued production of a similar navy missile, the Regulus, designed for ship-to-surface firing. Both missiles were capable of a range of "several hundred miles."

Chrysler Corp. started production of the Redstone, a medium-range missile developed by Redstone arsenal for army use. The Redstone was a ballistic type missile, an extension of the field artillery principle, with a range of about 200 mi. Also in production for the army were the Firestone Corporal, a somewhat smaller ballistic missile with a range of about 150 mi., and the Douglas Honest John, a short range unguided rocket for anti-personnel use.

Under development for both the army and the marine corps by Martin was a new close support missile, LaCrosse. LaCrosse was capable of a range of about 8 to 10 mi. It was powered by a single small solid propellant rocket.

The aforementioned Snark, Navaho and Atlas, all U.S. air force missiles and all still in development status, rounded out the surface-to-surface category.

Air-to-Air.—One new missile of this type turned up during the year—the Sidewinder, or XAAM-N-7, under development by Philco Corp. No details were released. Production of the Sperry Sparrow was continued for the navy bureau of aeronautics and the Hughes Falcon was being readied for introduction to operational service. It would be used as armament for the Convair F-102 delta wing all-weather fighter, expected to go into service in early 1956. The Martin Oriole, a larger missile than either the Sparrow or Falcon, was cancelled during 1954.

Surface-to-Air.—Nike, an army antiaircraft missile, joint project of Western Electric and Douglas, was in its third year of production and its second year of service use. More than 100 Nike sites had been set up around 13 major cities in the U.S. by the end of 1955. The Nike is a slim, 20-ft. rocket with beam-riding guidance system (it follows a radar beam to its target). Range of the in-service missiles is about 20 mi., but a Nike II under development was to have greater distance capabilities.

Boeing Airplane Co. continued development of the Bomarc, a large rocket-ramjet missile resembling a fighter plane, with comparable range. It was not yet ready for service introduction. Bendix Aviation Corp. was developing a new surface-to-air missile, the Talos, but no details were made public. Talos was a navy missile, but was also being considered by the air force. East Coast Aeronautics was developing the Loki, an unguided antiaircraft artillery rocket.

Air-to-Surface.—This is a type of missile designed to be carried by a bombing plane and launched some distance from a target, permitting the "mother" plane to stay out of range of the target's antiaircraft or missile defenses. Generally, missiles of this type follow a beam projected from the mother plane to the target.

Two new missiles in this category were announced. Martin was working for the air force on the Bulldog, a small missile powered by a single solid fuel rocket. Eastman Kodak was developing the Dove, which would be used either as an air-to-surface or air-to-underwater missile, for the navy.

Bell Aircraft Corp. continued development work on its Rascal, a winged weapon which resembled a small aeroplane. Gorgon 5,

a Martin-navy project, was cancelled. No missile in this category had yet reached production status.

Air-to-Underwater.—In addition to the Dove, Fairchild Guided Missiles division was developing the Petrel, an anti-submarine weapon launched from a plane like a guided aerial torpedo. Development status was not disclosed.

In addition to the above categories, the navy was reportedly working on an "underwater-to-underwater" guided torpedo, but no missile types were disclosed officially. (See also ARMIES OF THE WORLD; ATOMIC ENERGY; AVIATION, MILITARY; JET PROPULSION; NAVIES OF THE WORLD.) (J. J. Hy.)

Muscat and Oman: see ARABIA.

Museums. *United States.*—The American Association of Museums celebrated its 50th anniversary during 1955. It was a year of expansion and modernization to meet growing needs for the unique services museums perform. The 150th annual exhibition of the Pennsylvania Academy of Fine Arts, Philadelphia, recalled that museum services to the community are of long standing.

Building activity was widespread and gave promise of continuing. The Whitney Museum of American Art, New York city, and the Fort Worth (Tex.) Art centre moved into new buildings. Both structures were good examples of modern thinking in museum architecture. The Santa Barbara (Calif.) Museum of Natural History completed a wing which increased its exhibit space by one-third. In Richmond the Virginia Museum of Fine Arts opened its large addition and the Valentine museum moved and rebuilt a historic residence to provide more space for its collections and program. New wings were finished at the J. B. Speed Art gallery, Louisville, Ky., and the M. H. de Young Memorial museum, San Francisco, Calif. The Cleveland (O.) Museum of Art began work on a \$5,000,000 addition. The Birmingham (Ala.) Museum of Art, received a \$1,000,000 bequest for a new building.

The changing educational needs of the public, matched by changes in the techniques of exhibition, require museums to bring their exhibits up to date. The United States National museum, Washington, D.C., opened two reinstalled halls as part of its long-term renovation plan. One was the famous collection of gowns worn by the first ladies of the White House. The dresses were placed in period settings representing rooms in the executive mansion. The other hall was on American Indians and their characteristic ways of life. The American Museum of Natural History, New York city, continued to shift the emphasis of its new exhibits to man's relation with his environment, completing a hall of oil geology. The Metropolitan Museum of Art, New York city, finished its great postwar remodelling and reinstallation project. Some of the new installations elsewhere concerned unusual subject matter. The San Diego (Calif.) Museum

of Man prepared an exhibit series on ethnic music. Besides showing primitive instruments in appropriate settings, it contained a juke box which visitors could play to hear recordings of native songs. Displays illustrating the methods and interest of 19th-century natural history were installed in a new building at the Old Museum Village of Smith's Clove, Monroe, N.Y. The Shelburne (Vt.) museum moved a big side-wheeler nearly two miles overland from Lake Champlain to preserve and tell the story of steamboating on the lake. In Pittsburgh, Pa., the Buhl Planetarium and Institute of Popular Science opened a hall called "Worlds Without End" using fluorescent paintings and moving models to illustrate many facts about the stars and planets. A rocket hall at the American Museum of Natural History showed how rockets are fired into the upper atmosphere and what has been learned from these experiments.

New museums opened during the year represented a variety of interests. After years of careful excavation and reconstruction the Saugus (Mass.) Ironworks restoration was complete. It recreated in operating condition an actual iron furnace, for and mill exactly where they had stood in 1646. The national park service and the state of North Carolina built a Museum of North Carolina Minerals on the Blue Ridge parkway. Exhibits not only showed the important minerals found in the state, but illustrated historic and present-day mining and uses. In Abilene, Kan., the Eisenhower museum, built by citizens of Pres. Dwight D. Eisenhower's boyhood home, was dedicated. A Museum of Indigenous Art was established in New York city.

One of the responsibilities of museums is to preserve the research collections of natural history specimens upon which are based much of man's detailed knowledge of the world. The American Museum of Natural History, the Chicago (Ill.) Natural History museum and the National museum each receive important collections of insects containing many thousands of specimens to be filed, studied and preserved. (See also SMITHSONIAN INSTITUTION.) (R. H. Ls.)

Accessions to Art Galleries and Art Museums.—Despite

"TWELFTH NIGHT" by Jan Steen, a 1955 acquisition of the Museum of Fine Arts, Boston (Mass.)



the death of Samuel H. Kress, the Kress foundation continued during 1955 the policy of diversifying its vast collections with the opening of the 12th and by far the most important group so far at the De Young museum in San Francisco. Highlights were the "Portrait of a Young Man Holding a Book" by a Venetian painter, a close follower of Giorgione (formerly in the Cook Collection, London) and Francisco de Goya's "Don Ramon de Sada y Soto."

The University museum in Philadelphia, which was one of the first archaeological museums to recognize that its collections were works of art as well as mere records of a civilization, had installed its great Babylonian collection emphasizing particularly its high artistic qualities. This centres around a group of extraordinary gold objects from the royal tombs at Ur dating about 2600 B.C.

The long-awaited opening took place of the Sterling and Francine Clark Art Institute at Williamstown, Mass. This impressive white marble building with the most up-to-date equipment and lighting opened three galleries as a sampling of the collections which would be placed on view as more galleries and period rooms were completed within the spacious building. The paintings on view included a Goya portrait of Ascensio Julia and a nude landscape, but otherwise were mostly 19th-century American and French canvases, including many by academic artists long out of favour. Among them were John Singer Sargent's brilliant early portrait of his teacher Carolus-Duran, an early Mary Cassatt "Offering the Panal to the Bull Fighter," ten paintings by Winslow Homer and a famous Turner, "Ships and Blue Lights." Among the French were Géricault's "Portrait of an Artist," Chartran's "Calvé as Carmen" (1898) and three Gérômes including the "Slave Market." The collection also contained superb examples of American and European 19th-century silver.

The Frick gallery in New York city acquired the famous "Schild Madonna, a late work of Jan van Eyck (c. 1441) finished by Petrus Christus. It shows the Virgin and Child, saints and a Carthusian donor and was reputed to have cost 10,000.

The Virginia Museum of Fine Arts opened a new \$2,200,000 building, more than half of which was paid for by the state of Virginia. Among its important recent acquisitions was the "Presentation of the Virgin" by Luca Signorelli (Italian, c. 1450-1493). The Metropolitan museum acquired Edwin Dickinson's "Sins at Daphne," four feet high, which took the artist 12 years to paint and may be regarded as a landmark in American romantic painting. Chicago's Art Institute through partial purchase and partial group gift acquired Picasso's "Woman and Child," a large and most monumental painting of his classical period. August Rodin's monumental sculpture of the French novelist Honoré de Balzac (1897) was presented to the Museum of Modern Art in memory of Curt Valentin by 130 friends of the regular former head of the Valentin gallery.

Boston's Museum of Fine Arts purchased a large and outstanding painting, "Moses Striking Water From the Rock" by Pieter van Leyden, signed and dated 1527. This was acquired from the National museum in Nuremberg, Ger., and was only the third example of this rare Dutch master's work to come to an American collection.

The William Rockhill Nelson Gallery of Art in Kansas City, Mo., acquired an important painting by Jacques Louis David, "Portrait of Diane de la Vanpalière Comtesse de Langeron."

A large portrait (85½ in. high) of a Genoese lady and child (1627) by Sir Anthony van Dyck went to the Cleveland Museum of Art, and a Pieter Brueghel, the Younger, "Winter Landscape With a Birdtrap" to the Toledo (O.) Museum of Art. This is the first portion of the Joseph Winterbotham bequest, the



ENTRANCE to Oil Geology hall opened at the American Museum of Natural History, New York city, in 1955

Art Institute of Chicago received a Van Gogh "Self-Portrait" and the "Woman in a Rose Hat (Mme. D. M.)" by Edgar Degas.

A rare bronze, "Le Bourgeois qui Flâne, L'Armoureux" by Honoré Daumier (1808-79), went to the National gallery in Washington.

The City Art museum of St. Louis, Mo., acquired "The Capture of Weislingen" by Eugène Delacroix (1798-1863).

Rembrandt's "Portrait of a Young Man," dated 1655, was purchased for the Sumner collection of the Wadsworth Atheneum, Hartford, Conn. (F. A. Sw.)

International.—An international conference of art historians was held in Venice, It., during September. At the 12th International Congress of Local Authorities in Rome in October the principal session was concerned with "Local Authorities and Culture." During the year the United Nations Educational, Scientific and Cultural organization (UNESCO) raised its contribution to the International Council of Museums from \$17,000 to \$20,000 and seven out of 20 fellowships granted by UNESCO in 1955 were devoted to museum subjects. At the 11th session of the advisory board of the International Council of Museums in Paris in July the subjects of most general concern were the recruitment and training of new members of the museum profession and the reconstruction of museums in war-ravaged regions such as Austria and Japan.

Great Britain.—The second report of the reviewing committee on the export of works of art again stressed the insufficiency of purchase grants from the state, especially those to provincial museums, which remained at a total of £1,320 for the year. Among the treasures saved for the nation were mediaeval stone statues from St. Mary's abbey, York, for the Yorkshire museum; the Butler-Bowdon cope for the Victoria and Albert museum, for which the treasury made a special grant of £9,000 toward the purchase price of £33,000; a pair of 18th-century silver-gilt salvers by Frederick Kandler for the Birmingham city museum and art gallery and the Victoria and Albert museum; the manuscript autobiography of the composer Thomas Whythorne for the Bodleian library, Oxford; and a sketch by El Greco, the "Dream of Philip II," for the National gallery. The treasury made a special grant of £30,100 toward the purchase price of £42,500 for this picture.

The National Gallery and Tate Gallery act enabled the Tate gallery trustees to become independent of the National gallery, and British works of art from the gallery's collection could therefore be loaned for public exhibition overseas.

Commonwealth.—In Australia the Museum of Applied Arts

and Sciences celebrated its 75th anniversary and the biennial conference of the art galleries and museums of Australia was held in Melbourne. In Canada the new building of the Saskatchewan Natural History museum was opened and the Château de Ramezay in Montreal celebrated its 250th anniversary. In New Zealand, at the Hawke's Bay art gallery and museum, Napier, a new wing was opened to house Maori and Pacific basin collections, local historical exhibits, and a natural science display. The first children's museum in the country was inaugurated there.

The Colombo museum, Ceylon, acquired an important collection of books from the New York Museum of Modern Art. New galleries were opened in museums at Ratnapura, Kandy and Jaffna. In Pakistan a general museum at Hyderabad Sind and an army museum at Rawalpindi were opened. The art gallery of the Peshawar museum was expanded. The South African museum, Cape Town, and the Albany museum, Grahamstown, celebrated their centenaries and the house of Sir Marshall and Lady Campbell, which contained a valuable collection of Afri-cana, was presented to the city of Durban.

Europe.—In Austria a museum of army history was opened in June at Vienna by the minister of education. The annual conference of the Association of Czech Museums was held at Prague, at which the five-year plan for museum development in Czechoslovakia was accepted. In Hungary the ancient Tihany monastery on Lake Balaton was opened as a museum. The foundation document of the monastery, the earliest written record of the Hungarian language, was exhibited.

Three new museums were opened in Italy—the Museo Civico, Viterbo, the Castello Storico di Miramare, Trieste, and the Convent of the Oblate, Florence. The Galleria Nazionale dell' Umbria, Perugia, was reopened and extensive reorganization was carried out in the Museo Nazionale di Villa Giulia, Rome, and the Museo Archeologico, Aquileia.

The Joodsch Historical museum was reopened in Amsterdam and an exhibition of European style from Michelangelo to El Greco was organized at the National museum, Amsterdam, by the Council of Europe, Strasbourg. In Poland museums came under the administration of the state. New museums included a historical and Lenin museum in Warsaw, an archaeological museum in Cracow and a general museum in Elblag. In Switzerland the gallery of near eastern art at the Musée d'Art et d'Histoire, Geneva, was reorganized. In Yugoslavia the Central Museum of the National Liberation of the People's Republic, Slovenia, was opened at Ljubljana and the first international exhibition of drawings was held in the Gallery of Modern Arts, Ljubljana. (See also ART EXHIBITIONS; ART SALES.) (M. D. N.)

Music. **Classical.**—During the 1955 season, international travel by opera companies and symphony orchestras became more frequent than ever before. Three orchestras from the United States undertook extensive tours abroad. The New York Philharmonic made a European trip in the summer under its permanent conductor, Dimitri Mitropoulos, going as far as Athens, Gr. The Philadelphia orchestra under the direction of Eugene Ormandy also toured Europe as far as Finland. The newly reorganized Symphony of the Air undertook a trip by plane to Japan, Korea, Formosa and the Philippines under two U.S.-born conductors, Walter Hendl of the Dallas Symphony and Thor Johnson of the Cincinnati Symphony. This was the first trip by a large American orchestra to Asia.

European orchestras paid visits to the United States. The Berlin Philharmonic presented up to April 1 concerts in the major cities of the United States under its conductor, Herbert von Karajan, successor of Wilhelm Furtwängler; in Oct. 1955 Karajan toured the United States again with the Philharmonia orchestra of London.

As in previous years there were numerous and varied festivals of music in Europe. The annual festival of the International Society for Contemporary Music (I.S.C.M.) was held in Baden-Baden, with the co-operation of the radio network Südwestfunk. The first program (June 17) included the following orchestral works: *Seventh Symphony* by the Danish composer Vagn Holmboe; *Variations for Orchestra* by Luigi Dallapiccola of Italy; a cantata, *Lied der Kentauren*, by Markus Lehmann of Germany; *Music for Strings* by the Swiss composer Constant Regamey; and *Third Symphony* by Carlos Chávez of Mexico.

The second program of the I.S.C.M. festival (June 18) included *Actus Tragicus* for ten instruments by Erich Itor Kampe of the United States; *Kammerkonzert* by Karl Birger Blomdahl of Sweden; *Arpiade* for voice and a chamber ensemble by Wladimir Vogel, Russian-born composer living in Switzerland; and *Le Marteau sans maître* for voice and a chamber ensemble by the French ultra-modern composer Pierre Boulez.

The third concert of the I.S.C.M. festival on the afternoon of June 19 was devoted mainly to chamber music. The following works were performed: *String Quartet* by Herbert Brün of Israel; *Alpha and Beta* for piano by the young Japanese composer Makoto Moroi; *Sonatina* for piano by Peter Sculthorpe of Australia; *Five Songs* by Hans Erich Apostel of Austria; *Trio* for oboe, clarinet and bassoon by Jan Maegaard of Denmark; and *Third String Quartet* by the Hungarian-born English composer Matyas Seiber.

The fourth concert of the I.S.C.M. festival on the evening of June 19 included *Orchestral Ornament* by the China-born Baltic-German composer Boris Blacher; *String Quartet* by the young German modernist Hans Werner Henze; *Chanson and Romance* by Werner Egk of Germany; *The Creation* by the German composer Wolfgang Fortner; and *Variations for Orchestra* by Arnold Schönberg.

The fifth concert (I.S.C.M.) was given on June 20 in a program including *Sonata for Two Pianos* by Riccardo Nielsen of Italy; *Quartet* for flute, clarinet, bassoon and piano by Krystian Wiggan of Norway; *Cello Sonata* by Elliott Carter of the United States; *Concertino* for flute, oboe, English horn and cello by Ingvar Lidholm of Sweden; and *String Quartet* by Francis Burt of England.

The I.S.C.M. festival concluded on June 21 with an orchestral program that featured a *Rhapsody* by the pianist Art Schnabel; *Divertimento* by the Hungarian-French composer Tibor Harsanyi (1898-1954); *Suite* for string orchestra, piano and percussion by Gino Contilli of Italy; and a *Symphony* by the Spanish-born English resident composer, Roberto Gerha.

A special concert of jazztime music was given as part of the I.S.C.M. festival on June 22, in a program that included the following pieces: *Passacaglia for Big Band* by Roland Kovacs; *Spiritual Concert* for baritone and jazz orchestra by Herbert Werner Zimmermann; and *Ebony Concerto* by Stravinsky.

The list of European festivals presenting opera, symphony and chamber music comprised the following: Edinburgh (Aug. 21-Sept. 10), at which the Berlin Philharmonic and the New York Philharmonic took part; Salzburg (July 24-Aug. 3), which featured the world première of the opera *Irish Legend* by Werner Egk (Aug. 17); Bayreuth (July 22-Aug. 21), devoted to Wagner; Munich (Aug. 12-Sept. 11), presenting operas by Richard Strauss, Mozart, Handel, Wagner and Hans Pfitzner; Wuppertal (June 4-6), presenting the music of Paul Hindemith, who conducted the first performance of his oratorio, *Angeli Veloces*; Aix-en-Provence (July 10-31), in performance by several opera companies, orchestral organizations and chamber ensembles; Bergen, Nor. (May 26-June 7), in program of Scandinavian music; the Holland festival at various cities and towns (June 15-July 15) that brought the Israel Philharmonic

the opera company of La Scala from Milan; Venice (Sept. 15-25), presenting as a main event the first complete stage performance of Sergei Prokofiev's opera *The Flaming Angel* (Sept. 15).

The first international annual music festival to be held in Greece took place at Athens (Aug. 24-Oct. 2). The program included eight opera performances and seven symphony concerts. The Athens festival was held in the ancient open-air theatre situated on the Acropolis. The concerts of the New York Philharmonic were incorporated into the festival.

In Latin America an important music festival was held in Caracas, Venez., from Nov. 22 to Dec. 10, 1954, which, in addition to symphonic and choral concerts, awarded generous prizes for the best works. Juan José Castro of Argentina received first prize (\$10,000) for his *Corales Criollos*; Carlos Chávez of Mexico received second prize (\$5,000) for his *Third Symphony*; and Julian Orbón of Cuba received another prize of \$5,000 for *Tres variaciones sinfónicas*.

Festivals of music in the United States, while not so numerous as those in Europe, contributed to the interest of American musical life. The Berkshire Music festival at Tanglewood, Mass., featured the production of *The Rope*, opera by Louis Nunni (Aug. 9) commissioned by the Koussevitzky Music Foundation.

The ninth annual Ojai festival at Ojai, Calif. (May 20-22), presented an ambitious series of concerts, with Stravinsky conducting several of his works. The third Early Moravian Music Festival at Winston-Salem, N.C. (June 20-26), gave performances of music by European composers who settled in Pennsylvania in the middle of the 18th century.

Among successful opera productions, the American premiere of Sir William Walton's *Troilus and Cressida* (originally produced in London on Dec. 3, 1954) was given in San Francisco on Oct. 7, 1955. The opera by Gian-Carlo Menotti, *The Saint of Bleeker Street*, first produced in New York on Dec. 27, 1954, had subsequent performances in Vienna and at La Scala in Milan. It was awarded a Pulitzer prize.

Two interesting short operas by United States composers were presented for the first time: *The Pot of Fat* by Theodore Kutzer (Cambridge, Mass., May 8) and *The Ruby* by Norman Lo Joio (Bloomington, Ind., May 13).

The Louisville orchestra continued the presentation of specially commissioned works, among them *The Wish*, opera by George Antheil to his own libretto (April 2).

Lukas Foss composed a special opera for television named *Effekkin*, which was produced on the "NBC Television Opera Theatre" on Nov. 6.

In London the opera by Michael Tippett, *The Midsummer Marriage*, was produced on Jan. 27. The opera *Die Füsse im Feuer* by the Swiss composer Armin Schibler was presented for the first time in Zürich on April 25.

When Prokofiev died in 1953 he left a newly revised version of his opera *War and Peace*. This version was performed for the first time in Leningrad on March 31, 1955. Among other musical events in the U.S.S.R., the appearance in Moscow of the Brazilian composer Claudio Santoro was met with interest. He conducted his *Symphony of Peace* there on March 21.

There was a noticeable increase of musical interchange between the Soviet Union and the western world. A major Soviet artist appeared in the United States in the person of the pianist Emil Gilels, who gave recitals in the U.S. in October and also played concertos with symphony orchestras. The Soviet violinist David Oistrakh followed him in November.

Among symphonic and other works performed for the first time in 1955 the following were of interest: *Violin Concerto* by Arthur Bliss (London, May 11); *Cantata of Psalms* by the



SCENE FROM "THE SAINT OF BLEEKER STREET," a 1955 television production of the opera which won the Pulitzer prize for Gian-Carlo Menotti

young Viennese composer Anton Heiller (Vienna, June 16); *Sixth Symphony* by Darius Milhaud (Boston, Oct. 7; commissioned by the Boston Symphony orchestra); Walter Piston's *Fifth Symphony* (Boston, Nov. 25; also a commissioned work). *Deserts* by Edgar Varèse, scored for 20 instruments and sound effects on tape and written according to the composer's theory of "organized sound," was first performed in Paris on Dec. 2, 1954, much to the consternation of some listeners; it was given its first American performance on May 17, 1955, at Bennington, Vt.

A new violin concerto by the Canadian composer John Weinzwieg was played for the first time in Toronto (May 30) by the Symphony orchestra of the Canadian Broadcasting corporation.

Serious music continued to make progress in Japan. Among new works given in Tokyo were two piano concertos, by Yasuji Kiyose (March 10) and Shukichi Mitsukuri (April 23).

An event of great cultural significance was the opening of the new hall of the Vienna State Opera on Nov. 5, with a production of Beethoven's opera *Fidelio* symbolizing the triumph of freedom. The new hall replaced the one destroyed during World War II; rebuilt according to the architectural plan of the old opera house, it is modern in its furniture and lighting.

In anticipation of the 90th birthday of Jan Sibelius (Dec. 8), a complete cycle of his symphonies was presented in Finland. (N. Sv.)

Popular.—The year 1955 presented an unusual situation in the fact that the most popular music was almost all either a resurrection of old materials or a flagrant imitation of folk song, the latter reaching its lowest ebb in the so-called "rock 'n' roll" style of rhythmic chant.

The most popular song of the year, as judged by the statistics of "Your Hit Parade," was merely a waltz arrangement of the ancient "Melody of Love," a favourite with piano students in the early years of the 20th century. Its music was credited to the original composer, Hans Engelmann, and Tom Glazer, himself an expert in folk music, added singable words.

Definitely in the folk style was the "Ballad of Davy Crockett." The refrain had a suggestion of the old "Ja-Da" tune, but on the whole this could almost pass for true folk music. Tom Blackburn and George Bruns were credited with the text and

melody, respectively.

Late in the year there was a solid revival of "The Yellow Rose of Texas," which had been a popular song of the Confederacy. (Its tune was echoed by Paul Dresser nearly 40 years later in "Just Tell Them That You Saw Me.") The original was signed only by the initials J. K., but the modern version was published as "by Don George" and popularized in the recording of Mitch Miller of Columbia. Eventually he started to work also on "The Bonnie Blue Flag," which became "The Bonnie Blue Gal."

A monstrosity called "Let Me Go, Lover" had only a suggestion of the more obvious "country" quality, while "Learnin' the Blues," by Dolores Vicki Silvers, scarcely lived up to its title and owed its success largely to Frank Sinatra. A far better song was "Mr. Sandman," popularized by the Chordettes, and there was considerable merit in "Unchained Melody," written by Hy Zaret and Alex North, with practical help from the blind Negro singer Al Hibbler.

A French importation, "Cherry Pink and Apple Blossom White," won success by way of Jane Russell's motion picture *Underwater*, with the music credited to Louiguy and the words of Jacques Larue adapted by Mack David. "Tweedlee Dee" supplied the annual nonsense song, again in the tradition of early folk materials, and Irving Berlin upheld the honour of the established song writers by appearing 13 times on "Your Hit Parade" with "Count Your Blessings Instead of Sheep," sung effectively by Eddie Fisher.

There were such minor items as "I Need You Now," "Sincerely," "Domani," etc., and the rowdy element was represented by "Rock Around the Clock," theme song of the controversial film *The Blackboard Jungle*. The "rock 'n' roll" school in general concentrated on a minimum of melodic line and a maximum of rhythmic noise, deliberately competing with the artistic

ideals of the jungle itself.

The most encouraging aspects of the year's popular music were to be found in the Broadway shows, with young Richard Adler and Jerry Ross following up the success of their *Pajama Game* with *Damn Yankees*, which contained two respectable hits in "Whatever Lola Wants" and "Heart" (a bit reminiscent of "It Had to Be You"). *Plain and Fancy* offered a more than adequate score, and Cole Porter's *Silk Stockings* came close to his best standards. There were good songs also in the devastating parody of the 1920s, *The Boy Friend*.

At the close of the year lovers of popular production music were looking forward to a new work by Richard Rodgers and Oscar Hammerstein II based on John Steinbeck's novel *Swing Time*. Meanwhile their epoch-making *Oklahoma!* had reached the screen, with a revelation of new possibilities in colour and sound and a timely reminder of the permanence of the songs. (S. Sp.)

Music in Industry.—With an ever-increasing emphasis on office and industrial automation, there was great historic business significance to be gleaned from a number of independent surveys taken during 1955. Conclusive evidence pointed to the fact that properly conceived and programmed work music could be as important a tool of progressive management in measuring increasing employees' efficiency and productivity as automatic devices designed to save time or cut costs or errors, etc. Indeed the greater the degree of automation, the more important work music becomes, according to these surveys. On-the-job experiments demonstrated that office and industrial machines, while solving one set of production problems, create others. For instance, the more mechanical the device, the more boring and monotonous the job is to its operator. Boredom leads to discontent which in turn is almost invariably followed by a marked fall-off in efficiency, by absenteeism and eventually by the loss of valued employees. It was found that the greater the degree of skill (training) required to operate automatic machinery, the more intelligent the operator, the more likely are boredom and monotony to lead to costly employee turnover and unnecessary labour-management friction.

Muzak corporation, pioneer in the industrial music field, has documented that work music in many instances can eradicate personnel problems induced by automation. This can be accomplished only by special recordings (music made for this purpose only) and transmission (controlled high fidelity) technique coupled with programming specifically designed by musicologists to fulfil the needs (the time, the place and the activity of the areas to be serviced) of individual subscribers.

It was the consensus of many management consultants that the day was not far removed when work music would be considered as necessary to the operation of any business as gas, lighting, heating and ventilation. (X.)

Recordings.—Since the phonograph was invented in 1877 its principal function had been the reproduction of recorded music. By 1955, however, all the major works of musical art had been superbly recorded, and many extremely minor works had been equally well treated. The record industry had, in effect, run out of worthwhile unrecorded music.

To compensate for this shortage, record manufacturers were exerting themselves to find suitable nonmusical material, the result was most varied. More than 90 records of poetry, much of it read by the poets themselves, were now available. Almost as many plays, essentially complete, were similarly served. Tennessee Williams and Sir Max Beerbohm had their own short stories in their entirety, and even the audio art of a burlesque show had been dutifully preserved for forthcoming generations to savour.

At the year's end the array of nonmusical but otherwise



ANGRY DIVA, Mme. Maria Meneghini Callas, shouting at U.S. marshal Stanley Pringle who had served the Italian soprano with a summons after her farewell performance with the Lyric theatre opera company in Chicago, Ill., Nov. 1955

assifiable record album titles was steadily mounting and included such diverse entries as "The Birth of a Baby," "The Tinsey Report," "Entertainment of Sinister and Disconcerting Humor," "Excuse My Fluff," "Golden Voiced Canaries," "Great Moments in Sports," "Heart Recordings," "How To Relax and Live," "Milady, Your Figure!," "Parakeet Lessons," "Parson My Blooper," "The Power of Positive Thinking," "Rail Dynamics," "Relaxation by Suggestive Therapy," "Sam Snead Golf Lessons," "Sounds of the American Southwest," "Sounds of the South American Rain Forest," "Sounds of the Sea," "Through the Sound Barrier," "Voices of the Sea," "Voices of the Night" and "Zany Letters."

The national revival of interest in Civil War lore led Columbia Records to issue a remarkable album of music and history titled *The Confederacy*. From this, Mitch Miller, the company's director of popular music, extracted "The Yellow Rose of Texas," a tune which turned out to be one of the year's liveliest best-sellers. Among the best albums of serious music issued during the year were the following:

On RCA-Victor, Ravel's *Daphnis and Chloë* in the complete vocal and orchestral version with a vocal group trained by Robert Shaw and the Boston Symphony orchestra conducted by Charles Munch; the same orchestra provided two astonishing performances of the *Pathétique* of Tchaikovsky and the *Fantastique* of Berlioz with Pierre Monteux conducting the first of these and Munch the second; Verdi's *Te Deum* and Boito's *Mefistofele Prologue* played by the NBC Symphony and sung by the Robert Shaw Chorale under the direction of Arturo Toscanini; and *Fifty Years of Great Operatic Singing*, a handsomely turned out five-record album which starts with tenor Francesco Pannofino singing "Di Quella Pira" from *Il Trovatore* in 1902 and covering most of the memorable vocal performances up to 1951 when Risè Stevens sings "So Piu Cosa Son" from *The Marriage of Figaro*.

On Columbia, Gustav Mahler's *First Symphony, The Titan*, conducted by the New York Philharmonic Symphony society under Bruno Walter, who at the age of 17 was Mahler's assistant conductor at the Hamburg Opera house; an unusually revelatory album titled *The Birth of a Performance* in which Columbia added to a fine recorded performance of Mozart's *Symphony No. 36* (K.425) a complete recording of the rehearsal preceding the finished product in which Bruno Walter is heard patiently and persuasively fashioning the instrumentalists to his taste; and Shostakovich *Symphony No. 10* played by the New York Philharmonic under Dimitri Mitropoulos.

On Angel, Verdi's *La Forza del Destino*, sung by the La Scala company of Milan with the famed Maria Meneghini as Desdemona; Mozart's *Così fan Tutte*, conducted by Herbert von Karajan with Elizabeth Schwarzkopf and Nan Merriman in the lead roles; the complete piano music of Mozart played by Walter Gieseking in a de-luxe edition released in honour of the forthcoming bicentennial of the composer's birth.

On Mercury, Tchaikovsky's complete ballet score for *Swan Lake* played by the Minneapolis Symphony orchestra under Leopold Stokowski. On Decca, the *Violin Concerto* of Brahms with the renowned Russian David Oistrakh in the solo role and the accompaniment provided by the Saxon State orchestra of Dresden led by Franz Konwitschny. On Vox, three Mozart sonatas (Nos. 331, 545 and 283), played by pianist Guiomar Novaes; and 12 church and 12 chamber sonatas comprising Corelli's *Opus 1* and 4, played by the Musicorum Arcadia. On Westminster, the six *Concerti Grossi* of *Opus 3* of Francesco Geminiani played by the English Baroque orchestra under Herman Scherchen. (J. J. RY.)

Jazz.—The trend in jazz during 1955 seemed to be away from the currently popular rhythm and blues. This older form of jazz,



"CRAZY OTTO," a German concert pianist named Fritz Schulz-Reichel, whose novelty recordings were best sellers in the U.S. in 1955

not being a balanced entity in that rhythm predominates over melody and harmony, is not of sufficient character to retain the public it initially attracts, and 1955 saw a lessening of interest in this type of music. Many of its supporters were augmenting their musical experiences with more modern forms of jazz.

The movie industry was aware of the growing interest in jazz and had released or had in production several stories based on jazz sequences. Some of the more prominent were *Love Me or Leave Me*, *Pete Kelly's Blues*, *The Red Nichols Story*, *The Benny Goodman Story*, *Daddy Long Legs* and *The Joe Sullivan Story*.

Independent radio stations rely for a major portion of their programming upon jazz, and the major networks were beginning to extend their coverage in this area. Jazz was an important part of the format of several of the popular television programs.

Among the outstanding smaller jazz units, or combos, were those of Dave Brubeck, John Lewis, Tony Scott, Gerry Mulligan, Chet Baker and Shorty Rogers. In the forefront of the larger bands were Stan Kenton, Billy May, Count Basie, Woody Herman, Les Brown, Les Elgart, the Dorsey Brothers, Ray Anthony and the Sauter-Finegan orchestra.

It appeared that while the rhythm and blues era had by no means passed, its supporters were sensing a lack of musical depth and were beginning to cast about for additional musical experiences. Many were finding that the better jazz groups produce a type of music which is melodically and harmonically interesting as well as rhythmically stimulating. (M. E. HL.)

Mutton: see MEAT.

Mutual Security Program: see FOREIGN AID PROGRAMS, U.S.

Narcotics. The tenth year of international control of narcotics under the sponsorship of the United Nations was marked by steady progress on various fronts. The Commission on Narcotic Drugs at its tenth session, April 18 through May 12, 1955, made several recommendations for the consideration of the Economic and Social Council.

International Control of Narcotics and Implementation of Treaties.—The commission requested that governments comply with their obligations under the 1925 and 1931 conventions to transmit complete and accurate estimates and statistics, regularly and promptly, giving adequate explanation of methods used to calculate the quantities involved.

Priority was given to discussion of the proposed single convention, which would revise, improve and codify the nine existing narcotic treaties into one document. The commission considered these questions relating to the single convention: control of poppy straw, coca leaves, cannabis and cannabis resin; specific rules for synthetic narcotics; details concerning estimates and statistics, particularly for opium; the remaining formal sections, especially those that provided for a territorial (colonial) clause, amendment of the new treaty, settlement of disputes and reservations; composition of schedules listing categories of drugs under different regimes; and definitions of terms to be used in the treaty.

Drug Addiction.—Increasing emphasis was being placed on social and economic aspects of drug addiction. The work of the Social commission in crime prevention somewhat paralleled the work of the Commission on Narcotic Drugs, which requested continued collection of information and study of drug addiction by the secretary-general in consultation with the World Health organization, the Social commission and other bodies concerned; noted that in the treatment of drug addiction ambulatory treatment methods (including the so-called clinic method) are inadvisable; requested that the World Health organization prepare a study on methods for treating drug addicts; and recommended that governments concerned collect information on drug addiction in their countries and submit these statistics in accordance with the revised form of annual reports.

Illicit Traffic.—The Chinese mainland continued to be the source of great quantities of opium, morphine and heroin, exported with official sanction to supply the international illicit traffic and used as bartering commodities in Japan, Korea and throughout southeast Asia.

Raw Opium.—In 1954, 34,766 kg. of raw opium were seized. Although Thailand had prohibited opium production since 1949, large quantities continued to be smuggled into Thailand from neighbouring producing countries. In Singapore several large smuggling rings were broken up. Strenuous enforcement in Turkey resulted in larger seizures of opium in 1954. Egypt also reported increased seizures of raw opium.

Prepared Opium.—Total seizures of prepared opium in 1954 were 3,529 kg., most of them in the middle and far east. Illicit traffic in prepared opium declined in Canada and the United States. Considerable quantities of morphine base were seized in Lebanon. It was feared that much illicit morphine base from Lebanon was still reaching Canada, Italy, France and the United States.

Heroin.—Therapeutic use of heroin had been discontinued in all except a few countries of the world. Japan, Mexico and Turkey each reported the discovery of an illicit laboratory for the manufacture of heroin. Canada, the United States and Mexico co-operated in bringing to an end the activities of several important international narcotic law violators. Large quantities of heroin from Communist China are annually smuggled into Japan via Korea, and into the United States via Hong Kong and Thailand.

Coca Leaf.—Production of coca leaves, under the proposed single convention, would be limited to legitimate needs, primarily for medical and flavouring purposes. Because chewing of coca leaves produces addiction, it is considered an illegitimate use, to be gradually abolished through persuasion and education and to be prohibited 25 years after the single convention comes into force.

Clandestine factories manufacturing crude cocaine remained a serious problem in Bolivia, Ecuador and Peru, and cocaine addiction was increasing. In the early months of 1955 more cocaine had been seized in the United States than during the entire year 1954. France also reported an increase in illicit traffic in cocaine.

Cannabis sativa.—Because cannabis drugs no longer serve any useful purpose, because of their increasing abuse in many countries and in view of the current research into the possibility of developing strains of *Cannabis sativa* L. devoid of harmful resins, the commission invited the Food and Agriculture organization in co-operation with the United Nations secretariat to act as a co-ordinating agency for this research and to report on progress made to the commission.

In 1954, 127,781 kg. of cannabis were seized. About 3½ tons of hashish were seized in Egypt. Large seizures were made in Lebanon.

Synthetic Drugs.—The secretary-general was requested to invite all governments not parties to the protocol of 1948 for control of synthetic narcotics to report on steps taken to become parties thereof, and to prohibit production and use of any synthetic narcotics not considered indispensable to public health. The commission urged governments that had not already done so, to prohibit manufacture, import and export of ketobemidone, one of the most highly addicting drugs known.

Narcotic Investigations in the United States and Canada.—The Canadian senate committee investigating narcotic problems held hearings in Ottawa, Ont., Vancouver, B.C., Montreal, Que., and Toronto, Ont., the cities with the greatest concentration of narcotic addicts. In June 1955 the committee published its final report and recommendations which emphasized, among other things, the need to establish an institution for treatment of drug addicts in or near Vancouver, where about half of the addicts in Canada are found.

The number of narcotic addicts in the United States was estimated at 50,000 to 60,000, with the greatest concentration in the areas of New York city, Chicago, Ill., and Los Angeles, Calif. Reports from the United States public health service hospital at Lexington, Ky., showed that most persons addicted to opiates came from cities of at least 1,000,000 population.

A survey of drug addiction in the United States, begun by the bureau of narcotics in Jan. 1953, showed that almost 80% of the addicts were men, and that about half of all addicts were between 21 and 30 years of age. Addiction among adolescents was negligible except in a few areas, where it was largely a part of the over-all problem of juvenile delinquency. More than three-fourths of the addicts in the United States use heroin.

Because many addicts have a history of social maladjustment including experience in crime, before they become addicted, the problem of successful treatment is extremely difficult and must be undertaken only in hospitals equipped with specially trained medical and nursing staffs and with psychiatric, occupational and recreational therapy programs to fit addicts to return to normal, productive living. Thus a workable solution of the problem lies in close co-ordination of efforts of narcotic enforcement agencies and medical authorities. Severe penalties also necessary to curb the illicit traffic in narcotics. This had been demonstrated in various parts of the United States that had experienced marked decline in narcotic violations after her

es and long prison sentences had been imposed. The President's Interdepartmental Committee on Narcotics was studying the entire narcotic problem with a view to formulating an administrative policy and recommendations to the congress for severe penalties for violators of the federal narcotic laws.

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(H. J. A.)

Nasser, Gamal Abdel (1918-), Egyptian army officer and politician, was born at el-Madiyat, near Alexandria, Jan. 18. He studied at the Ras-el-Tin secondary school in Cairo and was dismissed from there in 1935 for taking part in an antigovernment riot, but two years later was accepted at the Royal Military academy. In World War II he served in the western desert and in 1942 founded the secret Free Officers' movement which by 1952 had a membership of about 700. As a major Nasser took part in the 1948 war against Israel. In May 1952, then a lieutenant colonel, he approached Gen. Mohammed Naguib and offered him the post of commander of a revolution planned to overthrow King Farouk. The coup d'état of July 23 succeeded, and Naguib became the head of state and later president and prime minister of the republic. The real power, however, was held by the Revolutionary Command Council (R.C.C.) composed of 11 officers and controlled by Nasser, although Naguib was its nominal chairman. The relations between Naguib and Nasser became embittered because the former resented being a figurehead and repeatedly asked for greater powers. On Feb. 25, 1954, it was announced that Naguib had resigned from all his offices. Nasser succeeded him, but Naguib's popularity was great and two days later the R.C.C. elected him as president of the republic with Nasser as prime minister, and as chairman of the R.C.C. On March 8, Naguib assumed the position of prime minister, and chairman of the R.C.C. On April 18, however, a new reshuffle took place, Nasser became prime minister while Naguib remained president of the republic and chairman of the R.C.C. On Oct. 26 four officers were fired at Nasser as he was making a speech in Alexandria. Naguib was later implicated and removed from office in November.

From Jan. 22 to Feb. 6, 1955, Nasser presided over a conference of the Arab league in Cairo. From April 9 to 12 he visited Karachi, Pak., and during April 12-15, New Delhi, Ind. From April 18 to 24 he attended the Asian-African conference at Bandung, Indon. On July 11, Nasser and J. Nehru, the Indian prime minister, published a statement in Cairo expressing their conviction that "involvement in military pacts or in alignments with the great powers does not secure the cause of peace."

National Academy of Sciences: see SOCIETIES AND ASSOCIATIONS, U.S.

National Association for the Advancement of Colored People: see SOCIETIES AND ASSOCIATIONS, U.S.

National Association of Manufacturers: see SOCIETIES AND ASSOCIATIONS, U.S.

National Association of State Libraries: see SOCIETIES AND ASSOCIATIONS, U.S.

National Budget: see BUDGET, NATIONAL.

National Bureau of Standards: see STANDARDS, NATIONAL BUREAU OF.

National Catholic Community Service: see SOCIETIES AND ASSOCIATIONS, U.S.

National Catholic Welfare Conference: see SOCIETIES AND ASSOCIATIONS, U.S.

National Congress of Parents and Teachers: see So-

Cieties and Associations, U.S.

National Council of the Churches of Christ in the U.S.A.: see SOCIETIES AND ASSOCIATIONS, U.S.

National Debt: see DEBT, NATIONAL.

National Education Association: see SOCIETIES AND ASSOCIATIONS, U.S.

National Foundation for Infantile Paralysis: see POLIOMYELITIS; SOCIETIES AND ASSOCIATIONS, U.S.

National Gallery of Art: see SMITHSONIAN INSTITUTION.

National Geographic Society. The year 1955 brought to a successful conclusion the seven-year task of preparing the National Geographic society-Palomar observatory sky atlas, joint project of the society and the California Institute of Technology. Employing the unique Schmidt 48-in. wide-angle phototelescope, largest of its kind in the world, astronomers on Palomar mountain had been systematically photomapping the night skies since 1949. Their 1,758 resulting plates chart three-fourths of the heavens—all that could be photographed with good quality from the site. Plates record objects up to 600,000,000 light years distant (three sextillion 600 quintillion miles), an unprecedented depth for a sky atlas. The first section of the atlas, composed of 200 photographic prints from the plates, was released in August to observatories, universities and scientific institutions which had contracted for it. Additional sections, each containing billions of star images, were scheduled for delivery through following months. The 14 by 14-in. photographs each covered a star field the size of the bowl of the Big Dipper.

A second major publishing event of the society's year was the publication in October of *Indians of the Americas*. Matthew W. Stirling, Neil M. Judd, Andrew Ellicott Douglass, Hiram Bingham and other technical authorities contributed chapters to this 432-page record of Indians from Cape Horn to the Arctic and from the Ice Age to modern times. The 400 illustrations included six maps and colour reproductions of 149 paintings and 113 Kodachrome photographs.

The greatest change observed in the geography of Mars since the planet's surface was first mapped 125 years ago was reported by E. C. Slipher in the Sept. 1955 *National Geographic Magazine*, after preliminary study of 20,000 new Mars photographs. The change was a Texas-size dark area, believed to result from primitive plant life, appearing in a large desert region. Unlike new fertile patches previously observed, it was independent of existing dark areas. It thus suggested that deserts and dark areas on Mars were not directly related to topography, surface material or land elevation. The photographs were taken with the 27-in. refractor of the Lamont-Hussey observatory at Bloemfontein, U. of S.Af., by the National Geographic society-Lowell observatory expedition led by Slipher in 1954.

The National Geographic society "Calypso" oceanographic expeditions under Capt. Jacques Yves Cousteau of the French navy made still and motion pictures underwater off the Seychelles, Aldabra, Assumption and Madagascar in the western Indian ocean in addition to continuing Mediterranean and Red sea projects. Harold E. Edgerton, Massachusetts Institute of Technology, in his third summer's work on the expeditions' cameras and underwater lighting, tested a model of a camera he planned to build for the society capable of taking pictures in the greatest depths of the oceans. "Calypso" divers salvaged several thousand amphorae and pieces of fine pottery from the hold of the 2,200-year-old cargo ship found in 23 fathoms a few miles from Marseilles, Fr., late in 1952.

During the year the Marine laboratory of the University of Miami continued its research on life stages and migrations of Atlantic pelagic fish. Carl W. Gartlein, Cornell university, con-

tinued his long-range study of auroras and their relation to sun spots and disruption of wire and wireless communications.

Abundant additional evidence of three distinct periods of construction in the 1,500-year-old Olmec culture of southern Mexico resulted from excavations made at La Venta in westernmost Tabasco state. January through May. Anthropologists Philip Drucker, Smithsonian institution, Robert F. Heizer, University of California, and aides directed 40 native workmen in unearthing jaguar-mask courts of polished tile and five carved stone monuments. They found caches of pottery vessels and 2,000 jade objects including 30 standing figurines gathered in council-meeting fashion around a seated central figure.

In October, E. Thomas Gilliard, associate curator of birds, American Museum of Natural History, reported in the *National Geographic Magazine* on his fourth expedition to New Guinea, aided by a society grant. He made the first zoological exploration of the Hindenburg and Victor Emanuel ranges in northeast New Guinea and Papua close to the Netherlands New Guinea border, and observed the primitive culture of tribes whose head-hunting traditions yielded reluctantly to the impact of the 20th century.

T. Nicholas Panay, Greek scientist, worked summer and fall on a society grant on the Ionian sea island of Cephalonia. His project was to determine if fresh-water springs welling up offshore to the east were linked by any physical processes to a sea stream flowing onto the island in large volume at high tide from the west.

Entering a rocky, canal-like bed, it vanishes underground near the west-coast town of Argostolion.

Adm. Robert E. Peary's 45-starred United States flag, flown at the north pole April 6, 1909, and carried on all the explorer's Arctic travels, was presented to the society May 6, to be enshrined in its Explorers hall. At ceremonies in Constitution hall Mrs. Marie Peary Stafford bestowed the emblem on behalf of her family. At the same time she accepted for her mother, Mrs. Robert E. Peary, a special gold medal of the society honouring Mrs. Peary for her active part in her husband's explorations from 1891 through 1902.

The society's members at the end of 1955 numbered 2,150,000. About 1,100 colour pictures filled 823 colour pages in the year's 12 issues of the monthly illustrated *National Geographic Magazine*. The Atlantic ocean, southeast Asia, New England and eastern South America were 1955 subjects of large-scale map supplements in 10 colours prepared by the cartographic division. Fifty staff-drawn maps and map-diagrams illustrated articles on regional geography.

Chief justice of the United States Earl Warren and Benjamin M. McKelway, editor of the *Washington Star* (D.C.), were elected in January to the board of trustees of the society. At the same time, Thomas W. McKnew, secretary since 1945, became, in addition, a vice-president. On Sept. 22, 1955, John Oliver La Gorce, president and editor, completed 50 years of service to the society.

The other officers were: chairman of the board, Gilbert Grosvenor; vice-president and associate editor, Melville Bell Grosvenor; treasurer, Robert V. Fleming; research committee chairman, Lyman J. Briggs; vice-chairman, Alexander Wetmore.

(J. O. L. G.)

National Guard. By the end of Aug. 1955 the U.S. army national guard consisted of 5,221 units and 360,689 officers and enlisted men, and the air national guard consisted of 664 units and 61,271 officers and airmen. These units and personnel were located in more than 2,200 cities and towns throughout the United States, including each of the 48 states, the territories of Hawaii and Alaska, the commonwealth of Puerto Rico and the District of Columbia. On Oct. 1, 1955, all



NEW YORK GUARDSMEN filing out of the 71st infantry regiment armoury during the nation-wide alert, Operation "Minuteman," April 20, 1955

but one battalion (consisting of four engineer units) of the 1,600 army national guard units which were ordered to active duty during the Korean emergency had been released from federal service and returned to the control of their respective states.

During the latter part of 1954 the basic mission of the national guard, that of providing a reserve force capable of immediate mobilization in the event of a national emergency, was expanded to include new and increased responsibilities. The air national guard began active participation in the Air Defense Augmentation plan of the air defense command, a program designed to ensure the readiness and increase the combat potential of the air national guard, as well as to extend the coverage and strengthen the air defense system of the United States. Seventeen air national guard units at strategic locations maintained two jet fighter aircraft, five combat-ready air crews and thousands of supporting personnel on five-minute runway alert status during daylight hours, daily.

In a similar manner, the army national guard, assisting the regular army in the antiaircraft defense of the continental United States, expanded its antiaircraft artillery program. By the end of Sept. 1955, 54 army national guard antiaircraft batteries had assumed the 24-hour defense of major industrial and population sites which had formerly been defended by batteries of the regular army.

By Oct. 1, 1955, the air national guard had converted 65 of its 73 fighter-interceptor squadrons from conventional to jet aircraft, with the remaining 8 squadrons scheduled for conversion prior to July 1, 1956.

Operation "Minuteman," a surprise nation-wide test alert to the readiness and availability of the national guard, was held on April 20, 1955, and proved to be the greatest peacetime citizen-soldier training exercise in history, with more than 350,000 army and air guardsmen in every state, Alaska and the District of Columbia taking part.

In 1954-55, as in past years, the national guard participated in hundreds of rescue and relief missions, fought fires and flood fighting missions of mercy and responded in all types of local and state emergencies. In the wake of Hurricanes "Carol" and "Diane," national guardsmen performed disaster duty for successive days and nights, aiding storm victims and guarding business and residential districts in Connecticut, Massachusetts, Rhode Island, Pennsylvania, New Jersey, Virginia and North and South Carolina.

(E. C. EN.)

National Income and National Product: *see* INCOME AND PRODUCT, U.S.

National Insurance: *see* SOCIAL SECURITY.

National Labor Relations Board. The eighth year of the National Labor Relations board's administration of the Labor Management Relations act was marked by significant rulings in the areas of collective bargaining, jurisdiction and the union filing requirements of the act.

During the 1955 fiscal year, Pres. Dwight D. Eisenhower appointed Theophil C. Kammholz as general counsel and Boyd Leedom, new member to the five-member board. At the close of the fiscal year the board was composed of Chairman Guy F. Farmer and members Abe Murdock, Ivar H. Peterson, Philip W. Rodgers and Boyd Leedom.

Collective Bargaining.—The board made a number of decisions during the year which were significant in the field of collective bargaining. Among these was a ruling involving the subject of employee stock purchase plans. A majority of the board held that a stock purchase plan, when based on the employment relation and providing for company contributions, was a subject upon which an employer would be required to bargain if requested to do so by a union representing the employees. This ruling was based upon a finding that such plans come within the meaning of the "wages" and "other conditions of employment" as these terms were used in the act. The act required an employer to bargain about these matters with the representative chosen by a majority of employees.

Dealing with another aspect of collective bargaining, the board ruled unanimously that an employer must furnish information to support his claim of financial inability to pay a wage increase. The board stated the rule as follows: "... it is settled that when an employer seeks to justify the refusal of a wage increase upon an economic basis . . . good faith bargaining under the Act requires that upon request the employer attempt to substantiate its economic position by reasonable proof."

In another case, a majority of the board found that the employer had violated the act by discharging an employee who had participated in a conference designed to bring together representatives of various employers who needed employees, and thereby help the employer's employees obtain the best competitive offer possible. The conference was intended also to counteract an agreement among employers not to hire each other's employees of the character involved. A majority of the board ruled that the employees' activity engaged in was legitimate, "to broaden their opportunities for employment, to obtain the best market for their services, and to lessen their dependence upon the Respondent for employment—all matters clearly, and properly, related to the issue of wages. . . ."

Interpretation of the act's 30-day notice requirement was involved in another case. A majority of the board held that a strike to compel modification of an agreement was illegal where the union failed to give the Federal Mediation and Conciliation Service at least 30 days' notice of the dispute. The union in the case did not give the service notice until more than a month after the start of the strike.

Jurisdiction of the Board.—A number of decisions involved the board's dollar-volume jurisdictional standards. In one series of decisions the board announced that the standards would be uniformly applied in the territories as in the 48 states. In the first decision under this new policy a majority of the board dismissed a petition for decertification of a union representing employees of a company located in Puerto Rico because the company's operations failed to meet any of the board's standards

governing the assertion of jurisdiction. Board member Murdock dissented. The board previously had exercised plenary jurisdiction in the territories, taking cases without regard to the size of the employer's business.

The board also adopted a new rule for determining jurisdiction in secondary boycott cases. It announced that it would continue to consider the volume of business of all employers involved in such cases. The change was that, instead of counting merely the volume of affected business between the primary employer and any secondary employers concerned, the board would count toward the jurisdictional amounts all business of the secondary employers at the location affected by the boycott.

The Filing Requirements.—The compliance of unions with the filing requirements of the act was involved in two cases.

In one case the board unanimously ruled a national union to be out of compliance with the filing requirements of the act because the union failed to show that it had distributed its financial reports to its members as required by the law. As a consequence, the national and its affiliated local unions were disqualified from bringing cases to the board, participating in representation elections, or making valid union-shop agreements. The board acted after the national union failed to offer any evidence to back up earlier reports it had made asserting that it had distributed the financial reports to its members. This was the first such case to come before the board.

In another ruling, the board found that an officer of a national union had filed false non-Communist affidavits. Acting to effectuate the policies of the act and the requirements of national security and to protect the integrity of board processes, the board unanimously held the national union and its affiliated locals to be out of compliance with the filing requirements of the act. The board found, after a hearing, that the union officer had admitted in an article in the union's newspaper that his affidavit was false. However, the union obtained an order from the U.S. court of appeals at Washington staying any board action under this ruling until the board decision could be reviewed by the court.

Case Activity.—During the fiscal year ended June 30, 1955, individual employees filed more charges of unfair labour practices against employers and unions than in any prior year in the 20-year history of the National Labor Relations board. A sharp upward trend of such filings started during fiscal 1954 when 2,147 individuals filed charges. This compared with 1,656 charges filed by individual employees in fiscal 1953. The previous peak was 2,041 cases filed by individuals in fiscal 1949.

Individual employees filed charges of unfair practices in a total of 2,668 cases during fiscal 1955, constituting 43% of the 6,163 charges of unfair labour practices of all types filed during the year.

A total of 4,358 charges were filed against employers, or 71% of the total charges filed, and 1,805 charges were filed against unions, or 29% of the total charges filed.

Of the employees' charges, 1,576, or 59%, were directed against employers, and the remaining 1,092, or 41%, were directed against unions.

The agency closed a total of 13,679 cases of all types during the year. The board issued formal decisions in a total of 2,108 cases of all types. Of these, 360 were in unfair labour practice cases and 1,748 in representation cases.

The independent general counsel, who was the prosecuting officer of the agency, closed 5,320 unfair labour practice cases without the necessity of formal action; 614, or 12%, were adjusted by various types of settlements; 1,634, or 31%, were dismissed after investigation; and the remaining 57% were withdrawn. In many cases the withdrawals actually reflected settlements of the matter in issue.

The general counsel issued 373 formal complaints alleging violations of the act: 211 against employers, 112 against unions, and 50 against both employers and unions. (See also LABOUR UNIONS; STRIKES.) (G. F.)

National Museum: see SMITHSONIAN INSTITUTION.

National Parks and Monuments. In 1955 travel to areas administered by the U.S. national park service exceeded that of any previous year; funds for road, trail and other improvements were substantially increased; and a number of important donations were made for park purposes.

Visitors to national park areas totalled 49,176,293 in the 12-month period ended Sept. 30, 1955. This compared with a total of about 47,925,000 in the previous 12-month period, and exceeded by approximately 15,500,000 the 1950 total.

Additional accommodations for visitors were provided by the concessionaires operating in a number of parks. Special ceremonies marked completion of the multimillion-dollar Jackson Lake lodge in Grand Teton National park, Wyo., built with funds provided by Jackson Hole Preserve, Inc., a nonprofit organization established by John D. Rockefeller, Jr.

At Grand Canyon National park, Ariz., plans were drawn up for a \$1,000,000 visitor-facilities modernization and improvement program by Fred Harvey, the concessionaire on the canyon's south rim. Negotiations were completed, subject to congressional review, for the installation and operation of extensive dining and boating facilities at the Flamingo site in Everglades National park, Fla., entailing an initial investment of \$250,000 of private capital.

Approximately \$2,500,000 of federal funds was programmed for road, parking area, camp ground, marina and other installations in and adjacent to the Flamingo site.

Work was continued on a number of major road projects, such as the Stevens Canyon road in Mt. Rainier National park, Wash., begun in 1930; the Heart O' the Hills highway in Olympic National park, Wash.; the Heintooga Ridge road in Great Smoky Mountains National park, N.C.-Tenn.; and the Blue Ridge, Natchez Trace and Colonial parkways.

One of the year's highlights was the establishment on Sept. 14 of a representative portion of the scenic and historic Cumberland gap region, Kentucky-Virginia-Tennessee, as the Cumberland Gap National Historical park. The 20,100 ac. for this tri-state park were acquired by the three states at a cost of approximately \$1,250,000 and donated to the federal government.

Another of the year's highlights was the enactment of legislation sponsored by Hawaii's delegate to the U.S. congress, Elizabeth Pruitt Farrington, authorizing establishment of the ancient City of Refuge and adjoining lands on the Kona coast of the Island of Hawaii as a national historical park. This congressional action culminated a half century of effort by the Hawaiian people to achieve national recognition and protection for this unusual "city" where Hawaiian fugitives and refugees found sanctuary many centuries ago. The secretary of the interior was authorized to acquire lands for the park by donation or purchase. The governor of Hawaii also was authorized to acquire lands at the expense of the territory by exchange or otherwise.

One unit of the national park system—Old Kasaan National monument, Alsk.—was abolished and its 38 ac. transferred to the U.S. forest service for administration as part of the Tongass National forest.

Secretary of the Interior Douglas McKay was the principal speaker at ceremonies dedicating Fort Vancouver National monument, Wash., on Aug. 13. This area, established in 1954, includes the site of the stockaded fur-trading post which served

Areas Administered by the National Park Service (Sept. 30, 1955)

Type of area	Number	Federal land (approximate acreage)
National parks*	28	12,670,400
National historical parks	7	31,700
National monuments†	83	8,975,400
National military parks	11	24,400
National memorial parks	1	68,400
National battlefield parks and sites	9	5,700
National historic sites and memorials	22	5,700
National cemeteries	10	2,000
National parkways	5	81,500
National capital parks	1	35,000
National recreation areas	4	2,020,000
Total	181	23,919,000

*Largest and oldest national park is the Yellowstone in Wyoming (also includes small portions of Idaho and Montana). Established in 1872, the park contains more than 2,000,000 acres. †The oldest national monument is Devils Tower in Wyoming, established by proclamation of Pres. Theodore Roosevelt in 1906. Special ceremonies were to be held in 1956 in observance of the area's golden anniversary.

as headquarters, from 1824 to 1846, of the Hudson's Bay company activities from the Rocky mountains to the Pacific and from California to Alaska.

Secretary of Agriculture Ezra Taft Benson delivered the main speech at ceremonies at George Washington Carver National monument, Mo., in observance of Carver day, July 12. The birthsite and boyhood home of the famed Negro educator-scientist are preserved in this area.

Ceremonies were held on June 17 dedicating to public use a new Museum of North Carolina Minerals at Gillespie gap on the Blue Ridge parkway. At this point the parkway skirts the Spruce Pine area, one of the world's most highly mineralized regions. The state of North Carolina provided funds for erecting the museum structure and for the preparation of its series of interesting exhibits by the national park service.

Jackson Hole Preserve, Inc., donated \$300,000 to match an equal amount of federal funds appropriated by congress for park land acquisition. The donation was made and accepted on condition that the entire \$600,000 would be expended for the acquisition of property in Grand Teton National park.

A donation for the purpose made possible the purchase by the national park service of one of the tents used by George Washington during the American Revolution. This valuable accession was to be on display at Yorktown, Colonial National Historical park, Va., during the 350th Jamestown anniversary celebration in 1957. The park includes most of Jamestown Island.

An anonymous donation of \$30,000 was given to the service for a two-year study of methods and devices employed in national and state park areas to interpret these areas to the visiting public. This study was being made by Freeman Tilden, a leading authority on parks and author of the book *The National Parks: What They Mean to You and Me*.

Three vacancies on the Advisory Board on National Parks, Historic Sites, Buildings, and Monuments were filled by the appointment of John B. Oakes, *New York Times* editorial board member; Carl I. Wheat, an attorney of Menlo Park, Calif.; and E. Raymond Hall, chairman of the department of zoology, University of Kansas, Lawrence. (C. L. W.)

England and Wales.—Two further national parks, areas of Northumberland and the Brecon Beacons, comprising about 900 sq.mi., were designated in 1955. Both of these were awaiting confirmation by the minister of housing and local government. The eight national parks already confirmed and established covered an area of 4,333 sq.mi. In these, additional accommodations and facilities for visitors were provided during the year. The National Parks commission made proposals for the designation of the Quantock hills, in Somerset, and the Gower peninsula, Glamorgan, as "areas of outstanding natural beauty." These areas were to be the ones selected for special planning designed to maintain their beauty. They might be less extensive areas than the national parks, and the provisions of the National Park

regarding the development of facilities for open-air recreation did not apply to them.

Australia.—Queensland.—During the year six new areas totalling 7,768 ac. were proclaimed national parks, the chief of which was Magnetic Island, outside Townsville, covering an area of 6,260 ac. Additional areas totalling 1,787 ac. were added to existing parks, including 1,480 ac. to the Carnarvon park. About 2,000 people visited the parks.

Tasmania.—A new national park was established in the rugged southwestern part of the island—Lake Pedder National Park, embracing Lake Pedder and some spectacular peaks rising 5,000 ft. Others included 620 ac. of forest fringing St. Mary's Bay in the northeast, and 20 ac. of scenic foreshore at Stewart's Bay, Port Arthur. About 25,000 people visited the parks during the year.

A "countryside code," the first of its kind in Australia, was sponsored and introduced by the Scenery Preservation board. **South Australia.**—Two new roads were provided in the Belair National park, which enabled visitors to traverse areas hitherto inaccessible. Approximately 400,000 people visited this park during the year.

Victoria.—About 35,000 persons visited the Buchan Caves National park during the year.

Belgian Congo.—No new nature reserve was established during 1955, but consideration was given to the establishment of five national parks, especially in the region of Haute-Tshuapa, with a view to protecting a portion of the equatorial forest. Provision was made for the accommodation of visitors to the Kindi area of the Albert National park by establishing a new camp capable of accommodating 60 persons. A total of 3,754 persons visited the parks during the year.

Kenya.—The two national parks affected by Mau Mau activities, Mt. Kenya and Aberdare, continued to be closed to the public and all plans for development were suspended temporarily. The new Safari lodges were opened in the Tsavo National park, Kenya's main sanctuary for big game, the Kitani Safari lodge in the western sector of the park and the Aruba Safari lodge in the eastern sector. Approximately 120,000 people visited the parks during the year.

Northern Rhodesia.—Development work continued in the northeastern sector of the Kafue National park. In the northern sector six temporary camps were constructed and the dry-weather tracks were improved and extended.

South Africa.—A record number of 91,000 visited the Kruger National park. Conditions in the Mountain Zebra park were very favourable and six foals were raised, making the total 16.

Tanganyika.—The Serengeti National park was the only published national park in Tanganyika, but the establishment of at least two additional parks was under consideration. L. S. B. Key, curator of the Coryndon museum, Nairobi, continued archaeological research in the Oldwai gorge, disclosing further evidence of Stone Age culture and the fauna of 250,000 years ago.

About 2,000 visitors visited the park during the year.

Yugoslavia.—Eight national parks, with a total area of 360,000 ac., had been established since 1949. The largest was the Mavrovo National park in Macedonia, with an area of 176,160 ac. established to protect the recently created Mavrovo lake which supplied water for the Mavrovo electric plant system. The other seven national parks were Durmitor, Biogradska and Lovcen in Montenegro, Plitvice Lakes, Paklenica and Risnjak in Croatia and Pelister in Macedonia. (See also TOURIST TRAVEL.)

(H. M. AS.)

National Recreation Association: see SOCIETIES AND ASSOCIATIONS, U.S.

National Safety Council: see ACCIDENTS.

National Science Foundation: see SOCIETIES AND ASSOCIATIONS, U.S.

National Society for Crippled Children and Adults, Inc.: see SOCIETIES AND ASSOCIATIONS, U.S.

National Temperance League, Inc.: see SOCIETIES AND ASSOCIATIONS, U.S.

National Wealth: see WEALTH AND INCOME, DISTRIBUTION OF.

Natural Gas: see GAS, NATURAL AND MANUFACTURED.

Naturalization: see IMMIGRATION, EMIGRATION AND NATURALIZATION.

Nauru: see TRUST TERRITORIES.

Navies of the World. At the end of 1955 there were three great navies, those of the United States, the United Kingdom and the U.S.S.R. Other major fleets were those of France and Italy, followed by those of the Netherlands, Sweden, Spain, Turkey, Canada, Australia, Argentina, Brazil and Chile. There were also 45 lesser navies. The comparative strengths in ships, of and above the escort categories, of the navies of the world were as shown in Table I.

Among the naval events of the year were: the first sea trials of the U.S.S. "Nautilus," the world's first atomic-powered submarine, Jan. 17-20; the large operations of the United States 7th fleet, involving 120 warships, to cover the evacuation by the Chinese Nationalists of the Tachen Islands, which started early in February; the explosions and fire in the U.S. submarine "Pomodon" at San Francisco, Calif., on Feb. 21; the commissioning of H.M.S. "Ark Royal," Great Britain's largest aircraft carrier and the first to have all the postwar developments in flight deck technique, on Feb. 22; the launching of H.M.S. "Excalibur," the second submarine with engines boosted by hydrogen peroxide, at Barrow-in-Furness on Feb. 25; the combined

Table I.—Navies of the World, Dec. 1955*

Country	Fleet aircraft carriers	Light fleet aircraft carriers	Escort and ferry carriers	Battle- ships	Cruisers and armoured ships	Destroyers	Frigates and escort vessels	Submarines
United States	29	7	66	15	76	379	357	202
Great Britain	5	9	2	5	24	80	183	59
U.S.S.R.	—	—	—	3	31	140	200	450
France	—	3	1	2	5	20	54	14
Italy	—	—	—	2	3	7	38	5
Netherlands	—	1	—	—	2	10	24	7
Sweden	—	—	—	—	5	14	9	21
Spain	—	—	—	—	6	18	18	6
Turkey	—	—	—	—	1	10	—	12
Canada	—	1	—	—	2	11	52	—
Australia	—	2	—	—	1	6	17	—
Argentina	—	—	—	2	5	15	8	3
Brazil	—	—	—	—	2	9	8	3
Chile	—	—	—	1	2	6	6	5
India	—	—	—	—	2	6	4	—
New Zealand	—	—	—	—	2	—	6	—
Greece	—	—	—	—	1	3	19	4
China (Communist)	—	—	—	—	1	2	12	8
Norway	—	—	—	—	—	5	12	8
Portugal	—	—	—	—	—	5	8	3
China (Nationalist)	—	—	—	—	—	9	20	—
Japan	—	—	—	—	—	2	28	1
Peru	—	—	—	—	—	—	6	6
Pakistan	—	—	—	—	—	4	4	—
Rumania	—	—	—	—	—	4	—	3
Poland	—	—	—	—	—	2	—	4
Thailand	—	—	—	—	—	—	5	4
Dominican Republic	—	—	—	—	—	2	9	—
Egypt	—	—	—	—	—	2	7	—
Israel	—	—	—	—	—	2	5	—
Venezuela	—	—	—	—	—	2	4	—
Colombia	—	—	—	—	—	2	3	—
South Africa, Union of	—	—	—	—	—	2	3	—
Indonesia	—	—	—	—	—	1	4	—
Denmark	—	—	—	—	—	—	10	3
Yugoslavia	—	—	—	—	—	—	4	2
Mexico	—	—	—	—	—	—	8	—

*Other naval forces with four or fewer escort vessels are those of Cuba, Belgium, Ireland, Korea, Iran, Uruguay, Ecuador and Burma. Minor warships are possessed by Bulgaria, Ceylon, Finland, Germany (East), Germany (West), Haiti, Honduras, Hungary, Iceland, Iraq, Panama, Paraguay, Philippines and Vietnam (South).

fleet exercises in the Mediterranean known as "Sea Lance" during March 10-15 in which about 50 ships and 150 aircraft took part in simulation of atomic warfare; the sinking of the British submarine "Sidon" at Portland, Dorset, following an explosion in a torpedo on June 16 (the submarine was salvaged a week later); the commissioning of H.M.S. "Grey Goose," the largest warship so far to be propelled solely by gas turbines, on June 22; the bombardment lasting for two days of the terrorist positions in Johore on the east coast of Malaya by the British cruiser "Newcastle," flagship of the admiral second in command of the far east station (announced June 28); the agreement to hand over the administration and control of the British naval base at Simonstown to the government of the Union of South Africa (announced July 4); the launching of the U.S.S. "Sea Wolf," the second atomic-powered submarine (but the first with an intermediate reactor and a liquid metal coolant) at Groton, Conn., on July 21; the withdrawal of the last British battleship in commission, H.M.S. "Vanguard," from the fleet to be reduced to reserve (announced Sept. 12); the major North Atlantic Treaty organization maritime tactical exercise of 1955 known as "Sea Enterprise" held in the Norwegian sea area during Sept. 21-28, which was sponsored by the supreme Allied commander, Atlantic, and conducted by the commander in chief, eastern Atlantic, in which 36 ships including 5 British aircraft carriers, 100 aircraft and 15,000 men from the United States, United Kingdom, Canada and Norway took part; the commissioning at the Norfolk naval shipyard, Portsmouth, Va., of the U.S.S. "Forrestal," the largest aircraft carrier in the world, on Oct. 1 and the launching of her sister ship "Saratoga" at the New York naval shipyard, Brooklyn, on Oct. 8; the visit of six Russian warships comprising two cruisers and four destroyers to Portsmouth, Eng., and the reciprocal visit of six British warships comprising an aircraft carrier, a fast minelayer and four destroyers to Leningrad between Oct. 12 and 17; and the celebrations to mark the 150th anniversary of the battle of Trafalgar on Oct. 21 when the queen and the duke of Edinburgh dined with the board of admiralty in the famous Painted hall of the Royal Naval college, Greenwich, to do honour to the immortal memory of Vice-Admiral Lord Nelson.

U.S. Naval Strength.—Three giant aircraft carriers of 60,000 tons were being built, the "Independence," "Ranger" and "Saratoga," and a fifth ship of this "Forrestal" class, the "Kitty Hawk," was projected. Fifteen aircraft carriers of the "Midway" and "Oriskany" ("Essex") classes were being converted with the

new angled deck and the enclosed bow. The heavy cruiser "Boston," "Canberra" and "Los Angeles" were converted guided missile ships. Eleven large destroyers were under construction and seven more were projected. Four destroyer escorts were completed or being built and nine more were projected. Another six nuclear-powered submarines and four large submarines of conventional design were projected. In addition to the ships enumerated in Table I, there were 246 minelayers and minesweepers, 118 patrol vessels, 553 amphibious craft, 550 auxiliaries and 1,800 service craft. The U.S. navy comprised a total of 4,420 vessels at the end of 1955.

British Naval Strength.—The new large fleet aircraft carrier "Ark Royal" was finally completed and joined the operational fleet in the Mediterranean in Oct. 1955. The fleet aircraft carrier "Victorious" was being completely rebuilt into a bigger ship. The intermediate fleet aircraft carrier "Hermes," an improvement on the three new vessels of the "Centaur" class, was still under construction. The light fleet aircraft carriers "Herald" and "Leviathan" were still suspended. The construction of the long-suspended cruisers "Blake," "Defence" and "Tiger" was resumed. Two fleet escort ships (superdestroyers) and eight general-purpose frigates were ordered under the 1955-56 naval estimates. Of the 26 new frigates of the anti-aircraft, anti-submarine and two antisubmarine types, six were completed, five were nearing completion and nine were launched. Six new submarines were under construction. Warships other than those shown in the table included three fast minelayers, 63 ocean minesweepers, 139 coastal minesweepers, 112 inshore minesweepers, 52 fast patrol boats, 30 seaward defense boats, 32 antisubmarine trawlers, 66 landing craft and many miscellaneous ships and auxiliaries.

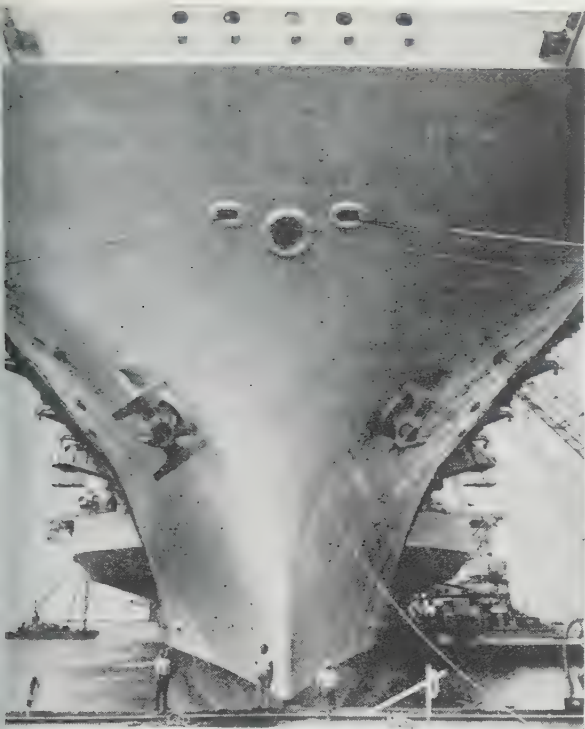
U.S.S.R.—Eight more of the class of large cruisers of which the "Sverdlov" was the prototype were under construction, bringing the number of this class of Soviet warships up to 10. Among new Russian destroyers were 24 of the flush-decked fleet and escort types. A large number of ocean-going long-range submarines were completed.

France.—Two large fast light fleet aircraft carriers were under construction or projected. The anti-aircraft cruiser " Colbert" was being built. Six more new destroyers were completed and five were under construction, six new frigates were completed and four under construction, and 13 submarines were under construction or projected.

Italy.—Two former light cruisers were converted into

Table II.—Modern Types of Warships

Category	Name or class	Country	Tons displacement	Main Armament guns	Torpedo tubes	Aircraft	Shaft horse power	Knots speed	Displacement complete
Fleet Aircraft Carriers	"Forrestal"	U.S.	59,650	8 5-in.	—	100	260,000	33	1
	"Coral Sea"	U.S.	45,000	14 5-in.	—	137	212,000	33	1
	"Ark Royal"	U.K.	36,800	16 4.5 in.	—	110	152,000	31½	1
	"Oriskany"	U.S.	33,100	8 5-in.	—	100	150,000	33	1
Light Fleet Carriers	"Albion"	U.K.	22,000	—	—	45	76,000	29½	1
	"Wright"	U.S.	14,500	—	—	50	120,000	33	1
	"La Fayette"	France	11,000	—	—	45	100,000	32	1
Battleships	"Missouri"	U.S.	45,000	9 16-in.	—	—	212,000	33	1
	"Vanguard"	U.K.	44,500	8 15-in.	—	—	130,000	30	1
	"Jean Bart"	France	38,750	8 15-in.	—	—	150,000	30	1
Large Cruisers	"Alaska"	U.S.	27,500	9 12-in.	—	—	150,000	33	1
Heavy Cruisers	"Salem"	U.S.	17,000	9 8-in.	—	—	120,000	33	1
Light Cruisers	"Roanoke"	U.S.	14,500	12 6-in.	—	—	120,000	32	1
	"Sverdlov"	U.S.S.R.	12,800	12 6-in.	10 21-in.	—	130,000	34½	1
	"De Ruyter"	Netherlands	9,664	8 6-in.	—	—	78,000	32	1
	"De Grasse"	France	9,000	16 5-in.	—	—	120,000	33½	1
	"Superb"	U.K.	9,000	9 6-in.	6 21-in.	—	72,500	31½	1
	"Göta Lejon"	Sweden	8,000	7 6-in.	6 21-in.	—	100,000	33	1
	"Wilkinson"	U.S.	3,700	2 5-in.	4 21-in.	—	80,000	35	1
Leaders and Destroyers	"Diana"	U.K.	2,610	6 4.5-in.	10 21-in.	—	54,000	34¾	1
	"Gearing"	U.S.	2,425	6 5-in.	5 21-in.	—	60,000	35	1
	"Alamein"	U.K.	2,400	5 4.5-in.	10 21-in.	—	50,000	31	1
	"Skory"	U.S.S.R.	2,200	4 5.1-in.	10 21-in.	—	70,000	38	1
	"Halland"	Sweden	2,600	4 4.7-in.	8 21-in.	—	50,000	35	1
	"Grenville"	U.K.	1,730	2 4-in.	—	—	40,000	36¾	1
Frigates	"Mounts Bay"	U.K.	1,580	4 4-in.	—	—	5,500	19½	1
	"Le Corse"	France	1,290	6 2.25-in.	12 21.7-in.	—	20,000	27	1
	"Nautilus"	U.S.	3,180	—	6 21-in.	—	—	30½	1
Submarines	"Gudgeon"	U.S.	1,615	—	6 21-in.	—	—	20	1
	"K 1"	U.S.S.R.	1,457	2 4-in.	10 21-in.	—	—	22½	1
	"Artful"	U.K.	1,120	1 4-in.	8 21-in.	—	—	18	1
	"Artemis"	France	820	1 3.5-in.	10 21.7-in.	—	—	17	1

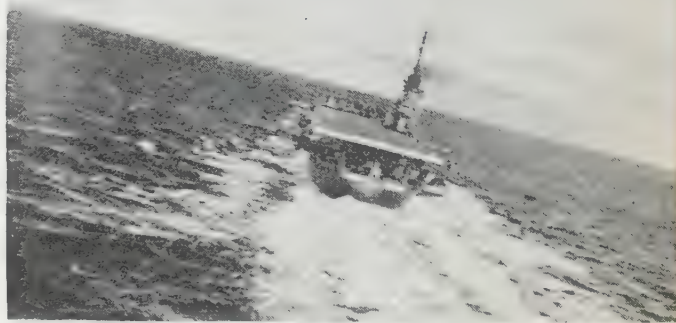
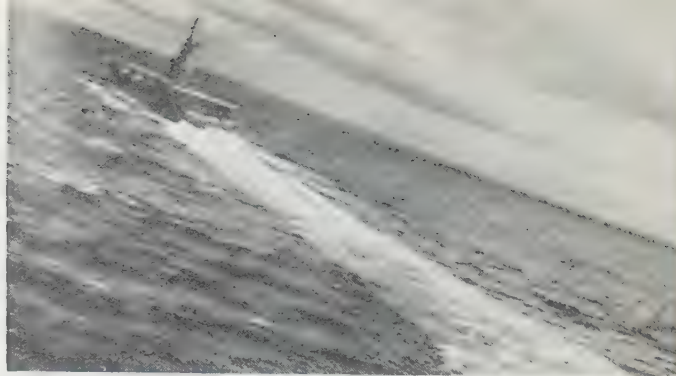
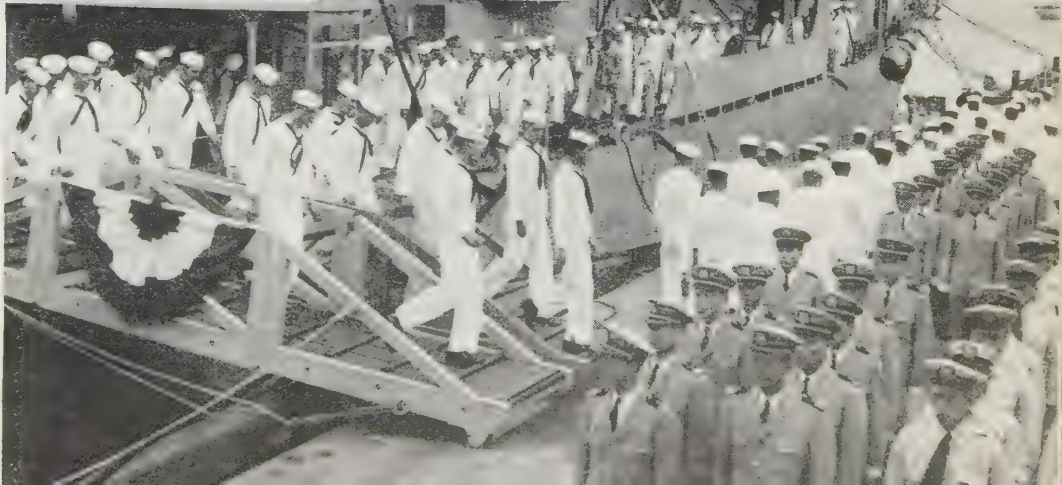


Above: DOCKSIDE VIEW of the U.S.S. "Forrestal," 550-ton aircraft carrier which was given its sea trials in 1955

Below: BRITISH SAILORS bicycling through Palace Square, Leningrad, during a 1955 visit of the British fleet to the Soviet city



Left: U.S. CREW leaving one of two destroyer escorts given to Japan in 1955 under the terms of the Mutual Defense Assistance Program. Japanese crews on the ship are waiting to board ship during the ceremonies at Boston, Mass., naval shipyard



Above: PILOT'S VIEW of a landing on a moving aircraft carrier; top, banking for the approach; centre, levelling off; bottom, hitting the flight deck. In the background of the bottom picture may be seen the barrier which stops the planes. The photographs were made during manoeuvres of the U.S.S. "Essex" off the coast of Formosa in 1955

stroyer leaders, and two large destroyers, four frigates and three corvettes were being built or completed. Two large submarines were acquired from the United States.

Netherlands.—Three large destroyers were completed and eight more were under construction. Seven escort vessels, six ocean minesweepers and five patrol vessels were acquired from the United States, and four submarines were under construction.

Sweden.—Two large destroyers were completed, and four destroyers, six submarines, a large minelayer, 20 motor torpedo boats and six coastal minesweepers were being built.

Canada.—The light fleet aircraft carrier "Bonaventure" was under construction in Great Britain, and 14 destroyer escorts, a loop layer, six coastal minesweepers and eight seaward defense patrol craft were being built. Twelve frigates were converted for antisubmarine duties.

Australia.—At the end of the year the light fleet aircraft carrier "Melbourne" (renamed Oct. 28; she was formerly named "Majestic") was completed in Great Britain, and three "Darling" class destroyers, four fast antisubmarine frigates, four coastal minesweepers, four seaward defense boats and four boom defense vessels were being built in Australia.

See Raymond V. B. Blackman, *Jane's Fighting Ships, 1955-56* (London, 1955).

Navy, U.S. Department of: see GOVERNMENT DEPARTMENTS AND BUREAUS, U.S.

Nebraska. Known as the "Cornhusker state," Nebraska is situated in the west north central portion of the U.S. Area: 77,227 sq.mi., including an estimated 564 sq.mi. of water. Population: (1950 census) 1,325,510; (July 1, 1955, est.) 1,369,000. In 1950 the urban population constituted 46.9% of the total. Capital city: Lincoln, pop. (1950) 98,884; largest city: Omaha, pop. 251,117.

History.—The 1955 session of the Nebraska legislature met from Jan. 4 to June 17, the longest session in the history of the legislature. A total of 354 bills were enacted into law, some of the more important of which were as follows: (1) property tax assessment date changed from March 10 to March 1; (2) property henceforth to be valued at its "basic value" rather than its "actual value"; (3) business inventories would henceforth be assessed on an "average annual inventory" basis (the above bills were passed to implement constitutional amendments adopted in 1954); (4) the tax commissioner was directed to formulate rules and regulations pertaining to the valuation and assessment of property; (5) the state turnpike authority was abolished; (6) a new formula for the distribution of the gasoline tax to the counties was formulated; (7) the state highway laws were codified; (8) aid to the totally and permanently disabled was added to the state public assistance program; (9) certification requirements for rural elementary teachers were raised; (10) use of radar in traffic enforcement was authorized and legalized; (11) penalties were increased for various traffic offenses; (12) truck and trailer licence fees were increased, as were those for passenger cars; (13) an Egg Improvement law was enacted and a new division of wheat development, utilization and marketing was established; (14) a 2% severance tax was levied on all oil and gas produced in the state.

Five constitutional amendments were proposed: (1) to change the allocation of fines and penalties collected for violation of overloading laws; (2) to authorize the legislature to provide for the appointment of a tax commissioner or tax commission; (3) to authorize the legislature to absolve real properties of tax and assessment charges in certain cases; (4) to remove the constitutional prohibition against changing executive salaries more than once in eight years; and (5) to allow for a different

method of taxing grain.

Elective state officials for 1955 were: governor, Victor Anderson (Rep.); lieutenant governor, Charles J. Warner (Rep., deceased, 1955); treasurer, Ralph Hill (Rep.); secretary of state, Frank Marsh (Rep.); auditor, Ray C. Johnson (Rep.); attorney general, Clarence S. Beck (Rep.).

Education.—Of the 5,536 school districts authorized to provide or elementary education during 1953-54, 3,871 were in operation providing instruction for 54,336 pupils under the direction of 4,382 teachers. Elementary instruction was also provided in 447 high school districts, 134,686 pupils under the direction of 4,247 teachers. There were 24 high schools in operation with enrolment of 60,989 under the direction of 3,341 teachers. Total expenditures for public elementary and secondary schools in 1953-54 were \$66,414,711. The state university is located in Lincoln; there are three other universities, a municipal university in Omaha, Creighton (Catholic) in Omaha and Nebraska Wesleyan (Methodist) in Lincoln. There are 13 four-year colleges and four junior colleges. There are 255 private, parochial and denominational schools in the state. The state holds 1,628,196 ac. of land, valued at \$36,003,479 in 1953, as a permanent endowment for its public schools. The permanent public school endowment fund was \$30,313,976. The commissioner of education in 1955 was Freeman Decker.

Social Insurance and Assistance, Public Welfare and Related Programs. For the biennium 1955-57 the legislature appropriated \$33,912,950 for public assistance, \$20,320,200 of which would come from federal funds. During the first six months of 1955 there was an average case load of 727 persons per month receiving aid to the blind with average payments of \$65.56; 17,938 persons per month receiving old-age assistance with average payments of \$56.23; and 2,568 families receiving aid for dependent children with average payments of \$97.88 per family. The 1955 session of the legislature provided for aid to the totally and permanently disabled, raised maximum blind assistance payments from \$70 to \$100 and added \$3 (for sundries and food) to the public-assistance allowance.

The state maintained 17 charitable, mental, reformatory and penal institutions under the supervision of the state board of control. On July 1, 1955, the total population of these institutions numbered 8,799. The state had 135 hospitals with 13,817 beds.

Communications.—The total road mileage of the state in 1955 was 94,387, of which the state maintained 9,870 mi. There were 5,783 mi. of steam railway. The 1955 legislature appropriated \$81,531,500 for highway purposes for the 1955-57 biennium, approximately \$35,240,000 of which was to come from federal funds.

There were 254 airports in the state, 6 of which were state owned and 66 municipally owned. There were 22 daily newspapers and 447 other newspapers and periodicals of all kinds published in the state. The state had 27 radio stations and 5 television transmitters.

Banking and Finance.—The state budget for the 1955-57 biennium was \$224,831,312, the largest in its history. For the fiscal year ending July 30, 1955, the state's revenues were \$118,167,350, expenditures were \$91,192,660. Federal grants furnished approximately \$22,000,000. The long-term debt of the state was nil.

On June 30, 1955, there were 291 state banks in the state with total resources of \$451,091,638 and 123 national banks with total resources of \$1,129,984,000. There were 50 co-operative credit associations with assets of \$7,737,899.

Agriculture.—A total of 96.8% of the land area is in farms. In 1954 there were approximately 100,846 farms in the state with a total area of 47,466,828 ac. The average size of farms was 470.9 ac., and 38.6% of the farms were operated by tenants.

Manufacturing.—There were (1955) 1,281 manufacturing establishments.

Table I.—Principal Crops of Nebraska

Crop	Indicated 1955	1954	Average 1944-54
Corn, bu.	104,160,000	196,000,000	228,658,000
Wheat, bu.	79,090,000	61,623,000	77,578,000
Oats, bu.	59,976,000	68,266,000	57,982,000
Barley, bu.	4,400,000	4,500,000	7,560,000
Rye, bu.	1,782,000	1,550,000	2,458,000
Potatoes, bu.	4,400,000	4,620,000	8,969,000
Sugar beets, tons	688,000	786,000	699,000
Hay, tons	5,582,000	6,290,000	5,102,000
Sorghum grain, bu.	7,148,000	13,416,000	2,346,000
Beans, dry (100-lb. bags)	1,270,000	1,309,000	1,038,000
Soybeans, bu.	2,450,000	4,180,000	927,000

Source: U.S. Department of Agriculture.

Table II.—Principal Industries of Nebraska

	All employees, 1953	Salaries and wages, 1953 (in \$'000)	Value added by manufacture, 1953 (in \$'000)	Value added by manufacture, 1954 (in \$'000)
Food and kindred products	25,892	\$93,864	\$203,237	\$188,400
Furniture and fixtures	*	*	*	4,000
Electrical machinery	2,140	7,851	17,227	15,000
Transportation equipment	1,002	3,664	6,440	5,000
Miscellaneous manufactures	7,284	25,732	35,012	30,000
Administrative and auxiliary	164	900	—	—

*Withheld because the estimate did not meet publication standards, either on the basis of the associated standard error of estimate or on the basis of a consistency review.
Source: U.S. Department of Commerce, *Annual Survey of Manufactures, 1953*.

nts (exclusive of printing and newspaper establishments, bottling com-
ies and bakeries with less than 5 employees) with 55,532 produc-
workers. About 48% of all manufacturing employees in the state
e engaged in the processing of foods. (J. W. Rs.)

Mineral Production.—Table III shows the tonnage and value of those
eral commodities produced in Nebraska in 1952 and 1953 (pre-

Table III.—Mineral Production of Nebraska

(in short tons, except as noted)

Mineral	1953	1952
	Quantity Value	Quantity Value
Coal (000 cu.ft.)	176,000 \$ 187,000	167,000 \$ 168,000
Oil (000 bbl.)	6,748,000 911,000	5,568,000 740,000
Gravel	6,344,000 17,190,000	2,660,000 6,490,000
Sand and gravel	5,970,000 4,340,000	5,437,000 3,874,000
Crude oil	1,407,000 2,070,000	1,245,000 1,946,000
Other minerals	... 8,583,000	... 7,379,000
Total	\$33,281,000	\$20,597,000

ary) whose value exceeded \$100,000. Nebraska ranked 37th among
states in the value of its mineral output in 1953, with 0.23% of
U.S. total.

ecrology: see OBITUARIES.

Negroes, American

During 1955 the issue of racial seg-
regation continued to occupy an
important place among events affecting Negroes in the United
States. On May 31 the U.S. supreme court rendered its imple-
mentation decree in which it reaffirmed the unconstitutionality
of laws requiring racial segregation in public education, ordered
the states affected to make a prompt and reasonable start toward
desegregation of public schools and gave district courts the re-
sponsibility of ensuring compliance with its decree. This court
decision resulted in the breaking down of racial separation of
children in at least 362 school districts or local communities for-
merly maintaining segregated classrooms.

While some desegregation occurred in four southern states,
Alabama, Kentucky, Tennessee and Texas, more progress took
place in the border area, particularly in Missouri, West Virginia,
Oklahoma and the District of Columbia. About 85% of Mis-
souri's Negro children were enrolled in nonsegregated classes
in school reopened in the fall, and 44 of West Virginia's 55
counties had ended or were in the process of ending segregation.
About 80% of the District of Columbia's public schools were
reported as functioning on a nonsegregated basis. Enrolment fig-
ures indicated that a total of 134,000 Negro children were af-
fected by the change from segregated to nonsegregated schools.
Resistance to desegregation was most intense in Alabama,
Georgia, Louisiana, Mississippi, North Carolina, South Carolina
and Virginia. Prince Edward county, Va., and Clarendon county,
S.C., both involved in litigation before the supreme court, con-
tinued to operate segregated schools. School officials in the two
counties contended they were not prepared for immediate desegre-
gation, and in both instances local district courts permitted
more time for planning.

At the college level, a total of 129 formerly "white" public
and private institutions of higher learning in the 17 southern
border states admitted Negro students or expressed willing-
ness to do so in official policy statements. At least 23 "Negro"
institutions also lowered the colour bar, making it possible for
Negroes to enrol. Only five southern states, Alabama, Florida,
Georgia, Mississippi and South Carolina, continued to exclude
Negro students from all educational work at their state-sup-
ported "white" institutions.

Employment and Income.—Major gains in the economic
sphere were included Pres. Dwight D. Eisenhower's executive order
prohibiting discrimination "against any employee or applicant
for employment in the federal government because of race, color,
religion or national origin," and the passage of fully enforceable
fair employment practice laws in Minnesota and Michigan.
The president's order banning bias in federal employment estab-

lished a committee on government employment policy without
enforcement power, but incorporated some improvements over
the nondiscrimination order it superseded. Minnesota and Mich-
igan became the ninth and tenth states in the nation to enact
comprehensive, enforceable fair employment practice laws pro-
hibiting discrimination on the part of public and private employ-
ers, labour unions and employment agencies.

The Armed Forces.—An official report issued by the defense
department late in 1954 announced: "The Negro citizen in the
Armed Forces is now utilized on the basis of individual merit
and proficiency in meeting the needs of the Services." The re-
lease also noted that integration had proceeded more rapidly
than was thought possible, with "no untoward incidents." A later
bulletin from the defense department reported that the number
of Negro officers and enlisted men in the armed forces had
doubled since 1949, the greatest increase occurring in the army,
which already had the largest proportion. The navy and the
marine corps had no Negro officers in 1949, but in 1955 did
have some.

Recreation and Sports.—Breaking precedent with earlier de-
cisions concerning public recreation facilities, the 4th circuit
court of appeals in Richmond, Va., declared segregation in
public parks per se unconstitutional. Considering cases involving
the use of beaches and bathhouses operated by the state of
Maryland and the city of Baltimore, the court held it "obvious"
that "racial segregation in recreational activities can no longer
be sustained. . . ." In the area of professional sports, a Texas
judge ruled in January that the state law prohibiting interracial
boxing was unconstitutional.

Mal Whitfield, Olympic track champion, became the first
Negro to win the James E. Sullivan memorial trophy, the high-
est U.S. amateur sports award.

The Arts and Literature.—In Jan. 1955 audiences and crit-
ics hailed Marian Anderson's debut with the Metropolitan Opera
company, reacting enthusiastically to her portrayal of the sorcer-
ess Ulrica in *The Masked Ball*. Miss Anderson was the first
Negro engaged to sing a major role by the Metropolitan Opera
company. Soprano Camilla Williams, who sang with the New
York City Opera company for several seasons, was engaged by
the Sadlers Wells Opera company in 1955. Miss Williams was
the first foreign-born artist to sing with that company.

Ralph Ellison, young writer of fiction (*Invisible Man*, 1952),
received the Prix de Rome in 1955 and began a year of residence
at the American academy in Rome. Langston Hughes published
Famous Negro Music Makers and *The Sweet Flypaper of Life*,
with photographs by Roy De Carva. James Baldwin followed up
his warmly praised novel *Go Tell It on the Mountain* (1953)
with the autobiographical *Notes on a Native Son*. Arna Bon-
temp's was represented by *Lonesome Boy* and Shirley Graham
by the juvenile biography *Booker T. Washington*. (See also
EDUCATION; ROMAN CATHOLIC CHURCH.)

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Nehru, Jawaharlal (1889—), Indian statesman, was
born at Allahabad, United Provinces,
Nov. 14. For his early career see *Encyclopædia Britannica*.
Arrested in 1942, following Congress' call for civil disobedi-
ence, he was released in 1945, and in 1946 took a leading part
in the negotiations with the British on Indian independence. In
September of that year he became prime minister of an all-
Indian interim government. On Aug. 15, 1947, he was appointed

prime minister and minister for external affairs of the independent dominion of India, posts in which he continued when his country became a republic on Jan. 26, 1950, and in which he was confirmed by the 1951-52 general elections.

On Dec. 28-29, 1954, at Bogor, Indon., Nehru conferred with the prime ministers of Indonesia, Burma, Pakistan and Ceylon in preparation for the larger Asian-African conference in April 1955 at Bandung, Indon., at which he led his country's delegation.

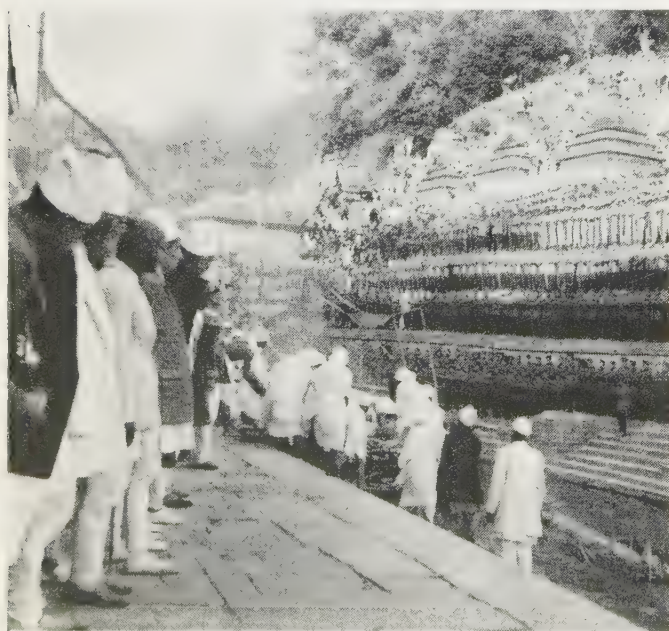
In June and July 1955 Nehru made official visits to Prague, the U.S.S.R., Warsaw, Vienna, Yugoslavia, Rome, London and Cairo. On June 22 Nehru and the Soviet prime minister, Marshal N. Bulganin, signed in the Kremlin a statement based on the former's *panch sila* (five principles of coexistence). In New Delhi on July 16 Pres. Rajendra Prasad conferred upon Nehru the Bharat Ratna (Jewel of India), his country's highest order, for his "heroic endeavours in the cause of peace."

In November and early December Nehru received Bulganin and N. S. Khrushchev, first secretary of the Communist Party of the Soviet Union, during their tour of India and Burma. Throughout the year the Indian prime minister's foreign affairs statements continued to express a policy of noninvolvement with either Communist or western blocs and of condemnation of colonialism, racial discrimination and military alliances.

In New Delhi on May 14-18 he met Mohammed Ali, the then prime minister of Pakistan, to discuss Kashmir. These discussions, though cordial, produced no solution of the problem. (See also INDIA.)

Nepal. Nepal is a Himalayan kingdom lying between India and Tibet. Area: 54,510 sq.mi. Pop. (1954 census) 8,431,537. Aboriginal stock is Mongolian, with Hindu admixture. Language: Gorkhalis (Gurkhas) speak Parbatia, of Sanskrit origin; Bothias use Tibetan; Newars, from southern India, speak Gubhajius, resembling Tibetan but with many Sanskrit words. Religion: Buddhism overlaid with Hinduism. Chief towns (pop., 1941 est.): Kathmandu 108,805; Patan 104,928; Bhatgaon 93,176. Kings in 1955: Tribhuvan Bir Bikram and (from March 14) Mahendra Bir Bikram. Prime minister, M. P. Koirala (until March 2, when the king assumed direct rule).

History.—King Tribhuvan died on March 13, 1955, in Zürich.



MOURNERS lining the banks of the holy Baghmati river, Nepal, March 17, 1955, during the funeral of King Tribhuvan. Workmen in white are preparing the cremation site

Prince Mahendra succeeded his father. On March 2 he accepted the resignation of the four-party Koiralacabinet, formed Jan. 31, 1954, and introduced direct rule "for the time being." On Nov. 6 King Mahendra arrived in New Delhi, Ind., on an official visit. The first all-weather airport, constructed by India army engineers, was inaugurated on June 13 at Gauchar. Two projects intended to bring more than 30,000 ac. of land under irrigation were under way; they would cost I.Rs. 350,000 and were undertaken by India as part fulfillment of its obligation to Nepal under the Colombo plan. A £10,000,000 five-year development plan was announced on Oct. 10: 900 mi. of roads, residential university at Kathmandu, a cement factory, a pulp factory and sugar mills were to be built.

Education.—Schools (1952): primary and basic 455, Sanskrit 27, middle and high (English) 190; 2 intermediate colleges and Kathmandu college.

Finance and Banking.—Monetary unit: Indian rupee and Nepalese rupee (called *mohur*) with an official exchange rate of N.Rs. 150 = I.Rs. 100 (for non-essential imports N.Rs. 175 = I.Rs. 100), and N.Rs. 7.14 to U.S. \$1. Budget (1952-53 actual): revenue N.Rs. 40,104,100, expenditure N.Rs. 52,929,000.

Foreign Trade.—With India (April-Dec. 1952): imports Rs. 32,200,000, exports Rs. 58,600,000; with the U.K., imports £2,298, exports £6. Principal exports: grain, jute, timber, oilseeds, clarified butter, potatoes, medicinal herbs, cattle, hides and skins.

Transport and Communications.—Roads (1953): 379 km. suitable for motor vehicles. Railways (1954) 102 km. Licensed motor vehicles (Dec. 1950): cars 220; commercial vehicles 80.

Nervous System: see PSYCHOSOMATIC MEDICINE.

Netherlands. A kingdom of northwest Europe, the Netherlands is bounded north and west by the North Sea, east by Germany and south by Belgium. Area: 12,524 sq.mi. in 1954. Pop.: (1947 census) 9,625,499; (1955 est.) 10,735,000. Language: Dutch. Religion (1947): Roman Catholic 38.50%; Dutch Reformed 31.03%; Reformed Churches 7.93%; non-church members 17.04%. Chief towns (pop., 1954 est.): Amsterdam (cap.) 858,702; Rotterdam 704,646; The Hague 590,755; Utrecht 241,723; Haarlem 165,142; Eindhoven 149,460; Groningen 140,456; Tilburg 126,939; Nijmegen 116,989; Enschede 113,513; Arnhem 114,002. Ruler, Queen Juliana; prime minister in 1955, Willem Drees.

History.—Prosperity was the prevailing note of the economic and social life of the Netherlands in 1955. The boom showed no symptoms of slowing down. The general index of industrial production continued its upward movement in the course of the year, as did the trend of labour productivity; there was a new low record of only 30,400 unemployed at the end of June (about 1% of the working population). The volume and value of exports reached a new peak since the liberation; as the price index numbers of imports and exports changed only a little the balance of trade remained nearly the same with a slight tendency to deterioration. Imports, however, increased at the end of 1954 and in the first half of 1955 so much that the trade balance became more adverse; from January till July 81% of imports were offset by exports (1953: 91%). This rise in imports was caused by a replenishment of stocks and an increase in home consumption. Consequently the balance of payments showed only a small surplus on current account in the same period.

As the currency circulation rose from 3,397,000,000 florins to 3,802,000,000 florins between May 1954 and May 1955, and the gold and dollar reserve slightly decreased in the same period (from \$1,298,000,000 to \$1,270,000,000), the government announced that a close watch would be kept on the development of the balance of payments and the internal economic situation. In September the Bank of the Netherlands told private banks to limit excessive loans and to divert short-term credits to long-term investments. These measures were intended to check anticipated inflationary development. The prevailing opinion in parliament favoured this policy but nearly all parties asked for

limitation of governmental spending on the same ground. Although the 1956 budget presented in September was balanced, notwithstanding a reduction of taxes by 500,000,000 florins, the general feeling was that its level was too high.

The vigilance of the cabinet was also roused by symptoms of price rigidity caused by cartels and other employers' agreements to control the market. The government disbanded several of these agreements in order to set competition going again and to offset inflation.

It was true, however, that the price movement was not alarming up till the end of the year; the cost of living had been very stable since mid-1954, though the index of hourly wages for industrial workers went up from 133 to 146 by mid-1955. Consequently the rate of consumption increased, as did the rate of saving. In view of the stability of prices real wages went up in 1955 but the workers asked for a bigger share of the general prosperity. Under the system of central control of wages, still in being in the Netherlands, the government had to allow a rise of wages; but the cabinet permitted only an extension of holidays and holiday compensation and of other secondary conditions of employment. This thwarted urge for higher wages caused some social unrest, though there were few strikes in 1955 and those short in duration.

A blemish in the picture of prosperity was the housing problem, still not solved ten years after the liberation. The number of homes built had gone up every year but it was expected that in big cities the housing shortage would last till 1964. Connected with the housing problem was the necessity to raise the rents of all homes. In the early summer of 1955 the government proposed a rise of two categories of higher rents by 5% and 10%. Parliament rejected the bill and there was a cabinet crisis. A compromise was reached on the basis of a general rise of rents of 5% and of compensations in the form of lower taxes; the cabinet withdrew its resignation.

The new statute of the kingdom guaranteeing full self-government to Surinam and the Netherlands Antilles moved Queen Juliana and Prince Consort Bernhard to visit these territories—the first visit of a reigning sovereign to these parts of the kingdom.

RACING BALLOONS preparing to ascend at the 6th Andries Blitz cup race held at 's Hertogenbosch, Neth., in May 1955. Seven of the nine balloons have now got off the ground, the winner floating a distance of 80 mi. (measured as a straight line from the point of ascent) in five hours

dom. New Guinea was again the subject of discussion in the UN general assembly of 1955, which was strongly opposed by the minister without portfolio at the foreign ministry, J. M. A. H. Luns.

Relations with Indonesia deteriorated when the trials of Dutch inhabitants accused of subversive activities were held to have been carried out in disregard of the elementary principles of a good administration of justice. In the spring the government made an appeal to world opinion with the publication of a White Paper.

Netherlands foreign policy invariably remained focused on the promotion of European co-operation. The meeting of foreign ministers of the European Coal and Steel community at Messina, It., in June discussed a Benelux proposal for the creation of a European market. In September the ministers discussed at Noordwijk a report of work of a working party instituted at Messina. The Netherlands was much interested in freer trade in Europe; it was also hoping for a European agreement on the use of atomic energy. (See also EUROPEAN UNITY; INDONESIA; NETHERLANDS ANTILLES; NETHERLANDS NEW GUINEA; SURINAM.) (M. RY.)

Education.—Schools (1953): primary 7,328, pupils 1,323,437, teachers 37,570; advanced primary 954, pupils 139,437, teachers 5,181; secondary 365, pupils 86,883, teachers 6,675; vocational 1,018, pupils 280,480, teachers 12,000. Teachers' training colleges (primary) 89, students 9,582. Institutions of higher education 10, including 6 universities; students 28,206.

Finance and Banking.—Monetary unit: guilder or florin, with an exchange rate of 3.79 guildens to U.S. \$1. Budget (1955 est.): revenue 6,600,000,000 guildens; expenditure 7,700,000,000 guildens. Internal debt (June 1954) 21,900,000,000 guildens; external debt 2,500,000,000 guildens. Currency circulation: (Dec. 1954) 3,682,000,000 guildens; (Aug. 1955) 3,466,000,000 guildens. Bank deposits: (Dec. 1954) 5,436,000,000 guildens; (Aug. 1955) 5,376,000,000 guildens. Gold and foreign exchange reserves of the Central bank (March 1955) U.S. \$1,268,000,000.

Foreign Trade.—(1954) Imports 10,853,000,000 guildens; exports 9,164,000,000 guildens. Main sources of imports: Belgium-Luxembourg 17%; Germany 15%; other continental European Payments union countries 13%; U.S. and Canada 12%; U.K. 9%; other sterling area 9%; Latin America 5%. Main destinations of exports: Germany 16%; Belgium-Luxembourg 14%; other continental E.P.U. 20%; U.K. 12%; other sterling area 9%; U.S. and Canada 7%; Latin America 5%.

Transport and Communications.—Roads (1953): 12,500 km. Motor vehicles in use (1954): cars 194,000, commercial vehicles 95,800. Railways (1954): 3,210 km., of which 1,283 km. electrified; passenger-kilometres (1953) 6,621,000,000; freight, ton-kilometres (1954) 3,362,000,000. Navigable inland waterways (Jan. 1954): 6,917.7 km., including 2,634.8 km. for ships of more than 400 tons. Shipping: merchant vessels of 100 gross tons and more (July 1954) 1,686; total tonnage 3,443,451. Cargo in Netherlands ports (metric tons, 1954): loaded 19,505,000; unloaded 41,277,000. Air transport (1954): passenger-kilo-



metres 1,362,119,000; freight, ton-kilometres 53,183,000. Telephones (Jan. 1954): 919,572. Licensed radio receivers (1953): 2,333,000.

Agriculture.—Main crops (metric tons, 1954): wheat 397,000; rye 515,000; barley 208,000; oats 464,000; potatoes 3,999,000; beet sugar, raw 420,000; rapeseed 17,000; linseed 24,000; dry peas 93,000; broad beans 4,000; flax fibre 22,000. Livestock (Sept. 1954): cattle 3,026,000; pigs 1,975,000; horses used in agriculture 241,000; sheep 408,000; poultry 31,900,000. Meat production (metric tons, 1954): beef and veal 181,000; pork 231,000; mutton and lamb 7,000. Dairy production (metric tons, 1954): milk delivered 4,933,000; butter 81,600; cheese 147,000. Fisheries (1953): total catch 343,300 metric tons; fish exports 144,701.

Industry.—Index of industrial production (Feb. 1955: 1948=100): general 149, coal mining 102, manufacturing 151, fuel and power 173. Employment index (Dec. 1953; 1948=100): 111. Registered unemployed (Jan. 1955): 82,200. Wages index: (Feb. 1955; 1948=100) 143; (Jan. 1954) 134. Fuel and power (metric tons, 1954): coal 12,070,000; lignite 171,700; crude oil 939,100; manufactured gas 1,852,000,000 cu.m.; electricity 10,590,000,000 kw.hr. Raw materials (metric tons, 1954): pig iron 610,500; crude steel 927,600; zinc, smelter 26,000; tin, smelter 28,900; salt (1953) 457,000. Manufactured goods (metric tons, 1954): cement 962,000; cotton yarn 68,600; wool yarn 27,600; rayon filament yarn 29,500; rayon staple fibre 11,800. New dwellings completed (1954): 68,487. Merchant shipping launched (1953): 341,313 tons.

Netherlands Antilles.

The Netherlands Antilles are six small and scattered islands in two groups of three; almost 600 mi. separate the two groups. Three islands lie between the Virgin Islands and Antigua, and three to the southwest across the Caribbean, near the Venezuelan coast. Their total area is 366 sq.mi., and their total population (1955 est.) is 181,000. The largest island is Curaçao (173 sq.mi.), with a population of (1953 est.) 114,683. Its largest city, Willemstad (pop. 44,062) is the capital of the Netherlands Antilles. Aruba (69 sq.mi.) has a population of 54,625, Bonaire (95 sq.mi.), one of 5,153, while the small islands in the Windwards have few inhabitants, St. Eustatius (7 sq.mi.) 1,015, St. Martin (only the southern 17 sq.mi., as the rest belongs to France) 1,571 and Saba (5 sq.mi.) 1,458. The governor in 1955 was A. A. M. Struijcken, and the premier was Ephraim Jonckheer.

History.—As a result of the election of Nov. 15, 1954, the opposition party came into power. Its program had to be adjusted to the limited income which the economic structure of these small islands permits. The petroleum industry continued to be the principal employer of the islands, with no appreciable decline during 1955 in the output of the two great refineries, that of the Royal Dutch Shell on Curaçao and that of the Creole on Aruba. Slight labour controversies in the industry were settled satisfactorily.

The year's chief occurrence was the royal visit, Oct. 18–27, when Queen Juliana visited the Netherlands Antilles, the first monarch to do so. Under the new constitution (1954), the crown is the essential link between the three states, the Netherlands, the Netherlands Antilles and Surinam, which now constitute the Dutch State. The Netherlands Antilles maintains at The Hague an official who is at one and the same time ambassador from the Netherlands Antilles, in all dealings with governmental agencies, and a member of the Dutch cabinet whenever matters relating to defense, foreign policy or anything else affecting the islands are under discussion. He has a colleague from Surinam with similar attributes and duties.

Systematic efforts to increase and diversify the industry and agriculture in the islands were continued during 1955. Trade between the islands was improved through more frequent and direct shipping and air schedules, in order to bring the markets in the larger islands more readily within reach of the three in the east. (C. E. Mc.)

Education.—On Jan. 1, 1954, there were 52 elementary schools with 16,680 pupils, 42 higher elementary schools with 15,572 pupils, 3 secondary schools with 539 students and 3 technical schools with 595 students.

Finance.—The monetary unit is the Netherlands Antilles guilder or florin, valued at 53.0264 cents U.S. currency during 1955. The central budget for the fiscal year ending March 31, 1956, estimated revenue at 36,000,000 guilders and expenditure at 35,826,000 guilders. The public debt at the end of 1955 was 6,071,000 guilders; notes in circulation (Dec. 31, 1954) 38,740,875 guilders.

Trade and Communications.—Exports in 1954 totalled 1,455,343,000 guildens; imports were 1,542,678,000 guildens. Almost all the exports consisted of petroleum products and about 85% of the imports consisted of crude petroleum, principally from Venezuela. The U.S. supplied about two-thirds of the nonpetroleum imports.

The highway mileages of the islands of the Netherlands Antilles in 1952 were as follows: Curaçao 220; Aruba 165; Bonaire 32.5; St. Martin 17; Saba 4.5; and St. Eustatius 2.5. On Jan. 1, 1955, 9,337 motor vehicles were in use on Curaçao and (Dec. 31, 1953) 4,907 on Aruba. Telephones on Curaçao and Aruba totalled 4,678 on Dec. 31, 1953. In 1953, 14,407 vessels entered the ports of Curaçao and Aruba.

Manufactures.—Exports of refined petroleum products produced by the three refineries—two on Curaçao and one on Aruba—totalled 41,458,600 metric tons in 1953, including 26,700,854 tons of fuel oil, 3,711,544 tons of diesel oil and 2,241,369 tons of kerosene. (J. W. Miv.)

Netherlands New Guinea.

The western part of the island of New Guinea in the western Pacific, with adjacent smaller islands, forms part of the territory of the kingdom of the Netherlands. Area: about 160,618 sq.mi. Pop. (1954 est.): 700,000 (of whom about 400,000 are in districts under regular Dutch administration), mainly Papuans but including about 8,000 Europeans, about 6,000 Indonesians and about 1,700 other Asians (mainly Chinese). Principal towns: Hollandia (cap.), pop. (1954 est.) 11,322; Sorong 10,000; Biak 3,670 and Merauke 3,350. Governor in 1955 J. Baal.

History.—In 1955, the second year of the three-year development plan, with insufficient labour and the housing problem still being the main stumbling blocks, economic development remained principally confined to agrarian research and related activities. The fight against malaria and framboesia (yaws) was continued on a large scale. In April the budget for 1955, balanced at Fl. 111,263,425, was submitted to the Dutch parliament for approval.

Under the three-year development plan the draining of an area of about 48 sq.mi. near Merauke, with an expected rice production of 6,000 tons (the annual need amounted to 6,800 tons), was started. The aerial survey of the whole territory and the construction of a series of airfields along the north coast were to be completed in 1956.

In a number of towns and regions government advisory councils, including Papuan members, were set up.

While co-operation with Australia in various fields was extended, relations with the Indonesian government deteriorated on account of "invasions" of small Indonesian military groups in May 1953 and Oct. 1954. In Oct. 1955 Indonesia's new request to put the dispute concerning the status of Netherlands New Guinea on the agenda of the UN general assembly got the required two-thirds majority vote. (G. W. O.)

Education.—Schools (1954): primary 557, pupils 28,949, teachers 879; post-primary (including 1 Roman Catholic secondary) 4, pupils 280, teachers 14; vocational 4, pupils 204, teachers 10 (excluding specialized training courses); primary teachers' training courses, students 220.

Production.—Oil (annual output) 554,265 metric tons; (export value 1955) 26,444,000 guildens.

Netherlands Overseas Territories: see NETHERLANDS ANTILLES; NETHERLANDS NEW GUINEA; SURINAM.

Nevada.

A state of the mountain group of western states. Nevada was the 36th state to be admitted to the union, on Oct. 31, 1864; it is popularly called the "Sagebrush state" or the "Silver state." Land area 109,789 sq.mi.; water area 751 sq.mi. Pop. (July 1, 1955, est.) 216,000. Population statistics according to the 1950 census were rural 68,458; urban 91,625; white 149,907; nonwhite 10,176; total 160,083. The principal cities (with 1950 pop.) are: Carson City, the capital, 3,082; Reno, 32,497; Las Vegas, 24,624; Sparks, 8,203; Elko 5,393; Ely, 3,558.

History.—The 1954 general election resulted in the Republican party's winning the office of lieutenant governor in the state government and retaining the offices that were won in 1950. While Democratic registrations outnumbered Republican reg-

tions in the state approximately two to one, the Republican candidates retained their offices by substantial majorities. Three new members of the board of regents of the University of Nevada were elected, and the people approved four amendments to the constitution of the state of Nevada.

The Nevada legislature considered many important issues in 1955. It enacted a 2% sales tax law, an aid-to-dependent children program, a law providing for the reciprocal enforcement of support of dependents, increased gambling control laws, extensive revision of laws pertaining to school organization and administration, an interstate highway user fee apportionment law, and the California-Nevada interstate compact on water.

Late summer brought drought conditions in a number of areas of the state, and federal aid was necessary in order that feed might be provided for starving livestock in the stricken areas.

On July 1, 1955, elected officers were: governor, Charles H. Russell; lieutenant governor, Rex Bell; secretary of state, John Montz; state controller, Peter Merialdo; state treasurer, John W. Franks; surveyor general, Louis D. Ferrari; inspector of mines, Mervin J. Gallagher; superintendent of state printing, J. A. McCarthy; clerk of the supreme court, Ned A. Turner; superintendent of public instruction, Glenn A. Duncan; attorney general, Harvey Dickerson.

Education.—In June 1955 Nevada had 194 elementary schools with average daily attendance of 29,065; teachers numbered 1,255. High schools totalled 36, with an average daily attendance of 8,303 and a staff of 434 teachers. Kindergarten average daily attendance was 2,621; 17 kindergartens with 56 teachers. Average daily attendance for all schools was 39,989. State-wide expenditures for elementary and secondary education, all schools, were \$22,224,000 (est.) for the year, of which \$65,765 was provided as state aid.

Social Insurance and Assistance, Public Welfare and Related Programs.—For the fiscal year ended June 30, 1955, \$919,093 was expended by the state health and welfare departments. In addition, \$1,816,688 was expended for old-age assistance benefits to 2,712 persons, who received an average monthly amount of \$57.16. On June 30, 1955, the state prison had 334 men and 14 women inmates; total expenditures for the fiscal year were \$327,437. The Nevada school of industry had 38 boys and 6 girls under school control; total expenditures for the fiscal year were \$65,789. The state hospital for mentally ill persons had 439 patients in average daily residence during the fiscal year; expenditures for the fiscal year were \$416,922. The state children's home had 45 boys and 28 girl residents during the fiscal year, and the cost to the state was \$193,069.

Communications.—During the fiscal year ended June 30, 1955, the total expenditure for highways was \$12,597,963. There were approximately 26 mi. of road in the designated state highway system, including secondary roads. Railroad mileage totalled 1,647 in 1954. Motor vehicle registrations on June 30, 1955, totalled 107,817. There were 410 registered aircraft and 68 public airports in 1954.

Banking and Finance.—On July 1, 1955, there were 37 individual banks and institutions in the state, of which 30 were branches, 4 were national banks and 3 were state banks. The resources of Nevada banks totalled \$24,784,000 and deposits were listed as \$283,076,000. The credits of the state for the fiscal year ended June 30, 1955, amounted to \$46,433,239; the debits to \$46,810,179. There was a treasury balance of \$11,250,913. The state had bonds outstanding in the amount of \$1,428,000 for the construction of office and institutional buildings. The par value of bonds and securities held by the state totalled \$2,583,439, and they produced an income of \$338,524. A 2% tax on gambling netted the state \$3,805,003 and a state property tax of 69 cents each \$100 of valuation netted \$3,124,163. The total assessed valuation of the state for 1954 was \$478,253,836.

Agriculture.—The total farm value of the principal crops in 1953 was \$5,858,000; the total acreage harvested was 434,000. In 1953 the cash income from crops sold was \$6,363,000; from livestock sold, \$36,239,000.

Table I.—Principal Crops of Nevada

Crop	Indicated 1955	1954	Average 1944-53
Wheat, bu.	432,000	792,000	741,000
Alfalfa, bu.	476,000	510,000	488,000
Barley, bu.	245,000	324,000	503,000
Hay, tons	458,000	482,000	616,000
Cattle, head	215,000	308,000	341,000
Sheep, head	105,000	120,000	85,000

Source: U.S. Department of Agriculture.

Manufacturing.—Manufacturing in Nevada is limited in scope and production. In 1947 there were 126 industrial establishments in the state, employing approximately 2,667 persons and paying approximately \$8,409,000 in wages for the year. The value added by manufacturing was approximately \$27,777,000. Expenditures for new plants and equipment totalled \$2,959,000 in 1947. During 1955 chemicals and allied products were being manufactured in ever-increasing quantities at the Basic Magnesium project at Henderson, Nev. (J. E. Spr.)

Mineral Production.—Table II shows the tonnage and value of those mineral commodities produced in Nevada in 1952 and 1953 (preliminary) whose value exceeded \$100,000. In 1953 Nevada was first among the

Table II.—Mineral Production of Nevada

(In short tons, except as noted)

Mineral	1952		1953	
	Quantity	Value	Quantity	Value
Barite	68,000	\$ 391,000	100,000	\$ 615,000
Copper	58,000	27,848,000	62,000	35,502,000
Gold (oz.)	117,000	4,102,000	102,000	3,563,000
Gypsum	608,000	1,667,000	702,000	1,975,000
Iron ore	1,021,000	3,992,000	497,000	2,648,000
Lead	7,000	2,186,000	4,000	1,145,000
Mercury (flasks, 76 lb.)	4,000	701,000	3,000	628,000
Sand and gravel	2,098,000	2,380,000	2,266,000	2,089,000
Silver (oz.)	941,000	852,000	697,000	631,000
Stone	831,000	1,159,000	1,036,000	1,400,000
Talc	8,000	180,000	11,000	73,000
Tungsten concentrate (60% WO ₃)	2,000	8,821,000	4,000	13,824,000
Zinc	15,000	5,099,000	6,000	1,337,000
Other minerals	...	4,853,000	...	8,235,000
Total	...	\$64,231,000	...	\$73,665,000

states in the production of tungsten, second in magnesite, manganese and mercury, third in barite and fifth in copper; and stood 28th in the list of states in the value of its mineral output, with 0.51% of the U.S. total.

New Brunswick. Second largest of the four Atlantic provinces of Canada, New Brunswick entered the confederation in 1867. Area: 27,985 sq.mi. Pop.: (1951) 515,697; (June 1, 1954, official est.) 547,000. Capital, Fredericton, pop. (1951) 16,018. Largest city, Saint John (seaport), pop. (1951) 50,779. Other cities, Moncton, 27,334, and Edmundston, 10,753.

History.—Work proceeded on schedule on the \$50,000,000 hydroelectric development of the Saint John river, at Beechwood, with necessary properties expropriated in 1954 and excavations and cofferdam well under way in Oct. 1955. The provincial government under Progressive-Conservative Premier Hugh John Flemming extended its tourist publicity work, and the 1955 tourist influx was the greatest in history. The mining boom continued with new discoveries in Newcastle and other areas. Burnt Hill tungsten mines, first to reach production, started marketing late in 1954. Camp Gagetown, Canada's largest army training area, was occupied by the 1st Canadian division (11,000 men) under canvas in the summer of 1955, and a full-scale, week-long operation was observed by military experts and attachés from 18 other countries. An estimated 3,000 to 4,000 construction workers were engaged in permanent construction work at the camp in Oct. 1955, with a planned increase to 5,000 to 6,000 in spring of 1956.

Education.—Expenditures for education for the year ending March 31, 1955, totalled \$8,348,422. Total enrolment in provincially controlled elementary and secondary schools for the same period was 113,804, with an average daily attendance of 97,682, and 4,327 teachers. Revenues for the year ending March 31, 1955, were \$293,839.

Public Health and Welfare.—In 1954 there were 42 hospitals, containing 5,583 beds. Revenue for the year ending March 31, 1955, was \$4,047,510. Figures available in June 1954 showed that in the preceding year the federal government provided \$1,247,473 per month in family allowances on behalf of 206,815 children; \$1,071,320 in old-age security pensions to 26,690 pensioners; \$2,496,678 in old-age assistance payments to 5,790 recipients; and \$351,634 in pensions to 731 blind. Provincial mothers' allowances totalled \$1,273,836 were paid to 2,096 mothers.

Transportation and Communication.—Figures for 1954 showed 13,187 mi. of roads, of which 3,000 were surfaced; there were 95,000 automobiles. There were four active commercial airports. Telephones in 1954 totalled 91,444. The province's first television station opened in Saint John in March 1954, the second in Moncton in Feb. 1955.

Banking and Finance.—Revenues for the 1954-55 fiscal year totalled \$53,387,213 and expenditures \$53,311,440. The net direct debt less sinking funds was \$108,770,920, the net indirect debt less sinking funds \$10,562,743. In 1954, 161 credit unions lent \$4,128,358 to members.

Agriculture.—In 1952 farmers' total income was \$52,952,000 and in 1953 it dropped to \$46,051,000. Latest revised production figures available were for 1953, when the wheat harvest amounted to 70,000 bu.; oats, 6,840,000 bu.; barley, 338,000 bu.; and hay, 688,000 tons. On June 1, 1954, there were 195,000 head of cattle, 67,000 swine, 66,000 sheep and lambs and 26,000 horses on farms.

Fisheries, Furs and Forestry.—In 1954, 260,900,000 bd.ft. of lumber was cut, valued at \$18,101,400. Latest revised fisheries figures, also for 1954, showed 194,260,600 lb. of fish landed, with a market value of \$6,840,348. For the year ending March 31, 1954, trappers took 78,080 pelts, with a market value of \$200,000 to \$225,000.

Manufacturing.—Latest manufacturing figures available were for 1953, when 25,000 employees in 900 establishments were paid \$60,000,000 to

convert raw materials worth \$162,500,000 into products having a net value of \$295,000,000 and a gross value of \$320,000,000. The value of products of the three leading industries, with number of employees in parentheses, were: pulp and paper, \$100,000,000 (4,500); sawmills, \$19,290,000 (4,478); fish processing, \$17,520,500 (2,769).

Mining.—By early 1954, 37,000 claims had been staked in the Bathurst lead-zinc-copper-silver area, which held an estimated total of 100,000,000 tons of ore. In 1954 uranium was discovered near Harvey. Tungsten was the first of the new discoveries to arrive at marketing stage in the final weeks of 1954, at Burnt Hill. In 1953 coal was the leading mining operation, with total production of 483,720 tons, valued at \$5,818,500.

(J. M. Str.)

New Caledonia: see PACIFIC ISLANDS, FRENCH.

Newfoundland and Labrador. A province of Canada, Newfoundland joined the confederation in 1949. Area: Newfoundland Island, 42,734 sq.mi.; Labrador, about 112,000 sq.mi. Pop.: Newfoundland (1951) 361,416, Labrador (1951) 7,890; in Oct. 1955 the official estimate for both was 416,000. The capital is St. John's, pop. (1951) 52,873; largest towns are (1951 pop.) Bell Island 10,291; West Corner Brook 6,831; Wabana 6,460.

History.—During 1955 the United States military installations in Newfoundland continued to be a potent factor in aiding prosperity. It was estimated by U.S. air base authorities that their total expenditures in the Newfoundland area during 1955 would amount to \$27,337,249. This was broken down into pay-rolls \$15,893,920, purchases \$6,291,608, contract \$1,106,954, personal expenditure \$4,944,764.

Mining operations increased in 1954-55, partly because of the completion of a 9,000-ft. trans-island conveyor belt and heavy-media separation plant at Wabana, Bell Island, the oldest iron-ore mine in Newfoundland. The government called a special session of the legislature in October to get authority to back a bond issue for the Canadian Javelin company to the amount of \$16,500,000. This was to pay for the cost of the spur railroad, running from the iron-ore company's common carrier between Knob lake and Sept Îles. The spur line to connect with Javelin's new iron mine at Lake Wabush would be 45 mi. long. The estimated amount of ore in the region totalled more than 1,000,000,000 tons. An arrangement was announced by Premier J. R. Smallwood for a gypsum mill, which would be controlled by a British company known as Bellrock Gypsum Industries Ltd.

The Liberal government had been in power since 1949 under Premier J. R. Smallwood, who was also minister of economic development. The lieutenant governor was Sir Leonard C. Outerbridge; chief justice, Sir Albert Walsh.

Education.—In 1954 there were 93,000 students and about 2,700 classrooms with 2,650 teachers. A new \$10,000,000 university was contemplated, the site having been chosen and plans prepared. The education department had \$7,900,000 operating expenses in 1954.

Public Health and Welfare.—In 1954 there were slightly more than 1,600 general hospital beds in Newfoundland, 54 in nursing stations and 431 in cottage hospitals. There were slightly more than 700 beds at the mental hospital. Payments for family allowances totalled in 1955 more than \$1,000,000 per month, 173,395 children having received \$1,039,521 in November. There were 886 children added to the list that month. During 1955 a total of 15,693 old-age pensioners received \$7,082,969. Mothers' and dependents' allowances for fiscal year 1954-55 amounted to \$2,300,000; child welfare, \$250,000; blind persons' allowances, \$158,000; old-age assistance, \$1,825,000; disabled persons, \$336,000; home for aged and infirm, \$151,500; orphanage grants, \$60,000.

Transportation and Communication.—The main transportation service is Canadian National railways, spanning the island with a 547-mi. narrow-gauge line. In 1954 the total tonnage of freight carried was 123,698 tons. In 1954 there were 6,288 mi. of roads, all classes. For the year ending Oct. 30, 1955, there were 26,150 automobiles, 11,016 commercial vehicles and 43,326 drivers. There were 50,100 radio sets and 6,000 television sets. The first TV commercial station opened in Sept. 1955 in St. John's.

Banking and Finance.—Bank clearings of the 48 banks during the 1954-55 fiscal year totalled \$326,813,394. Revenue and expenditure for the province on current account were, respectively, \$39,200,300 and \$35,540,200, and there was a surplus of \$5,690,100. On capital account there was a deficit, revenue being \$3,953,900 and expenditure \$17,492,500. The funded debt in 1953-54 was \$15,000,000 less sinking fund assets of \$1,374,216.

Agriculture, Fisheries, Furs and Forests.—Farm population constitutes

only about 6% of total population and agricultural income is calculated at less than 4% of total income, according to the royal commission on agriculture.

There were 626,357,540 lb. of various types of fish landed in 1955 valued at \$15,111,791. In 1955 there were 17 filleting and freezing plants.

The multimillion-dollar mink industry expected to produce 25,000 mink in 1955 and 50,000 in 1956. The seal fisheries yielded 55,561 sealskins or pelts in 1955. There was not much activity in fur trapping. Sawmills produced 61,000,000 bd.ft. in 1955, much of which was low-grade lumber. Exports of newsprint in 1953 were valued at \$59,145,874; exports of sulphite pulp \$5,500,000. A total of 8,000 men earned a little more than \$22,000,000 in 1953 in woods operations.

Mining.—Mineral production in Newfoundland and Labrador in 1954 was valued at \$44,569,000. The leading mineral products were zinc, iron, lead and copper. Fluorspar, lime and gypsum were also exploited.

(Ec. A. S.)

New Guinea: see NETHERLANDS NEW GUINEA; PAPUA-NEW GUINEA; TRUST TERRITORIES.

New Hampshire. One of the New England states of the United States and one of the original 13, New Hampshire is popularly known as the "Granite state." Area: 9,304 sq.mi., including 287 sq.mi. of inland water. Estimated population, July 1, 1955, was 553,000. At the time of the 1950 census, 306,806 persons, or 57.5% resided in urban territory and 226,436, or 42.5% in rural territory. There were 532,275 whites (of whom 58,134 were foreign-born) and 96,000 nonwhites in 1950. Capital: Concord, with pop. (1950) 27,988. Other cities: Manchester 82,732; Nashua 34,669; Portsmouth 18,830; Berlin 16,615; Dover 15,874; and Keene 15,633.

History.—The legislature met in its regular biennial session from Jan. 5 to Aug. 6, 1955. Among the measures passed were acts to continue the state investigation of subversive activities; authorized in 1953; to raise the state minimum wage from 60 to 75 cents an hour; to impose more stringent restrictions on campaign contributions and spending; to create a \$1,000,000 Industrial Development authority to attract new industries to the state; to authorize funds for a constitutional convention to meet in May 1956, the members to be elected in March 1955; to continue the \$5 head tax; and to pay a \$100 bonus to veterans of the Korean war. As in previous sessions, considerable attention centred upon means of increasing the state's revenue. Perennial proposals for the establishment of state sales and income taxes were rejected as was a bill for the establishment of a state lottery. A bill for the establishment of a state sweepstakes based on racing was vetoed by the governor. A proposal to reduce the size of the lower house of the legislature was also defeated. The assembly voted a record budget of \$90,139,200 for the period from July 1, 1955 to July 1, 1957.

Town meetings were held in 223 towns on March 8, at which straw votes were taken on a proposal for a sales tax. Newports and Lancaster voted to retain their town manager form of government while Seabrook rejected the town manager plan.

State officers in 1955 were: governor, Lane Dwinell, elected in Nov. 1954; secretary of state, Enoch D. Fuller; state treasurer, Alfred S. Cloues; adjutant general, Col. John Jacobson Jr.; commissioner of education, Austin J. McCaffery; commissioner of agriculture, Perley I. Fitts.

Education.—In 1953-54 there were an estimated 82,711 pupils enrolled in 546 public schools in the state of which 63,459 were in grades from kindergarten through eighth grade and 19,252 in grades nine through twelve. There were 39 rural schools, 414 elementary schools, 11 approved junior high schools, 61 senior high schools and 21 junior-senior high schools. There were 3,365 teachers, including 2,088 elementary and 1,277 high school teachers. Total payments covering expenditures of school districts for the year 1952-53 were \$21,225,989.61, including \$1,111.42 for general expenses, \$6,583,281.66 for high schools and \$13,596.53 for elementary schools. In 1949-50 Catholic parochial elementary schools had a total registration of 19,306, while other private elementary schools had a registration of 683. The total number of students enrolled in approved public academies, accredited secondary schools and other private secondary schools in the same year was 6,440.

Other state educational institutions were the University of New Hampshire at Durham; Keene Teachers college at Keene; and Plymouth Teachers college at Plymouth.

Social Insurance and Assistance, Public Welfare and Related Programs.—As of July 1955 the numbers and categories of cases receiving di-

relief and public assistance under the Social Security act were as follows: general relief, 2,326 cases with expenditures of \$118,894; old-age assistance, 5,855 for the month with expenditures of \$353,364; old-age aliens, \$7, with expenditures of \$21,018; aid to dependent children, 1,005 families representing 2,698 children, with expenditures of \$122,755; aid to needy blind, 272 cases, with expenditures of \$16,888; aid to permanently and totally disabled, 239 cases, with expenditures of \$16,240. Total expenditures for public assistance and total obligations for direct relief were \$649,159 for July 1955 compared with \$639,111 for Aug. 1954 and \$701,696 for Jan. 1955. In the fiscal year 1954 New Hampshire received \$3,679,000 in federal grants for public assistance while in the same year payments by the state to recipients of public assistance amounted to \$7,332,000. The sum of \$5,680,000 was collected in contributions for unemployment insurance in 1954 and \$8,597,000 was paid for benefits. Funds available for benefits as of Dec. 1954 amounted to \$10,066,000.

The net appropriation for the operation of the state prison at Concord for the fiscal year ending June 30, 1955, was \$305,492; and for the Industrial School for Committed Minors at Manchester, \$280,796. As of Dec. 31, 1953, there were 193 persons in New Hampshire prisons and reformatories.

Communications.—At the end of 1953 there were 12,374 mi. of rural roads in New Hampshire, including highways under state, local and federal control. Disbursements from state highway funds for 1953 amounted to \$19,590,000. In 1953 there were 907 mi. of steam railways owned by the state compared with 936 in 1950. At the close of 1953 there were approximately 40,000 business and 113,000 residential telephones in operation.

Banking and Finance.—As of Oct. 7, 1954, there were in New Hampshire 10 national banks with deposits of \$223,598,000 and assets of \$249,503,700 compared with 51 banks with deposits and assets respectively, on April 15, 1954, of \$204,681,000 and \$230,037,000. Fifty-eight state-chartered banks had on June 30, 1955, deposits of \$452,041,126 (not including commercial deposits, Christmas clubs and school savings) and assets of \$547,155,782, compared with 58 institutions reporting deposits and assets, respectively, of \$417,161,837 and \$504,773,553 on June 30, 1954. There were 21 state-chartered building and loan associations with assets of \$41,072,626 compared with 24 institutions with assets of \$41,700,751 for the year 1954. There were two federal savings and loan associations with combined assets of \$47,761,553. As of June 30, 1954, 53 state-chartered savings banks and savings departments of trust companies reported assets of \$482,448,213, an increase of \$33,883,377, or 7.55% over the previous year.

Cash receipts of the state treasury department for the fiscal year ending June 30, 1955, were \$88,308,860; cash disbursements \$79,854,035. Cash balance, June 30, 1955, was \$8,454,825, as compared with a cash balance on June 30, 1954, of \$18,443,039. The bonded and note indebtedness on June 30, 1955, was \$40,215,000.

Table I.—Principal Crops of New Hampshire

Crop	Indicated 1955	1954	Average, 1944-53
Corn, bu.	672,000	645,000	567,000
Oats, bu.	156,000	120,000	211,000
Hay, tons	413,000	383,000	404,000
Potatoes, bu.	1,034,000	988,000	1,137,000
Apples, bu.	1,460,000	800,000	883,000
Apple syrup, gal.	61,000	68,000	52,000
Apple sugar, lb.	8,000	6,000	15,000

Source: U.S. Department of Agriculture.

Agriculture.—The estimated acreage from which crops were harvested in 1954 was 246,583 as compared with 290,199 in 1949. Cash receipts in 1954 from farm marketings (including crops and livestock and livestock products) were \$67,400,000 as compared with \$72,800,000 in 1953. Government payments in 1954 were \$300,000 as compared with \$500,000 in 1953. New Hampshire escaped the most severe damage suffered by New England from the hurricanes of August and September.

Table II.—Principal Industries of New Hampshire

	All employees 1953	Salaries and wages 1953 (in 000s)	Value added by manu- facture 1953 (in 000s)	Value added by manu- facture 1952 (in 000s)
Food and kindred products	*	*	*	\$10,017
Textile mill products	17,879	\$55,327	\$84,536	44,881
Paper and allied products	6,546	26,185	48,897	13,132
Printing and publishing industries	*	*	*	90,250
Other and leather products	21,670	60,056	84,283	7,283
Instruments and related products	*	*	*	*

*Withheld because the estimate did not meet publication standards, either on the basis of the associated standard error of estimate or on the basis of a consistency review.

Source: U.S. Department of Commerce, *Annual Survey of Manufactures*, 1953.

Manufacturing.—There were estimated to be 1,075 manufacturing establishments in New Hampshire as of Sept. 1950. In 1953 the average number of all employees was 88,771, to whom wages and salaries amounting to \$272,833,000 were paid. The estimated value added by manufactures in the same year was \$427,126,000. The principal categories of manufactures were textiles, lumber products, paper, leather and leather products and machinery. There were 7,000 persons unemployed in mid-June 1955, or about 4,400 less than in June 1954. (W. E. Ss.)

Table III.—Mineral Production of New Hampshire

	1952		1953	
Mineral	Quantity	Value	Quantity	Value
Sand and gravel (short tons)	3,200,000	\$1,002,000	2,249,000	\$ 506,000
Crushed stone (short tons)	70,000	546,000	77,000	539,000
Other minerals	...	397,000	...	760,000
Total		\$1,945,000		\$1,805,000

Mineral Production.—Table III shows the tonnage and value of those mineral commodities produced in New Hampshire in 1952 and 1953 (preliminary) whose value exceeded \$100,000. In 1953, New Hampshire was second among the states in the production of mica and stood 46th in the value of its mineral output, with 0.01% of the U.S. total.

New Hebrides. This Anglo-French condominium, the British element of which is within the jurisdiction of the western Pacific high commissioner, consists of a group of about 30 islands and many islets. (See PACIFIC ISLANDS, BRITISH.) Area: about 5,700 sq.mi. Pop.: (1952 est.) native 48,500, mainly Melanesians, nonnative 4,160, incl. 372 British, 1,311 French and 2,320 French protected (Indochinese labourers); (1954 est.) 52,120. Religion: mainly pagan. Capital, Vila (pop. 4,000). On Efate Island resident commissioners in 1955: British, H. J. M. Flaxman and (from July) J. S. Rennie; French, Marcel Agostini.

History.—During 1955 a condominium leprosarium was opened. Plans were made for the construction of a new wharf at Luganville, Santo. (J. J. Ty.)

Education.—Schools (1954): British government and aided 2; French government and aided 5; several British missions schools; French mission 2; secondary (mission) 1, pupils 25; pupils (all schools, 1952) 5,464. Teachers in training (British 1952) 204.

Budget.—Currency: sterling, Australian and New Hebridean franc (£A125=£100 sterling; £1=178 New Hebridean fr.; £A1=142.40 New Hebridean fr.). Condominium budget (1954 revised est.): revenue £278,000; expenditure £304,000. British administration budget (1954-55 est.) revenue £A8,470; expenditure £A74,294. French administration budget (1954 actual): revenue 27,667,000 fr. N.H.; expenditure 27,667,000 fr. N.H.

Foreign Trade.—(1954): Imports £1,143,841, including £672,242 from Australia, £151,041 from France, £189,078 from the U.K. Exports £1,660,558 including £1,574,840 to France, £67,477 to Australia (copra 543 long tons; cocoa 735 long tons; coffee 162 long tons; trochus shell 98 long tons.)

New Jersey. New Jersey, the "Garden state," is one of the northeastern states of the United States bordering the Atlantic ocean. It was the third state to enter the union, approving the constitution on Dec. 18, 1787. It has an area of 7,836 sq.mi. of which 314 sq.mi. are inland water. The population in 1950 was 4,835,329, of which 86.6% was urban and 94.3% was white. Official estimates placed the July 1, 1955, population at 5,370,000. The capital is Trenton, which had a population of 128,009 in 1950. Other large cities were Newark 438,776; Jersey City 299,017; Paterson 139,336; Camden 124,555; and Elizabeth 112,817.

History.—Some of the more important measures approved by the legislature and the governor in 1955 were a measure designated as the New Jersey Water Supply Bond act, which authorized a \$100,000,000 bond issue for acquiring, constructing and developing the New Jersey water supply system (defeated in a referendum at the general election in Nov. 1955); a law establishing a five-member bipartisan board to acquire and operate the New Jersey water supply system; a measure increasing the maximum weekly benefit rate under the unemployment compensation law from \$30 to \$35; a law establishing a research and training centre to conduct research in the field of mental deficiency and appropriating \$1,500,000 to the purposes of this act; a measure revising the pension system for teachers and providing for coverage under the Federal Social Security act; a measure authorizing and directing the commissioner of health to purchase and distribute sufficient quantities of poliomyelitis vaccine to inoculate children for whom free vaccine is not available from the National Foundation for Infantile Paralysis or who are unable to pay the cost thereof; a law establishing an 11-member rehabilitation commission to administer and supervise vocational rehabilitation in the state; a law authorizing the governor to execute a compact on behalf of New Jersey with any other state or states relative to the supervision of delinquent juveniles on probation or parole, the return of escaped juvenile

delinquents or the return of nondelinquent juveniles who have run away from home.

In the general election held Nov. 1954, Clifford P. Case (Rep.) was elected to the U.S. senate.

The chief officers during 1955 were Robert B. Meyner, governor; Edward J. Patten, secretary of state; Grover C. Richman, attorney general; Archibald S. Alexander, state treasurer; Charles R. Howell, commissioner of banking and insurance; Joseph E. McLean, commissioner of conservation and economic development; and Arthur T. Vanderbilt, chief justice.

Education.—Public-school day enrolment totalled 589,144 for grades kindergarten through 8 in June 1955; enrolment for grades 9 to 12 (including grades 7 and 8 in junior high schools) was 209,683, and for special classes 8,170. The 4 universities, 10 liberal arts colleges, 8 professional and technical colleges and 10 junior colleges had a combined enrolment of 22,067 full-time and 17,557 part-time students in 1954. The 6 state teachers' colleges had a total enrolment (full and part-time) of 7,458 in 1955 while the 27 professional and technical institutes had 4,022 full-time and 2,777 part-time students. The public day school expenditures (excluding capital expenditures) for fiscal 1953-54 were \$233,639,000. The state commissioner of education was Frederick M. Raubinger.

Social Insurance and Assistance, Public Welfare and Related Programs.—In July 1955 the state's welfare system cared for 14,506 patients in institutions for the mentally ill, while the county hospitals cared for an additional 6,538. The state institutions for the mentally deficient contained 5,121 patients; tuberculosis sanatoria had 2,294 patients; 691 students were in training schools for juvenile delinquents and 215 veterans were in soldiers' homes. Old-age assistance recipients numbered 20,252 in July 1955. The number of children assisted by the board of child welfare totalled 22,681; 877 received aid for the blind and the number of general assistance recipients was 18,958. The state prison, three prison farms and three reformatories for adult offenders contained 3,976 inmates. Benefit payments to the jobless totalled \$7,000,997 during July 1955.

Communications.—The total highway mileage of New Jersey on Jan. 1, 1954, was 28,987, of which 6,000 mi. were unimproved. State and federal funds disbursed for roads totalled \$62,297,058 during the fiscal year 1954-55. Motor vehicle registrations totalled 1,953,502 in 1954. The 23 railroads operating within the state had a track mileage of 5,317.90 and a line mileage of 1,970.85 on Dec. 31, 1954. Civil, commercial and municipal airports numbered 78 as of July 1, 1955.

Banking and Finance.—Deposits of the 134 institutions under the supervision of the state department of banking and insurance amounted to \$3,518,248,000 on June 30, 1955, an increase of \$197,402,000 over the previous June 30. The deposits of 111 commercial institutions were \$2,540,184,000, an increase of 4.6%, while the deposits in 23 savings banks showed \$978,064,000, an increase of 0.6%. National banks in New Jersey numbered 196 on Dec. 31, 1954, with total assets of \$3,272,125,000. The 455 building and loan and savings and loan associations had assets of \$1,153,408,033 on Dec. 31, 1954. State revenues for fiscal 1954-55 were \$500,341,096 and expenditures totalled \$506,701,627; the state's bonded debt was \$114,990,000 as of June 30, 1955.

Agriculture.—Combined harvested acreage of all New Jersey crops in 1954 was 811,290 ac. Cash income from crops amounted to \$120,100,000,

Table I.—Principal Crops of New Jersey

	Indicated 1955	1954	Average, 1944-53
Corn, bu.	7,622,000	9,600,000	8,823,000
Wheat, bu.	1,316,000	1,512,000	1,771,000
Hay, tons	455,000	437,000	448,000
Potatoes, Irish, bu.	6,982,000	5,784,000	10,207,000
Potatoes, Sweet, bu.	2,465,000	2,958,000	2,336,000
Asparagus, all purposes, 30-lb. crates	2,593,000	2,328,000	2,329,000*
Tomatoes for fresh market, bu.	1,176,000	1,599,000	1,702,000*
Tomatoes for processing, tons	104,200	197,600	227,400
Apples, bu.	2,760,000	2,900,000	2,421,000
Peaches, bu.	1,870,000	1,910,000	1,629,000

*Average, 1949-53.

Source: U.S. Department of Agriculture.

Table II.—Principal Industries of New Jersey

	All employees 1953	Salaries and wages 1953 (in 000s)	Value added by manu- facture 1953 (in 000s)	Value added by manu- facture 1952 (in 000s)
Food and kindred products	55,294	\$227,002	\$563,304	\$578,236
Tobacco manufactures	4,379	12,026	41,334	36,178
Textile mill products	52,560	206,703	336,094	314,065
Apparel and related products	82,862	223,324	359,564	302,649
Lumber and products (except furniture) Furniture and fixtures	*	*	*	26,728 60,633
Printing and publishing industries	25,405	112,614	172,805	161,917
Chemicals and allied products	81,213	392,779	1,130,249	983,086
Petroleum and coal products	18,084	93,885	176,240	188,026
Rubber products	15,227	61,528	97,853	94,126
Stone, clay, glass products	34,042	127,529	216,514	239,377
Primary metal industries	39,340	181,332	326,679	296,719
Fabricated metal products	52,806	227,802	414,783	365,038
Machinery (except electrical)	70,593	334,149	530,115	508,500
Electrical machinery	116,280	479,285	757,558	629,429
Transportation equipment	65,095	312,578	502,692	372,312
Instruments and related products	25,544	125,315	189,471	168,278
Miscellaneous manufactures	48,592	189,830	300,984	254,561
Administrative and auxiliary	17,557	85,968	...	...

* Withheld because the estimate did not meet publication standards, either on the basis of the associated standard error of estimate or on the basis of a consistency review.
Source: U.S. Department of Commerce, Annual Survey of Manufactures, 1953.

from livestock \$216,726,000, and from government payments \$872,000. Total value for staple crops amounted to \$53,392,000; the value of commercial vegetable crops (excluding potatoes) totalled \$47,839,000.

Manufacturing.—Wages paid to manufacturing workers in 1954 totalled \$3,425,467,068; for the first quarter of 1955 they amounted to \$854,419,091. The number of manufacturing workers averaged 774,027 during the first quarter of 1955. (R. H. M.)

Mineral Production.—Table III shows the tonnage and value of the mineral commodities produced in New Jersey in 1952 and 1953 (preliminary) whose value exceeded \$100,000. In 1953 New Jersey was fourth among the states in the production of zinc and ranked 34th in the value of its mineral output with 0.36% of the U.S. total.

Table III.—Mineral Production of New Jersey

Mineral	1953 (in short tons)		1952	
	Quantity	Value	Quantity	Value
Clay	532,000	\$ 1,326,000	599,000	\$ 1,963,000
Coke	1,175,000	?	1,472,000	?
Iron ore	914,000	10,115,000	768,000	6,760,000
Manganiferous residuum	294,000	†	215,000	†
Peat	7,000	193,000	5,000	178,000
Marl (greensand)	22,000	†	22,000	192,000
Sand and gravel	7,362,000	10,836,000	7,060,000	9,473,000
Sandstone, ground	128,000	919,000	138,000	1,012,000
Stone	6,036,000	13,308,000	6,102,000	12,307,000
Zinc	46,000	9,923,000	59,000	21,521,000
Other minerals . . . . .	...	5,328,000	...	4,062,000
Total . . . . .	...	\$51,948,000	...	\$57,468,000

*Values for processed materials are not included in the totals.

†Value included with other minerals.

New Mexico. A state in southwestern United States, popularly known as the "Sunshine state," New Mexico was admitted to the union in 1912. Area: 121,666 sq. mi. (121,511 sq. mi. land, 155 sq. mi. water); pop.: (July 1, 1955 est.) 769,000; (1950 census) 681,187; rural 339,298; urban 341,889; white 630,211; nonwhite 50,976. Capital, Santa Fe (1950 pop.) 27,998. Other cities: Albuquerque (96,815); Roswell (25,738); Carlsbad (17,975); Clovis (17,318); Hobbs (13,875); Las Cruces (12,325).

History.—The state elective administration, legislature and congressional representation were Democratic during 1955. The chief officers of the state were: governor, John F. Simms, Jr.; lieutenant governor, Joseph M. Montoya; secretary of state, Natalie Smith Buck; auditor, J. D. Hannah; treasurer, Joseph B. Grant; attorney general, Richard H. Robinson; superintendent of public instruction, Mrs. Georgia L. Lusk.

The 1955 legislature provided for legal death by gas, more rigid control for small loans, regulation of securities, anti-race segregation, a minimum wage, absentee voting and a closer primary, and declared state official symbols the following: yucca flower, chaparral (road runner) bird, nut pine or piñon tree and native cutthroat trout.

State constitutional amendments increased the membership of the house of representatives to 66, made the highway commission financially responsible to the legislature, provided direct legislative control for the state penitentiary, miners' hospital, insane asylum and boys' reformatory and renamed the asylum New Mexico State hospital and the reformatory New Mexico Boys' school.

Education.—For the school year 1953-54, 4,916 teachers served municipal schools at an average salary of \$4,101.43; pupils numbered 144,563. In rural schools 1,220 teachers earned an average salary of \$3,714.09; pupils numbered 28,705. Total expenditures for municipal and rural schools were \$39,257,327.

Social Insurance and Assistance, Public Welfare and Related Programs.—During the fiscal year ending June 30, 1955, \$5,753,162.50 was expended for old-age assistance; \$5,564,228.50 for dependent children; \$202,670. for needy blind; \$787,889.50 for the disabled; \$170,180.22 for general assistance; \$811,747.18 for medical care; \$249,755.32 for child welfare services; \$124,268.99 for crippled children. A total of \$4,102,138 was paid for unemployment compensation; \$646,572 for veterans' unemployment compensation and \$110,431 for federal employees. For the same fiscal year, an estimated \$9,089,000 was paid for old-age and survivor insurance.

The penitentiary appropriation was \$951,564 for 696 inmates (September); insane asylum, \$1,375,000 for 1,050 inmates (Sept. 1); Los Lunas mental hospital, \$166,360 for 127 inmates (September); girls' welfare home, \$248,000 for 146 inmates; industrial school for boys, \$244,195 for 79 inmates (Sept. 1).

Communications.—New Mexico had an estimated 50,523 mi. of surfaced highways and 12,042 mi. of surfaced roads in 1955. For the fiscal year ending June 30, 1955, the state highway department expended \$30,528,423.15 plus \$2,116,205 for debt service.

Steam railway companies operated 2,536 mi. of main track (1955).

Table I.—Principal Crops of New Mexico

Crop	Indicated 1955	1954	Average, 1944-53
Wheat, bu.	1,408,000	1,318,000	1,550,000
Barley, bu.	1,302,000	643,000	3,153,000
Oats, bu.	725,000	594,000	754,000
Corn, bu.	726,000	525,000	526,000
Sorghum grain, bu.	5,751,000	2,660,000	3,693,000
Hay, tons	532,000	512,000	436,000
Alfalfa, bales	240,000	316,000	217,000
Beans (100-lb. bags)	222,000	216,000	323,000
Peas, bu.	650,000	760,000	592,000
Nuts, lb.	6,250,000	6,600,000	7,904,000

Source: U.S. Department of Agriculture.

Table II.—Mineral Production of New Mexico

(in short tons, except as noted)

Mineral	Quantity 1953	Value 1953	Quantity 1952	Value 1952
Asbestos	514,000	\$ 3,081,000	759,000	\$ 4,382,000
Barite	72,000	41,602,000	76,000	36,838,000
Borax	?	*	16,000	823,000
Coal (oz.)	3,000	91,000	3,000	103,000
Dolomite	3,000	771,000	7,000	2,261,000
Iron	?	*	53,000	*
Lead	399,086,000	24,344,000	359,377,000	16,414,000
Oil shale (000 cu. ft.)	172,000	10,094,000	164,000	11,660,000
Oil shale (000 gal.)	70,441,000	185,260,000	58,681,000	144,940,000
Oil shale (bbl.)	121,000	4,618,000	114,000	3,600,000
Oil shale (000 gal.)	1,553,000	52,293,000	1,411,000	46,385,000
Oil shale (K ₂ O equiv.)	529,000	760,000	217,000	755,000
Oil shale	1,416,000	1,239,000	497,000	500,000
Oil shale	205,000	186,000	479,000	434,000
Oil shale	625,000	511,000	318,000	192,000
Oil shale	13,000	3,076,000	51,000	16,924,000
Oil shale	...	2,903,000	...	2,289,000
Oil shale	...	...	...	...
Total	330,829,000		288,500,000	

Value included with other minerals.

There were 3 scheduled air carriers, 102 airports and airfields, 1,530 mi. of controlled coloured airways and 2,296 mi. of very-high-frequency bidirectional range airways. There were about 174,000 telephones.

Banking and Finance.—On Dec. 31, 1954, there were 26 national banks with total deposits of \$346,110,900.72; loans \$107,086,773.67; investments \$155,680,437.46. The 27 state banks had deposits of \$138,416,552.9; loans \$45,512,929.03; investments \$57,063,832.95.

Total resources of 14 building and loan associations in 1954 were \$26,894,13 and of 7 federal savings and loan associations, \$45,764,11.43.

The total of all state receipts for the fiscal year ended June 30, 1955, was \$179,161,552.68; total disbursements \$180,297,543.43.

Agriculture.—The total value of agricultural production in 1954 was \$1,158,000; acreage harvested 1,293,000. Livestock was estimated at 27,679,000 (Jan. 1, 1955).

Manufacturing.—Estimates on manufacturing for 1954 were: workers, 183; wages and salaries, \$71,966,000; value of products, \$291,480,000. (F. D. R.)

Mineral Production.—Table II shows the tonnage and value of those mineral commodities produced in New Mexico in 1952 and 1953 (preliminary) whose value exceeded \$100,000. In 1953 New Mexico was first among the states in output of potash and pumice, fourth in copper, borax and molybdenum, and rated 11th in the value of its mineral output with 2.30% of the U.S. total.

Newspapers and Magazines. U.S. Newspapers.—

The leading newspaper of 1955 was that of the 103-year-old *St. Louis Globe-Democrat* and its radio station KWK in March for \$6,250,000 to Samuel I. Newhouse, who owned 12 other newspapers. The *Charlotte (N.C.) Observer* was bought Dec. 30, 1954, for \$1,000,000 by John S. Knight, who owned four other newspapers. The *Augusta (Ga.) Herald* was acquired in May for \$1,517,000 by William S. Morris and merged with his *Chronicle*. A new newspaper, the *State Times*, was launched in February 1955. 800 citizens of Jackson, Miss., who raised \$1,000,000 for the purpose as a protest against the older *Clarion Ledger* and *Daily News*. The tabloid *New York Graphic* was revived in June as a weekly by Bernarr Macfadden, who started it first in 1924 and suspended it in 1932. The *Wall Street Journal* in February opened a plant for a Washington, D.C., edition—the fifth city in which it had plants.

The 114-year-old *Brooklyn Eagle* was suspended in March by Frank D. Schroth after a 47-day guild strike. The *Los Angeles Daily News* was suspended in Dec. 1954 by Clinton D. McKinnon, and its name sold to the *Times-Mirror*. The last newspaper at Park row, former famous New York newspaper street, late 1954 when the 120-year-old *Staats-Zeitung Und Herold* moved uptown. The *Philadelphia Evening Bulletin* moved into a huge new building on June 1, celebrating 60 years of ownership by the McLean family.

The *Chicago Daily News* announced in August plans to build an \$11,000,000 addition to its skyscraper building to house 66 new presses, while the 42 presses discarded by the *New York Daily News* in a \$10,000,000 replacement project were bought by the *Boston Post* and the *Long Island Newsday*. In the final settlement of the will of William Randolph Hearst in May, all the newspapers, magazines, radio stations and syndicates, valued at \$78,000,000, were combined under 13 trustees of the Hearst corporation.

Newspaper advertising, after a slight drop late in 1954, went into record-breaking totals in 1955; national advertisers bought 9.5% more space in the first six months than in any previous comparable period. The notable months were March, up 12.2%, May, up 11%, and June, up 15.9%. National advertisers bought \$601,000,000 worth of space in 1953, slipped 1.2% to \$594,000,000 in 1954 but in 1955 were exceeding the 1953 rate. Automobile advertising led the increase. Advertising rates continued to rise; 113 newspapers in the Inland Daily Press association reported rates up 3% in the year and up 40% in the last ten years. Colour advertising became a regular feature in 560 daily newspapers with 70% of the circulation, and more advertisers were using coloured comic advertisements. After a drop because of the lung cancer scare, cigarette advertising rose 8.75% in 1955, promoting king-size and filter-tipped cigarettes. Newspapers profited when the post office on March 31 ended its 15-month "junk mail" experiment of letters addressed to "Occupant."

Total daily circulations, which reached 55,072,480 in 1954 with a gain of 600,194 above 1953, continued to rise in 1955; one midyear survey showed morning papers up 2.17% and evening papers up 1.40%. The number of English-language dailies decreased by 20 to a total of 1,765 on Jan. 1. About 25% of the dailies had become five-day papers, dropping Saturday or Monday. All surveys showed television having little effect on newspaper reading, although it might have held circulation gains below the population growth. In profits, small dailies below 25,000 circulation were faring better than large city papers in which costs rose faster than income. Because increased advertising made larger editions, paper consumption increased sharply, up 8% by May; the total reached 400,000 tons a month or 2,875,000 tons in the first seven months. Although Canadian mills increased output, production barely kept up. Newsprint production in the U.S. was increasing to balance foreign demands on Canadian mills. New mills, financed by newspapers, were opened at Calhoun, Tenn., and Boca Raton, Fla., using southern hard pine.

The most notable newspaper legal case of the year was the antitrust suit against the *Kansas City Star* and *Times* for unfair monopoly practices in advertising. After an indictment on Jan. 6, 1953, hearings started in federal district court on Jan. 17, 1955; 109 witnesses were heard, and on Feb. 22 the jury found the newspaper and its advertising director, Emil A. Sees, guilty—facing fines of \$5,000 and \$2,500. The case was to be appealed. In April the federal department of justice started antitrust suits against the American Newspaper Publishers association and six other trade groups, charging illegal price-fixing in the 114-year-old system of "recognition" and 15% commission of advertising agencies.

Contrasting opinions were returned in the New York federal appeals court in the case of Minot F. (Mickey) Jelke, convicted in Feb. 1953 of compulsory prostitution in a trial in which newspapers were barred part of the time; one decision on May 18, 1954, freed him on the grounds that he had been denied "open court"; in another suit, the same court ruled on Dec. 31, 1954, that newspapers were "outsiders" with no legal right to demand open trial. Efforts to bar photographers from court-

rooms, led by the Ohio supreme court and the American Bar association, resulted in conflicts between judges and newspapers in various cities—Greensburg, Pa., Phoenix, Ariz., and others. After the sensational murder trial of Samuel H. Sheppard in Cleveland, O., the judge declared that the excessive publicity had not influenced the jury. The Mississippi supreme court declared in June that a carrier boy is not a "little merchant" exempt from workmen's compensation.

It was a quiet year on the labour front; the only important strike was the guild walkout that ended the *Brooklyn Eagle*. The photoengravers' union and the I.T.U. printers' union sought jurisdiction over new electronic phototype and engraving processes. The *New York Times* in July discharged a copyreader who pleaded the fifth amendment before a senate committee investigating an alleged communist cell of newspapermen in the 1930s; the Newspaper guild had in June voted not to defend former communists in its ranks. An innovation was the growing use of vending machines to sell newspapers. Such machines were in use in more than 50 cities. Another was phototype "cold type," which was under experiment to cut composition costs.

The advertising industry proposed in August a campaign to mobilize its forces against juvenile delinquency. The Associated Press in April reported its present membership as 1,744 newspapers and 1,376 radio and television stations. Frank H. Bartholomew on April 6 succeeded Hugh Baillie as head of United Press. A press corps of 1,500 gathered at Geneva, Switz., in July for the meeting of the heads of state of the Big Four Powers, although the sessions were closed.

About 60 newspapers, with 14,000,000 circulation, sponsored a national spelling bee in May. The *Chicago Tribune* in August abandoned the simplified spelling that it had used for many years. The famous syndicated cartoon, "Toonerville Trolley," ended its 47-year run on Feb. 12 when Fontaine Talbot Fox, artist, retired at 71.

Magazines.—"Do-it-yourself" projects were the most novel new features in magazines in 1955. Another was the newsstand success of 14 "peephole" gossip magazines; the leaders were *Whisper*, selling 4,000,000 copies, and *Confidential*, selling 2,200,000 copies, which was barred from the mails in August. One of the most interesting events of the year was the appearance of the *Reader's Digest* in April with 32 pages of advertising, at \$31,000 a page, after 33 successful years without advertisements. New magazine titles were *TV Program Week* and a quarterly *Bride-To-Be*, both launched by Curtis Publishing company. The *New York Herald Tribune* started a Sunday radio and TV magazine, while Annenberg's *TV Guide* led the field with 3,000,000 sales. Comic books, while dropping from 422 to 335 titles, still held 35% of newsstand sales. Davy Crockett was fully exploited. Twenty-three comic-book publishers employed a code czar to reduce emphasis on crime and sex.

Most magazines faced falling newsstand sales and raised the subscription ratio from 53% to 70%. Supermarkets became an outlet for magazines. Paperback books reached 240,000,000 sales, began taking advertisements in covers and started a quarterly *Pocket Book Magazine*. Advertising in magazines increased from 5% to 30%, bulking more than \$600,000,000 for the year, with automobiles leading. But increased income did not meet rising costs; in the last ten years, while magazine sales had risen 24% and copy prices 30%, average profits dropped from 8.3% to 2.8%. Costs had risen thus: typography 91%, presswork 105%, photoengraving 86%, mailing 127%.

An antitrust suit against American News company and Union News company, distributors, threatened, while a proxy fight started in these firms, which also operate railroad restaurants and checkrooms. A McGraw-Hill export catalog listed 750 United States magazines selling in 63 countries. A new Catholic

press directory listed 350 publications with 20,000,000 sales.

(G. M. HY.)

Photojournalism.—Goals of press photographers in the U.S. continued to include revision of the American Bar association canon 35 which bans news cameras in courtrooms; development of better educational resources for both practising and student news photographers; protection of photographers' civil rights against "self-appointed censors" who in past years had subjected numerous cameramen to physical attack; and the quick dissemination of information on new photographic techniques and products.

A demonstration of the ability of press photographers to take pictures under courtroom conditions, unobtrusively and without artificial light, was made at the American Bar association convention in Philadelphia in Aug. 1955. Earlier, members of the National Press Photographers association had conducted a similar demonstration for editors and publishers at the American Society of Newspaper Editors meeting in Washington, D.C.

Eighteen photojournalism short courses were conducted in 1955 at colleges and universities from coast to coast. The N.P.P.A. also worked with college curriculum supervisors on improvement of undergraduate courses of study in pictorial communication. Initial subjects in an audio-visual library of press photography were distributed for use by local press photography organizations, including slides and tape recordings. More significant talks given at the short courses. (J. CA.)

Canada.—Counting as one those morning and evening papers published by the same owner, there was in 1955 a total of 100 daily newspapers in Canada, with circulation at end of March an all-time high of 4,454,518. Approximately 60 were equipped to use colour. By the beginning of 1956 the *Weekend magazine* originated by the *Montreal Standard* in 1951, was appearing in 28 week-end editions with a combined circulation of more than 1,450,000. Thomson Newspapers added the *Sudbury Star* (daily) and the *Oakville-Trafalgar Journal* (weekly) to a string which included 21 dailies and 4 weeklies. The Canadian Press was headed for a second term by R. J. Rankin, *Halifax Chronicle* and the Canadian Daily Newspapers association elected as president Emile Castonguay, *L'Action Catholique*, Quebec. National newspaper awards included: editorial writing, C. B. Pyper, *Toronto Telegram*; feature writing, Mac Reynolds, *Vancouver Sun*; staff correspondence, Bill Boss, the Canadian Press; sports news, Gwyn Thomas, *Toronto Star*; feature photo, Ray Munro, *Vancouver Province*; cartoon, John Collins, *Montreal Gazette*. In the weekly field the *Brampton Conservator* won top standing as the best all-round newspaper of 3,000 or more circulation; the *Oakville-Trafalgar Journal* was first in the 2,000 class and the *Acton Free Press* in the 1,000 group.

John Vopni, publisher of the *Davidson* (Sask.) *Leader*, was elected president of the Weekly Newspaper association. The *Thorold Post* (weekly) ceased publication after being published by the Thompson family for 70 years. Membership of the American Newspaper guild in Canada increased by 450 to 1,510.

(B. T. R.)

Great Britain.—During 1955 the British press suffered its longest and most severe industrial dispute in its history. The only comparable event in the past was the general strike of 1926, but whereas on that occasion all the unions struck, this time only 2 out of the 14 unions concerned with the press stopped work. The strike began on March 25, when 700 maintenance engineers and electricians withdrew their labour because of a wage dispute. There were no evening newspapers in London on that day and for the next 26 days until April 21, when the newspapers appeared again, virtually the whole national press in London was silent. The newspapers involved were all members of the Newspaper Proprietors' association and they included



Above: Photographs from the portfolio of Earl Seubert, *Minneapolis Star and Tribune* (Minn.), chosen as NEWSPAPER PHOTOGRAPHER OF THE YEAR. Left: "Korean Educators"; right: "Ooooff." "Korean Educators" also won first prize in PERSONALITIES category



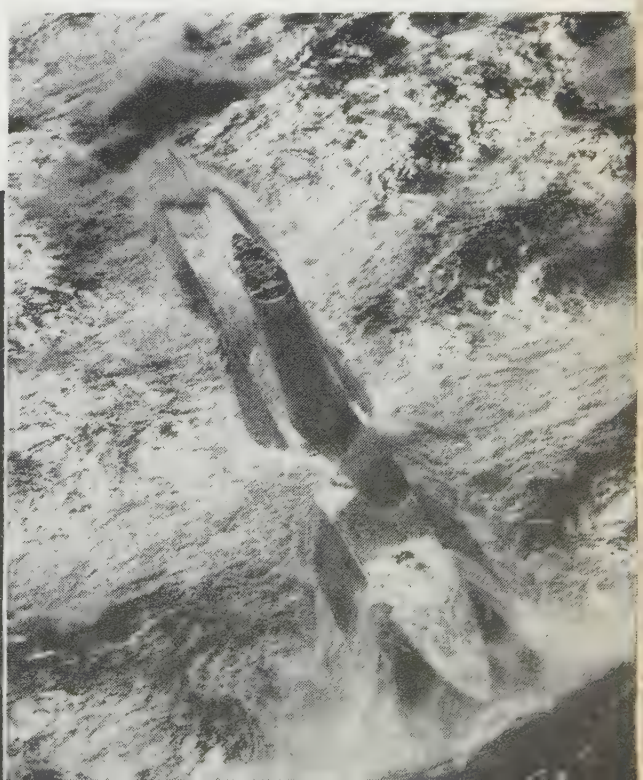
NEWS PICTURES OF THE YEAR

Prize-winning photographs chosen in the twelfth annual competition and exhibition for press photographers of America, sponsored jointly in 1955 by the National Press Photographers association and *Encyclopedia Britannica*.

Left: "Rescued," by Edward C. Meyer, *St. Louis Globe-Democrat* (Mo.), first prize SPOT NEWS. The picture was made during a storm which razed part of a grandstand at a civic program

Below: "The Nautilus," by *Life* magazine photographer Ralph Morse, first prize GENERAL NEWS category

Below: "Audrey Hepburn," from the portfolio of Leonard McCombe, *Life* magazine, selected as MAGAZINE PHOTOGRAPHER OF THE YEAR





Above: First prize FEATURE category, "The Newborn," by Suzanne Szasz, free-lance photographer

Left: Another photograph from the prize-winning portfolio of Leonard McCombe, *Life* magazine. Taken during a royal tour, the picture shows British Princess Margaret Rose handing her umbrella to a lady in waiting

Below left: "Toe Hold," honorable mention, SPORTS, by Earl Seubert, *Minneapolis Star and Tribune* (Minn.)

Below: "Misty Harbor," by A. Aubrey Bodine, the *Sunpapers* (Baltimore, Md.), first prize PICTORIAL category





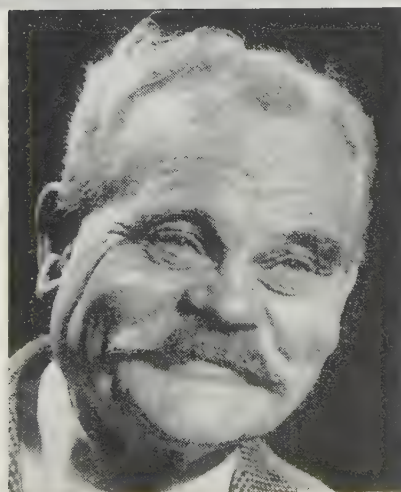
Above: "Snatched From Icy Death," George Wardwell, *Lewiston Journal* (Me.), one of a series voted first prize NEWSPAPER PICTURE STORY category. This particular print also took third prize in SPOT NEWS



Above: "Emergency at Midnight," first of a sequence which won first prize MAGAZINE PICTURE STORY for Hank Walker, *Life* magazine photographer

Left: "Old Man and His Horse," by Thomas Abercrombie, *Milwaukee Journal* (Wis.), second prize PICTORIAL category

Below: "Bulldogger at Work," first prize SPORTS by Dave Mathias, *Denver Post* (Colo.)



Above: Earl Seubert's portrait of Robert Tristram Coffin which tied for third prize PERSONALITIES category



the London national morning, evening and Sunday newspapers with the single exception of the *Daily Worker*, the communist newspaper. Where newspapers were published in Manchester and Glasgow by N.P.A. members, these also were prevented from publishing. The *Times* failed to appear for the first time since its beginning in 1785.

A railway strike which lasted for 17 days in June also had its adverse effect on the press. Newspapers were compelled to distribute by road, which limited the tonnage which could be sent out, and there was a temporary return to six- and eight-page issues with the corresponding loss of advertising revenue.

It was announced that newspapers were to be freed from government control in March 1956, when it was expected that a greater tonnage of newsprint would be available, both from overseas and home mills.

Woman's Sunday Mirror, sponsored by Sunday Pictorial Newspapers, made its appearance in January, the first new Sunday newspaper to be launched in London for more than 30 years and the first to be designed exclusively for women. Its circulation soon passed the 1,000,000 mark.

An act was passed to prevent the dissemination of "horror comics." It was made an offense to print, publish, sell or let on hire certain "pictorial publications harmful to children and young persons." The maximum penalty on summary conviction for an offense was to be four months' imprisonment or a fine of £100, or both.

A number of new periodicals appeared during the year, among them the *Agricultural Review* under the editorship of Sir James Scott Watson; *Art*, which aimed to "discuss, explain and comment on art in understandable language"; *Books and Bookmen*; *She*, for the younger woman reader; and two publications dealing with commercial television, *Commercial Television News* and *TV Times*.

Commonwealth.—Journalists in Southern Rhodesia championed the freedom of the press during the passage through parliament of the Public Order bill. The Rhodesia Guild of Journalists objected to a clause in the bill, which, first, made punishable by imprisonment the publication of false reports likely to cause alarm or disturb the peace and second, insisted that it would be no defense to plead ignorance of the falsity of the statement unless it could be proved that reasonable measures had been taken to verify its accuracy. The minister agreed to delete the second part of the clause, thus removing the main objection.

Sydney, Austr., like London, was deprived of all its regular morning and evening newspapers for more than three weeks by an industrial dispute.

R. E. Fitzpatrick and F. C. Browne, owner and editor respectively of the *Bankstown Observer*, were ordered to be committed to prison for three

months by the Australian house of representatives for breach of privilege. The order was later upheld by the high court and the judicial committee of the privy council. A motion for the immediate release was heavily defeated in the house of representatives and the two newspapermen served the full term of three months' imprisonment imposed.

A start was made in India to carry out some of the recommendations of the press commission which had reported in 1954. An act was passed creating a press registrar and requiring all newspapers to give full information as to the names of proprietors, editor, printer and publisher, circulation figures and the average number of pages printed each week. During the passage of the bill attacks were made on newspaper proprietors, but figures showed that nobody controlled more than 9% of circulation and no single newspaper more than 4%. The government decided to ban the publication of foreign newspapers and periodicals in India.

Europe.—The general assembly of the International Press institute was held in Copenhagen, Den., with 170 editors and other journalists from 20 countries outside the "iron curtain" attending. The assembly instructed the secretariat of the institute to inform its members of all cases where press freedom was limited or suppressed. Members were urged to warn governments which threatened press freedom and to defend colleagues who were victimized.

The French periodical *La Quinzaine*, begun in 1950 by a group of young Roman Catholics, ceased publication after it had been proscribed by a decree of the Supreme Congregation of the Holy Office. It was stated by the *Osservatore Romano* that it have often "discussed the complex question of collaboration

Number of Daily Newspapers in the World, 1953

(Except as indicated, the following data are derived from United Nations Educational, Scientific and Cultural Organization, "The Daily Press: A Survey," Reports and Papers on Mass Communication, no. 7 [Dec. 1953]. Only printed papers issued oftener than four times a week are included in this table.)

Afghanistan	4	French West Indies*	1	Nicaragua*	1
Alaska*	7	Germany (Democratic Republic)	33	Nigeria	1
Albania|| . . . . .	2	Germany (Federal Republic)	623	Norway	1
Algeria	11	Gibraltar	2	Pakistan†	1
Anglo-Egyptian Sudan†	8	Gold Coast	9	Panamá*	1
Angola	3	Greece	68	Paraguay*	1
Argentina*	179	Guam	1	Peru*	1
Australia	54	Guatemala*	6	Philippines*	1
Austria	34	Haiti*	8	Poland	1
Azores†	4	Hawaii*	5	Portugal (continental)†	1
Balearic Islands†	7	Honduras*	7	Portuguese East Africa†	1
Belgian Congo	5	Hong Kong†	12	Portuguese India†	1
Belgium	39	Hungary	6	Portuguese West Africa†	1
Bermuda*	2	Iceland	5	Puerto Rico*	1
Bolivia*	6	India§	300	Réunion	1
Brazil*	205	Indonesia	95	Rhodesia	1
British Guiana	3	Ireland	20	Rumania|| . . . . .	1
British Honduras*	1	Iraq	54	Saar	1
British West Indies*	15	Ireland, Northern†	4	Saudi Arabia	1
Bulgaria|| . . . . .	10	Ireland, Republic of†	8	Scotland†	1
Burma	32	Israel	21	Seychelles	1
Cambodia	5	Italy	107	Sierra Leone	1
Canada†	103	Japan†	179	Somaliand	1
Canary Islands†	5	Jordan	4	South Africa, Union of	1
Ceylon	7	Kashmir and Jammu†	3	South-West Africa	1
Channel Islands and Isle of Man†	4	Kenya	4	Spain	1
Chile*	52	Korea (North)§	30	Sweden	1
China§	350	Korea (South)	45	Switzerland	1
Colombia*	35	Laos	2	Syria	1
Costa Rica*	6	Lebanon	40	Tanganyika	1
Cuba*	52	Liberia	1	Tangier	1
Cyprus	9	Libya	2	Thailand	1
Czechoslovakia|| . . . . .	11	Luxembourg	5	Togoland	1
Denmark	132	Macau†	1	Trieste	1
Dominican Republic*	5	Madagascar and Comoro Islands	4	Tunisia	1
Ecuador*	27	Madeira†	4	Turkey	1
Egypt	50	Malaya Federation	26	Union of Soviet Socialist Republics§	50
El Salvador*	8	(including Singapore)	2	United States (continental)¶	1,800
Ethiopia	109	Malta	2	Uruguay*	1
Eritrea	2	Mauritius	8	Vatican City	1
Finland	64	Mexico*	100	Venezuela*	1
Formosa†	19	Morocco	11	Virgin Islands*	1
France	151	Mozambique	4	Wales†	1
French Guiana*	1	Netherlands	108	Yugoslavia	1
French West Africa	10	Netherlands West Indies*	6	Zanzibar	1
		New Caledonia	1	Total	7,300
		New Zealand	43		

*Enumeration of list in *Editor & Publisher International Year Book*, 1954 (New York, 1954).

†Enumeration of list in Benn Bros. Ltd., *The Newspaper Press Directory*, 1954 (London, 1954).

‡London Times article used as UNESCO authority apparently includes many papers published less than five times a week to arrive at its figure of 776.

§Estimated, in consultation with authorities.

||Information from National Committee for a Free Europe, Inc., New York.

¶Japan Newspaper Publishers and Editors Association, *The Japanese Press*, 1954, p. 49 (Tokyo, 1954).

¶N. W. Ayer & Son, *Directory of Newspapers and Periodicals*, 1954 (Philadelphia, 1954). Data on U. S. newspapers in *Editor & Publisher International Year Book* are limited to English-language dailies of general circulation, making its total 1,785. (F. L. M.T.)

tween Catholics and Communists without ever referring to the numerous interventions of the Holy See in this matter." For publishing articles in the French right-wing weekly *Aspects de France* attacking P. Mendès-France, the former prime minister, the editor and the author of the articles were ordered to pay fines totalling £2,100.

In Berlin *Die Neue Zeitung*, the official U.S. German-language newspaper which first appeared in 1945, ceased publication in spite of efforts by the German editorial staff to obtain suitable backing for continuing it. In Frankfurt a family magazine, common to the *Frankfurter Rundschau*, was started under the title *Zeit und Bild*. Statistics published by the Institute of Journalism of the Free University of Berlin showed that in 1954 there were 1,383 daily newspapers in the area of the German Federal Republic which together had a circulation of 15,000,000 copies. There were also 20 west Berlin newspapers with a total circulation of about 1,000,000. The Soviet High commission newspaper, *Tägliche Rundschau*, published in east Berlin since May 1945, ceased to appear. *Die Neuesten Nachrichten* of Saarbrücken was the first pro-German newspaper to be published in the Saar since World War II.

Figures published showed that Italy had 113 daily newspapers with a daily circulation of about 5,000,000 copies, an average of one newspaper for every ten inhabitants. The "responsible directors" of the Italian Communist newspaper *L'Unita* and the Nenni Socialist *Avanti* received fines and prison sentences for libelling the minister of labour and social insurance. (See also ADVERTISING.) (D. HN.)

New York. New York, one of the original 13 states of the United States, is known as the "Empire state." Northernmost of the middle Atlantic states, it covers an area of 49,576 sq.mi. of which 1,647 sq.mi. are water. Population: July 1, 1955, est.) 16,053,000; (1950 census) 14,830,192. The largest cities and their 1950 populations are: New York 7,891,777; Buffalo 580,132; Rochester 332,488; Syracuse 220,583; Albany 152,798; Albany (state capital) 134,995; Utica 101,711; Schenectady 91,785; Niagara Falls 90,872; Binghamton 67,674.

History.—On Jan. 1, 1955, Averell Harriman was inaugurated governor of the state. His inauguration marked the end of 55 years of Republican rule. Other elected state officials during 1955 were: lieutenant governor, George B. De Luca (D.); comptroller, Arthur Levitt (D.); attorney general, Jacob K. Javits (R.).

During 1955 the legislature broadened labour benefits, increasing unemployment insurance payments from \$30 to \$36 a week. Coverage of unemployment insurance was extended to employers of three instead of four or more persons, except domestic servants, and after Dec. 1, 1956, would include firms with two or more employees. Work hours of children under 16 were reduced from 44 to 40 hours a week in factories, mercantile and other establishments. Legislation affecting housing and rent control prohibited discrimination in publicly assisted housing projects because of race, creed, colour or national origin.

New York city's financial problems were recognized by the legislature, which granted broadened taxing powers. The city's temporary authority to tax sales, business and professional services and gross income of utilities was made permanent. A tax increase was authorized on business and professions. On the city's major income source, real estate, the state legislature raised the tax limit from 2¼% to 2½% of average full valuation of taxable property.

In upstate New York the St. Lawrence seaway and power projects, which were under construction, served to stimulate plans for industrial expansion. The first contract made by the

state power authority for use of a block of St. Lawrence power was with the Aluminum Company of America. The contract was for about 25% of the power potential of the project and the Aluminum Company of America announced plans for expenditure of nearly \$27,000,000 to modernize and expand its plant facilities at Massena, N.Y., and make the changes necessary to utilize the authority's power. The authority announced plans for a 2,700-ac. state park in the St. Lawrence valley as a part of the general development of the area.

In August Hurricane "Diane" caused severe rains and floods in southern and eastern areas of the state, taking four lives and causing property damage estimated at \$16,284,000. In mid-October floods caused by heavy rainfalls resulted in damages estimated in the millions of dollars to sections of the Catskills and some upstate counties, notably Schoharie and Schenectady. Rock collapses in 1954 and 1955 damaged Prospect point and Luna Island at Niagara falls. Remedial work was begun to remove dangerous overhangs and permanently protect the falls from further damage.

The New York state thruway, the express highway that was to span the state from Buffalo to New York city, was opened for nearly all of its length during 1955. A three-mile long, \$60,000,000 bridge across the Hudson river between Tarrytown and Nyack to link the thruway with the New York city area was opened on Dec. 15.

Education.—There were approximately 3,275,000 students in New York educational institutions in the school year 1953-54. Of these 2,300,000 were enrolled in public schools. There were 1,453,706 children enrolled in grade 6 and below in public schools and 849,109 in grades 7 through 12. There were approximately 560,000 pupils in the elementary grades and 95,000 in the secondary grades of the private and parochial schools. Enrolment at universities, colleges and other institutions of higher learning in the state in the fall of 1954 was 318,182. The commissioner of education, elected in 1955 by the board of regents, was James E. Allen, Jr.

The State University of New York has administrative jurisdiction over 27 state-supported institutions for higher education. Special state schools include 10 community colleges, 133 schools for nursing, 3 institutes for the blind and 6 for the deaf.

Social Insurance and Assistance, Public Welfare and Related Programs.—For the care and treatment of the mentally ill, mental defectives and epileptics, the state in 1954 maintained 27 institutions, including 18 hospitals, six schools for mental defectives, a colony for epileptics, the New York State Psychiatric institute for research and teaching and the Syracuse Psychopathic hospital for observation and temporary treatment of mental patients. The state also operated three after-care clinics for patients following release from hospitals.

During 1954 the state of New York certified unemployment insurance claims totalling \$290,136,915. On Dec. 31, 1954, the New York State Unemployment Insurance Trust fund had a balance of \$1,267,384,177.

Communications.—During 1955 there were more than 103,000 mi. of improved roads in the highway and street systems in the state. Of these, about 15,000 mi. were in the state system, 18,000 mi. in the county system, 54,000 mi. in town systems and 16,000 mi. in cities and villages. Motor vehicles registered in the state in 1954 totalled 4,363,204, including 3,705,149 passenger cars, 477,001 trucks, 162,508 suburban vehicles and 18,546 buses.

The state maintains a system of more than 500 mi. of inland waterways making up the barge canal system. This incorporates the Hudson and Mohawk rivers and some lakes, providing altogether 800 mi. of navigable routes used by freight and pleasure vessels.

Thirty-six railroads operate a total of 7,500 mi. of single track within New York state.

In 1955 New York state had 263 landing facilities including 214 airports, 37 seaplane bases and 12 heliports. During 1954 the four New York metropolitan airports, New York International at Idlewild (largest airport in the world), LaGuardia, Newark and Teterboro, handled a total of 9,320,838 air passengers. During the first six months of 1955 passenger traffic was up 16.3% over the first half of 1954. During 1954 New York city's four airports also handled 245,559,000 lb. of air cargo and 80,774,500 lb. of airmail.

Banking and Finance.—At the end of 1954 there were 692 banks with total resources of \$59,104,736,000 and deposits of \$52,603,264,000 operating in New York state. In addition, there were 236 savings and loan associations with about \$2,200,000,000 total assets and \$1,862,994,000 due private shareholders.

State revenues during the fiscal year ended March 31, 1955, totalled \$1,159,155,104. Expenditures totalled \$1,158,127,725, leaving an operating surplus of \$1,027,379. Total state debt as of March 31, 1955, was \$682,344,129. Of the state's general fund expenditures, 44% went for operation of the 19 state departments, state commissions and agencies, 60 state correctional and health institutions and 34 educational institutions, as well as the legislature, courts, highway maintenance and construction. The remaining 56% went to localities in the form of state aid for schools, welfare, highways, health and other operations. Tax stabilization reserve funds on March 31, 1955, aggregated \$144,045,310.

Agriculture.—New York state ranked 13th in 1954 in cash receipts from farm marketings of agricultural products, a total of \$816,854,000 being

reported. The 1953 total was \$874,702,000. In addition, government payments to farmers in 1954 were \$3,753,000 compared with \$4,949,000 in the previous year.

Cattle sold for meat were valued at \$53,175,000. Sale of milk and other dairy products in 1954 amounted to \$369,998,000.

The value of livestock and poultry on farms as of Jan. 1, 1955, was \$337,214,000. This included 2,356,000 cattle, 14,887,000 chickens, 73,000 horses, 1,000 mules, 160,000 hogs and 153,000 sheep. Turkeys raised in 1954 totalled 942,000.

Table I.—Principal Crops of New York

Crop	Indicated 1955	1954	Average 1944-53
Corn, bu.	30,573,000	29,568,000	26,326,000
Wheat, bu.	10,048,000	10,065,000	10,352,000
Oats, bu.	30,299,000	26,888,000	25,692,000
Barley, bu.	3,162,000	2,560,000	2,535,000
All hay, tons	5,078,000	5,512,000	5,735,000
Beans, dry (100-lb. bags)	1,314,000	1,396,000	1,452,000
Soybeans for beans, bu.	84,000	88,000	102,000
Potatoes, bu.	29,760,000	31,560,000	33,341,000
Apples, bu.	17,100,000	16,900,000	14,046,000
Peaches, bu.	1,300,000	1,010,000	1,337,000
Pears, bu.	495,000	285,000	548,000
Grapes, tons	75,400	94,000	58,920
Cherries, tons	38,200	30,100	22,100
Maple sugar, lb.	37,000	24,000	51,000
Maple syrup, gal.	461,000	378,000	448,000

Source: U.S. Department of Agriculture.

Manufacturing and Industry.—In 1953 the state's manufacturing firms added \$14,410,234,000 in value to the raw and semifinished material they purchased for processing, compared with \$3,313,649,000 in 1939.

In terms of value, New York state produces approximately 67% of the country's total output of women's dresses, coats and blouses, 94% of women's furs and 41% of men's and boys' tailored clothes. The state leads all others in the apparel, printing and publishing, paper and paper products and furniture industries. It produces 66% of the value of photographic equipment manufactured in the nation. The state is also noted as a producer of food products, chemicals, leather goods, optical instruments and lenses, millinery, children's wear, scientific instruments, dolls, costume jewellery and office machines.

Table II.—Principal Industries of New York

	All employees 1953	Salaries and wages 1953 (in 000s)	Value added by manufacture 1953 (in 000s)	Value added by manufacture 1952 (in 000s)
Food and kindred products	140,433	\$554,925	\$1,240,474	\$1,152,719
Textile mill products	76,091	267,765	453,334	440,050
Apparel and related products	393,956	1,262,114	2,126,938	1,901,505
Lumber and products (except furniture).	16,144	50,793	81,191	84,922
Furniture and fixtures	39,212	151,659	260,537	286,318
Paper and allied products	71,598	281,652	501,628	440,132
Printing and publishing industries	159,303	768,597	1,469,011	1,507,468
Chemicals and allied products	67,924	299,231	880,390	853,716
Petroleum and coal products	6,358	31,649	57,031	52,497
Rubber products	9,531	38,659	66,197	47,811
Leather and leather products	65,208	200,495	299,390	257,902
Stone, clay, glass products	41,206	173,371	323,159	322,196
Primary metal industries	88,872	415,455	732,067	634,392
Fabricated metal products	100,301	418,418	725,599	669,722
Machinery (except electrical).	158,425	723,741	1,267,484	1,098,032
Electrical machinery	140,065	576,772	983,274	833,762
Transportation equipment	141,850	699,738	1,081,342	929,423
Instruments and related products	84,182	398,478	745,446	806,526
Miscellaneous manufactures	174,698	677,023	1,100,115	"

*Withheld because the estimate did not meet publication standards, either on the basis of the associated standard error of estimate or on the basis of a consistency review.

Source: U.S. Department of Commerce, Annual Survey of Manufactures, 1953.

There were 5,856,000 persons employed in the state in 1954, exclusive of agricultural workers, proprietors, domestics and personnel of the armed forces, a gain of 1,678,000 since 1939. Average weekly factory earnings in 1954 were \$71.50. (E. M. De.)

Mineral Production.—Table III shows the tonnage and value of those

Table III.—Mineral Production of New York

Mineral	1953		1952	
	Quantity	Value	Quantity	Value
Cement (bbl.)	14,965,000	\$ 39,388,000	14,624,000	\$ 36,679,000
Clays	961,000	1,303,000	1,219,000	1,292,000
Coke	4,590,000	69,907,000	4,343,000	65,232,000
Gypsum	987,000	3,507,000	1,144,000	3,816,000
Ferrous alloys	268,000	71,735,000	258,000	74,156,000
Iron ore	3,825,000	36,346,000	3,244,000	34,515,000
Iron, pig	4,698,000	237,030,000	4,025,000	198,482,000
Lead	1,000	376,000	1,000	361,000
Natural gas (thousand cu. ft.)	2,347,000	742,000	3,627,000	1,059,000
Petroleum (bbl.)	3,800,000	16,260,000	4,242,000	17,940,000
Salt	3,323,000	17,351,000	3,417,000	16,746,000
Sand and gravel	22,531,000	23,494,000	20,270,000	18,288,000
Slate	114,000	1,733,000	126,000	1,811,000
Stone	15,962,000	25,251,000	16,235,000	25,244,000
Talc	156,000	941,000	150,000	4,070,000
Zinc	52,000	11,852,000	33,000	10,835,000
Other minerals . . . . .	...	8,324,000	...	8,095,000
Total		\$186,868,000		\$180,751,000

*Values for processed materials are not included in the totals.

mineral commodities produced in New York in 1952 and 1953 (preliminary) whose value exceeded \$100,000. In 1953 New York was first among the states in output of ilmenite and talc, second in salt, third in slate and zinc and fifth in cement, gypsum, iron, sand and gravel; and ranked 19th in the value of its mineral output, with 1.30% of the U.S. total.

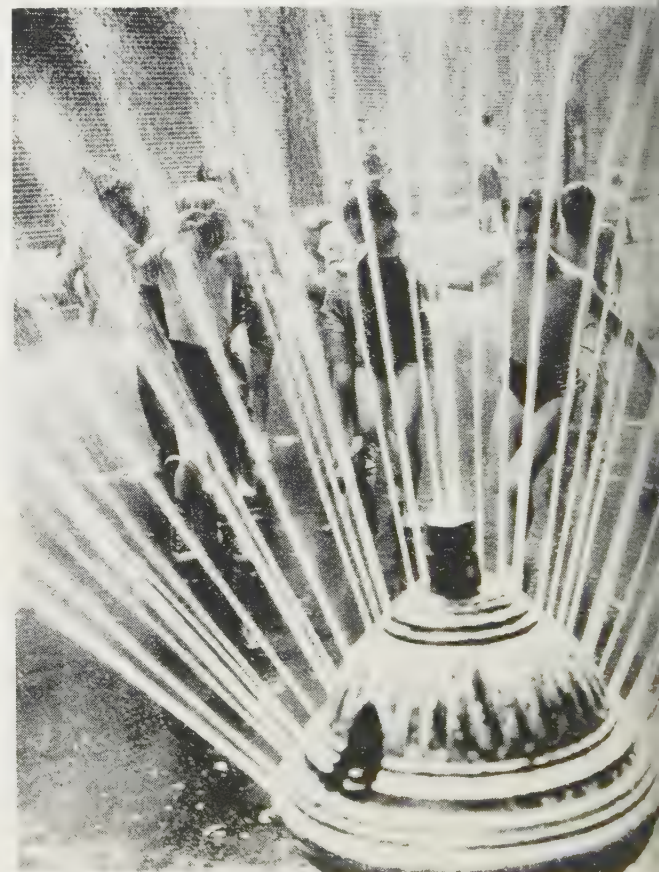
New York City. The largest city in the U.S., second in world only to metropolitan London. New York continued to grow, reaching an estimated population of 8,200,000 in mid-1955, in an area of 319.1 sq.mi.

In the second year of Mayor Robert F. Wagner's administration, the 1955-56 fiscal year expense budget totalled \$1,733,325,423.17, a record high for the city. Among the increased expenditures was the sum of \$27,413,151.90 to implement the Career and Salary plan, which, inaugurated in July 1954 and completed one year later, re-evaluated the work of city employees and determined the proper job classification and salary for each.

In Sept. 1955 the city's public schools recorded a net enrollment of 923,505 students. Twenty-four new schools or additions were opened at a cost of \$42,500,000; notable among them was a school to accommodate children suffering from cerebral palsy. Private and parochial school enrollment increased, reaching approximately 325,000 students. The four municipal colleges offered free higher education to about 73,000 students during the school year 1954-55.

The police department in mid-1955 reported a force of 21,800 men, the highest in history. Operation "25," an experiment in the calculation and assignment to a crime-ridden area of the optimum police manpower, was successful in apprehending an increased number of criminals and ultimately in reducing the crime rate. It was then extended to other "trouble" areas in the city, and credit was given to these operations for an over-reduction of crime in the first six months of 1955.

The city's complex transit system of subway and bus lines was put under the professional management of the Transit authority, a three-man, salaried team with expert knowledge in labour management, banking and transportation. The city bid farewell to a 77-year-old landmark, the Third Avenue El, and thus ended the era of elevated railways.



NEW YORK CITY CHILDREN playing in the spray of an open fire hydrant during a hot spell in July 1955

During the year an estimated 13,000,000 visitors were attracted to the city, including delegates to more than 700 conventions, among whom were 600 mayors and their families who attended the national convention of the U.S. Conference of Mayors. Ballet, opera, concerts, light opera, stage plays, motion pictures, television and radio programs and museum exhibitions were the major attractions for the visitors and for the city's own residents. The Summer festival staged special events of particular interest to tourists and successfully counteracted the usual summer slump in business, accounting for a higher percentage than ever before of the \$1,000,000,000 spent by visitors during the year.

New York provided a wide variety of events for the sports enthusiast. It was the scene of two championship boxing bouts, the light-heavyweight and heavyweight divisions. The Davis tennis matches, in which the U.S. lost the cup to the Australian team, and the Nationals, in which the U.S. won in all divisions, were both played at the West Side Tennis club in Forest Hills. In baseball a "subway" series was played between New York Yankees and the Brooklyn Dodgers, from which the Dodgers emerged as world champions. (W. R. Pr.)

New Zealand. A realm of the Commonwealth of Nations in the South Pacific, New Zealand proper comprises the large North and South Islands, and Stewart, Chatham and other minor islands. Dependencies: (i) island territories (Tokelau Islands and Cook and associated islands); (ii) Ross (antarctic) dependency; (iii) Western Samoa (trust territory). Area: New Zealand proper 103,740 sq.mi.; island territories 193 sq.mi.; Ross dependency about 175,000 sq.mi.; Western Samoa 1,131 sq.mi. Pop. (1951 census): New Zealand proper 1,939,472, including 115,676 Maoris; island territories 105 (including 15,079 in Cook Islands); Western Samoa 84,000. Pop. of New Zealand proper (1955 est.) 2,136,000; island territories (1954 est.) 22,116. Language: English; Maori (a Melanesian language). Religion: Christian (Anglican 37.5%, Presbyterian 23%, Roman Catholic 13.6%, Methodist 8%, Baptist 1.7%). Chief cities (1953 est.): Wellington (cap.) 126,000 (excluding Hutt); Auckland 131,400; Christchurch 126,600; Dunedin 71,100; Hutt 46,600. Queen, Elizabeth II; governor general in 1955, Lieut. Gen. Sir Willoughby Norrie; prime minister, Sidney George Holland.

History.—New Zealand's economy showed a high level of prosperity in 1955 although by mid-year there were signs of tendencies toward inflation. The situation had been caused largely by a high degree of private imports, with a fall in overseas exports. But agricultural production remained high and there was no unemployment and no major industrial disputes.

The minister of external affairs, T. L. Macdonald, attended the conference of the Southeast Asia Defense Treaty organization (SEATO) at Bangkok in February. He also attended the ANZUS (Australia, New Zealand and the U.S.) council in September, the United Nations meetings in October and a meeting of the Colombo plan countries in the same month. A new diplomatic post was established at Singapore when Foss Shanahan was appointed commissioner for New Zealand in southeast Asia. His appointment emphasized the change in New Zealand's main line of commitment in commonwealth defense plans. A contingent of troops was sent to assist the commonwealth strategic command in southeast Asia. The prime minister, S. G. Holland, attended a commonwealth prime ministers' conference in London in January. The deputy prime minister, K. J. Holyoake, visited Moscow at the invitation of the Soviet government in October.

Much interest was aroused by the announcement of plans for a New Zealand antarctic expedition to link up with the com-

monwealth transcontinental antarctic expedition. The New Zealand party was to be based on New Zealand territory at McMurdo Sound in the Ross Sea and would be led by Sir Edmund Hillary. New Zealand gave £50,000 to the commonwealth expedition and raised a further £100,000 by public appeal for the New Zealand expedition.

The budget, the first of the present finance minister, J. T. Watts, was introduced in July. It was a liberal budget with £9,800,000 concessions to the taxpayer and increases in social security benefits and war pensions. The biggest tax cut was a 20% rebate on income tax with an upper limit. Rates of death gift duty were liberalized and sales tax on most remaining articles taxable was removed. A special feature was restrictions on instalment purchasing in order to correct inflation tendencies. The budget figure showed estimates as follows: receipts £192,700,000, expenditure £190,300,000. A capital program of £73,900,000 was envisaged and £26,700,000 on defense. For the production year ended June 30 there was an over-all deficit of £42,300,000 in overseas exchange transactions compared with a surplus of £25,200,000 in the previous 12 months. Over the previous 16 years the national income had increased fourfold and in 1955 stood at £802,000,000, while the value of goods and services showed a similar increase.

The high degree of prosperity was marked by increased internal price stability and by a steady rise in production in primary and secondary industry. The government successfully floated a £20,000,000 loan on the London market and also converted or repaid a maturing loan of £12,000,000. In order to finance the dollar expenditure involved in the Murupara scheme \$16,000,000 were borrowed from the United States. In August measures to check inflationary tendencies were taken by the Reserve Bank. The bank rate, which stood at 4% at the beginning of the year, was raised in July to 5%, in September to 6%, and to 7% in October. The percentage of demand liabilities which trading banks had to maintain with the Reserve Bank was also increased from 15% to 16½% and measures were taken to curtail bank overdrafts. There was also a general tightening of building controls. (A. T. Cl.)

Education.—Schools, including Maori (1952): primary (including district high and intermediate schools or departments) 2,361, pupils 339,448, teachers 10,217; secondary (including secondary departments of district high and combined secondary-technical): 248, pupils 44,915, teachers 2,230; vocational 30, pupils 16,179, teachers 905; part-time vocational centres 145, students 26,349. University of New Zealand (4 constituent colleges and 2 associated agricultural colleges), 10,365 full and part-time students (4,900 full-time in 1954), teaching staff (1951) 701. Teachers in training (1953) 2,354. Correspondence schools (for those in isolated rural areas): primary 1,596, secondary 435, technical 1,420.

Finance and Banking.—Monetary unit: New Zealand pound, at par with the pound sterling and with an exchange rate of £N.Z.0.36 to U.S. \$1. Budget (consolidated fund, 1954–55 actual): revenue £N.Z.191,216,000, expenditure £N.Z.184,376,000; (1955–56 est.): revenue £N.Z.192,700,000, expenditure £N.Z.188,256,000. Social security fund (1954–55; 1955–56 est. in parentheses): revenue £N.Z.70,314,000 (£N.Z.74,100,000), expenditure £N.Z.67,163,000 (£N.Z.73,422,000). Total public debt (March 31, 1955) £N.Z.730,084,000, of which £N.Z.99,880,000 domiciled in London. Currency circulation (Aug. 1954) £N.Z.61,000,000, (April 1955) £N.Z.62,500,000. Bank deposits (Aug. 1954) £N.Z.231,400,000, (April 1955) £N.Z.250,300,000. Gold and foreign exchange (reserve bank only, Dec. 1954) U.S. \$239,000,000, (July 1955) U.S. \$258,000,000.

Foreign Trade.—(1954) Imports £N.Z.213,300,000, exports £N.Z.243,900,000. Main sources of imports: U.K. 57%; Australia 13%; other sterling area 8%; U.S. and Canada 10%; continental European Payments union countries 7%. Main destinations of exports: U.K. 67%; continental E.P.U. 16%; Australia and other sterling area 6%; U.S. and Canada 7%. Main exports: wool 36%; butter 18%; lamb 16%.

Transport and Communications.—Roads (1953): 123,800 km. Licensed motor vehicles (1953): cars 312,000, commercial vehicles 105,600. Railways (1954): 5,700 km.; freight, ton-kilometres 1,756,000,000. Shipping: merchant vessels of 100 gross tons and more (July 1954) 167; total tonnage 244,000. Air transport (1953): passenger-kilometres 228,026,000; freight, ton-kilometres 6,013,000; kilometres flown 12,161,000. Telephones (March 1954): 456,289. Licensed radio receivers (March 1955): 508,900.

Agriculture.—Main crops: (metric tons, 1954) wheat 109,000; barley 45,000; oats 27,000; (1953) potatoes 106,000; dry peas 16,000; (1952) linseed 10,000; tobacco 2,600. Livestock (Sept. 1954): cattle 5,782,000; sheep 37,275,000; pigs 656,000; horses (Jan. 1953) 158,065. Livestock products (metric tons, 1954): wool 135,000; meat 573,000 (of which beef and veal 202,000, mutton and lamb 333,000, pork 38,000); butter 188,400; cheese 106,800; milk (1952–53) 5,342,000. Wine production (1953) 2,000.

Industry.—Index of employment (1954: 1948=100) 112. Fuel and power (1954): coal 837,700; lignite 1,784,000; manufactured gas 146,800,000 cu.m.; electricity 3,745,000,000 kw.hr. Production (metric tons, 1954): cement 322,700; (1953): tungsten 25; superphosphates 691,000; wood pulp 35,000, (1954) 74,250; sawn timber (cu.m., 1953) 254,000; hardwood 96,000. New dwelling units completed (1954-55) 18,500.

Nicaragua. A Central American republic, Nicaragua is situated between Honduras on the north and Costa Rica on the south. Area: 57,143 sq.mi., of which 3,475 sq.mi. is water. Pop.: (1950 census) 1,057,023; (1954 estimate) 1,224,000. Capital: Managua, pop. (1950 census) 109,352. Other largest cities are Chinandega, 13,146; Granada, 21,035; León, 30,544; Masaya, 16,743; and Matagalpa, 10,323. Language: Spanish. Religion: predominantly Roman Catholic. President in 1955: Gen. Anastasio Somoza.

History.—Strained relations between Costa Rica and Nicaragua were spotlighted in Jan. 1955, when the Organization of American States commission investigating the unsuccessful Costa Rican revolt (see COSTA RICA) accused Nicaragua of aiding the rebels. During U.S. Vice-Pres. Richard M. Nixon's Central American tour, Pres. Anastasio Somoza complained that the report of the Organization of American States had been released without giving him an opportunity to state his position. Friction with Costa Rica reappeared in July when President Somoza charged that Col. Frank Marshall, who suppressed the January Costa Rican revolt, had plotted his murder with official Costa Rican approval.

Trouble also flared on Nicaragua's northern border where Honduras rushed troops, claiming that Nicaraguan soldiers had penetrated Honduran territory. This incident further aggravated the old dispute over the Morazán and Jerez area which was awarded Honduras in an arbitration decision made by the king of Spain in 1906. In October President Somoza proposed the unification of Honduras and Nicaragua to settle this dispute and promote Central American union. When the Nicaraguan Conservative party, indicating that it favoured strong support of the Organization of Central American States (*q.v.*), said that republican forms of government were necessary to the success of the organization, Somoza offered to resign to help achieve Central American union.

Civil liberties remained insecure in Nicaragua during 1955. The Inter-American Press association negotiated the release of the editor of *La Prensa*, Pedro Joaquín Chamorro, Jr., who had been convicted of revolutionary conspiracy in January. However, Hernán Robledo, editor of *La Flecha*, who fled to Costa Rica and later to Mexico City, could not return except to stand trial for allegedly plotting to overthrow Somoza, who later deported two staff members of *La Flecha* to Costa Rica. Moreover, the president refused the request of important members of the Conservative party that he grant general amnesty to everyone implicated in the April 1954 plot against his life. The Conservative party later joined the Liberal Independent party, a dissident branch of Somoza's party, in calling for a complete return to constitutionality, the lifting of the state of siege imposed in April 1954, and unified opposition to Somoza's reelection. Somoza's party countered by citing the unanimous approval by congress in 1954 of the constitutional amendment which permits the president to succeed himself. The state of siege was finally lifted in April 1955.

In 1955 the World bank lent Nicaragua \$7,500,000 to finance a thermoelectric power plant in Managua and \$1,500,000 for agricultural development, thus making a total of \$18,200,000 lent by the bank to that country. (See also ORGANIZATION OF AMERICAN STATES.) (R. HN.)

Education.—In 1953 there were 1,765 state elementary schools, 6 normal schools, 39 secondary schools, 6 professional schools, 1,727 mixed (urban and rural) schools, 49 other schools and 1 university (León) with a total of 4,899 teachers and 123,832 pupils.

Finance.—The monetary unit is the córdoba, valued on Aug. 31, 1955 at 14.18 cents U.S. currency, official rate, and 13.51 cents, curb rate. The official rate was changed from 20 cents to 14.18 cents effective July 1, 1955. The national budget for the fiscal year 1955-56 (July 1-June 30, 1955) placed expenditure at 240,300,000 córdobas and revenue at 238,000,000 córdobas. The public debt (Dec. 31, 1953) was 47,508,000 córdobas, of which 23,011,000 córdobas was external. Currency in circulation (July 31, 1955) totalled 120,600,000 córdobas; demand deposits, 146,700,000 córdobas. The retail price index (Managua) stood at 188 in June 1954 (1948=100).

Trade and Communications.—Exports in 1954 totalled \$62,775,000; imports, \$58,306,000. Leading exports were coffee (40%), cotton (27%), gold (13%), timber (5%) and sesame (4%); leading imports, machinery and apparatus (18%), vehicles and parts (17%), chemicals and drugs (11%) and iron and steel and manufactures (9%). Leading customers were the U.S. (45%), Germany (14%), the U.K. (12%), Japan (11%) and the Netherlands (5%); leading suppliers, the U.S. (65%), Germany (9%), the Netherlands Antilles (5%), the U.K. (3%) and Panama (3%).

In 1951 there were 268 mi. of railway and (1950) 445 mi. of surfaced highways. On Jan. 1, 1955, there were 4,078 automobiles, 2,302 trucks and 302 buses. Telephones (Jan. 1, 1954) numbered about 3,500, none of which was automatic.

Agriculture.—Production of coffee in the 1954-55 season was estimated at 326,000 bags of 132 lb. each; exports in 1954 were 285,000 bags of 480 lb. each; rice (rough), 56,200,000 lb.; tobacco (1954), 2,850,000 lb. Exports in 1954 included bananas, 576,831 stems; sesame, 14,370,000 lb.; cottonseed, 35,375 short tons; timber, 36,399,000 bd.ft. Cattle (1954) numbered 1,200,000.

Minerals.—In 1954, 233,149 troy oz. of gold were exported. (J. W. Mw.)

Nickel. World production of nickel is shown in Table I and the salient features of the industry in the United States are shown in Table II, based on reports by the U.S. bureau of mines.

Table I.—World Production of Nickel

	(In short tons)				
	1950	1951	1952	1953	1954
Canada	123,659	137,903	140,559	143,693	159,992
Cuba . . . . .	..	..	8,924	13,844	14,545
Finland . . . . .	..	94	446	418	187
New Caledonia	4,685	7,400	11,750	18,800	15,100
South Africa	929	1,254	1,444	1,891	2,112
U.S.S.R. (est.)	32,000 [†]	36,000 [†]	41,000 [†]	44,000 [†]	47,000
United States	913	756	633	602	2,645
Total	162,000	184,000	205,000	223,000	242,000

Table II.—Nickel Supply in the United States

	(In short tons)				
	1950	1951	1952	1953	1954
Production	913	756	633	602	2,645
Secondary recovery	8,795	8,602	7,749	8,352	8,701
Imports*†	96,640	101,620	118,372	131,685	144,100
Nickel content	91,281	93,116	108,850	118,737	131,787
Exports*†	3,645	4,622	6,941	15,168	14,241
Consumption	98,904	86,416	101,397	105,681	94,733

*Includes gross weight (not nickel content) of ore, matte, oxide, alloys and scrap.
†Due to changes in classification, 1952-54 data are not strictly comparable to earlier years.

United States.—Domestic production was increased to a new record in 1954 by opening the deposit at Riddle, Ore. A nickel smelting plant, completed in 1954, began commercial production in Jan. 1955.

Canada.—Output of nickel in the first eight months of 1955 totalled 118,059 short tons.

Cuba.—Several new nickel mines went into production in 1954. Expansion of capacity by 75% was begun at Nicaro in Oct. 1954.

Rhodesia and Nyasaland Federation.—In 1954, Southern Rhodesia produced 62 short tons of nickel and exported 55 tons all to western Germany. Messina Transvaal Development Corp. Ltd., was drilling a nickel deposit about 45 mi. north of Sinoia at the end of 1955. (F. E. H.; B. B. M.)

Niger: see FRENCH UNION; FRENCH WEST AFRICA.

Nigeria: see BRITISH WEST AFRICA.

Nixon, Richard Milhous (1913-), U.S. vice-president, was born on Jan. 9, 1913, in Yorba Linda, Calif., near Los Angeles. He was educated at Whittier college, Whittier, Calif., and at Duke university, Durham, N.C., and practised law for five years at Whittier. At



VICE-PRESIDENT RICHARD M. NIXON climbing back into fishing boat after falling out during a fishing mishap in the Florida Everglades in 1955

few months in Washington, D.C., as attorney for the Office of Emergency Management (Jan.-Aug. 1942), Nixon was commissioned a lieutenant, junior grade, in the U.S. navy. He saw service in the South Pacific and by the time of his discharge in 1946 had been promoted to lieutenant commander. In Nov. 1946 he was elected to the U.S. house of representatives as a Republican from the 12th California district and was re-elected in 1948 for second term. In the house he was appointed to the un-American activities committee and figured prominently in the investigations that led to the Alger Hiss trial. In Nov. 1950 he was elected U.S. senator from California.

At the 1952 Republican convention in Chicago, Nixon was nominated vice-president on July 11 and immediately began a vigorous campaign as the running mate of Dwight D. Eisenhower, and with him won a decisive victory at the polls on Nov. 4. Nixon was sworn into office as the 36th U.S. vice-president on Jan. 20, 1953, at Washington, D.C., shortly before Eisenhower's inauguration. He became one of the administration's most active and trusted "trouble shooters," not only in domestic political matters but in foreign affairs.

In February-March 1955 Nixon made a month's good-will tour of Caribbean nations. On March 17, following publication of the Yalta documents, he said he did not believe there was any deliberate attempt to sell out to the Communists" at the 1945 conference. Nixon viewed the Geneva conference of the heads of the Big Four Powers (July 1955) as possibly the world's last chance" to attain lasting peace—a view that differed somewhat from that of Secretary of State John F. Dulles.

NRB: see NATIONAL LABOR RELATIONS BOARD.

Nobel Prizes. The Nobel prizes for literature, physics, chemistry, medicine and peace, first awarded in 1901, were established by the Swedish industrialist Alfred Bernhard Nobel (1833-96). Each award consists of a gold medal and a sum of money which varies with the income from the \$9,000,000 fund set up by Nobel's will. In 1955 it amounted to \$36,720 for each award, which was a record high.

The peace prize for 1954 was awarded in 1955 to the Office of the United Nations High Commissioner for Refugees. Established Dec. 14, 1950, to protect racial, religious and political refugees, the office administers the UN Refugee Emergency fund which provides financial aid for the neediest of the refugees. The peace prize cash award would go directly into this fund. This prize is given to persons, organizations or institutions "who shall have most and best promoted the fraternity of nations and the abolishment or destruction of standing armies and the formation or extension of peace congresses." The committee postponed naming a winner for 1955.

Halldór Kiljan Laxness, the Icelandic novelist, was the winner of the prize in literature for his "vivid epic writing which has renewed the great Icelandic narrative art." His best-known book outside his own country was *Independent People*, which was a Book-of-the-Month club choice in the United States in Sept. 1946. Two other of his books had been translated into English, *Salka Valka* and *The Great Weaver of Kashmir*.

The 1955 prize for medicine was awarded to Axel Hugo Theorell, a Swedish biochemist, for his discoveries on the nature and action of oxidation enzymes. Theorell, who was stricken by poliomyelitis when a young man and forced to abandon his career as a medical practitioner, was head of the biochemistry department of Stockholm's Nobel Medical institute.

The chemistry prize went to Vincent du Vigneaud of Cornell Medical college at New York hospital for his work on two hormones that help in childbirth and keep a check on vital organs such as the kidneys.

Again the prize in physics was awarded jointly, this time to two Americans, Polykarp Kusch of Columbia university and Willis E. Lamb, Jr., of Stanford university, for their work in atomic measurements.

The formal presentation of the 1955 prizes was made at the traditional Nobel ceremonies in Stockholm on Dec. 10, the anniversary of Nobel's death. (See separate article on each recipient.)

(A. J. RR.)

North Atlantic Treaty Organization. The North Atlantic Treaty organization, or NATO, established in 1949, had by 1955 proved a powerful instrument for the consolidation of the free western world and for the preservation of peace and democracy. In spite of the fact that, partly as a matter of national economy and partly through the use of French NATO divisions in North Africa, the manpower commitments of various member nations were cut during the year, equipment, supplies and general military efficiency had been considerably increased. The number of airfields and the length of the fuel pipeline network had steadily grown. Design of a fighter plane for close support of NATO forces and of a common air defense system were parts of the program to develop new nonnuclear weapons on behalf of NATO.

SHAPE (Supreme Headquarters, Allied Powers in Europe) established in the Netherlands an Air Defense Technical centre in order to develop an integrated NATO system of aircraft control and early warning that could be transmitted and understood despite language barriers. Problems were created by the decision to use nuclear weapons for defense; the question arose on whose authority these weapons would be used. Pres. Dwight D. Eisen-

hower declared on Dec. 15, 1954, that he would follow the broad principle of maximum consultation with the NATO allies, and with the U.S. congress as well, consistent with the protection of the vital security interests of the United States and its allies. The use of these weapons might endanger the vital interests of other nations besides the U.S. and therefore consultation to the full extent compatible with military safety should be followed. On April 13, 1955, a draft agreement was published according to which the United States would from time to time make available to NATO atomic information deemed necessary to the development of defense plans and to the training of personnel in the use of and defense against atomic weapons.

General NATO Policy.—Returning from the NATO council meeting in Paris, U.S. Secretary of State John Foster Dulles declared on Dec. 21, 1954, that the important thing is that whatever Soviet Russia does, "we should proceed in our own way, steadily building our own strength and our own unity upon which our strength depends." The democracies should neither allow themselves to be lulled into a false sense of security by Soviet blandishments nor frightened into a state of paralysis by Soviet threats. He pointed out that violent Soviet threats directed against the west in connection with the Marshall Plan, NATO and German rearmament, and against Yugoslavia when it broke loose from Soviet control, did not result in any warlike action when they were countered by unity and determination. "If we persist in building defensive strength and unity in Western Europe it will actually promote peace." Dulles reported that for the first time NATO had the means of developing a strategy to protect western Europe from invasion. This new capability would constitute the strongest deterrent against military aggression. Should aggression, however, occur, the new strategy would make certain that western Europe would not be put into a position of having to be liberated.

As of late 1955, Dulles was proven right by the developments of the year. The Soviet Union replied to the growing strength of NATO and to the policy of strengthening the western defenses by a German contribution to the common defense with conciliatory gestures by which it apparently hoped to lull the democracies into a feeling of security. The democracies, however, proceeded with their plans for strengthening NATO and the meetings of the foreign ministers of the 15 member nations, which started in Paris on May 9, 1955, marked a turning point in NATO history.

The May 1955 Council Meeting.—For the first time not only the military plans but also the policies of NATO were discussed by all the members, whereas so far the Big Three alone had determined policy. This broadening of the scope of the council's discussions coincided with the acceptance of the German Federal Republic as the 15th NATO member. The combination of the expected 12 German divisions and of atomic weapons formed the basis of the forward strategy of western defense, though it was realized that it would take four years before the German divisions would be ready. In his speech at the opening session of the council, the German chancellor Konrad Adenauer stressed the ardent desire of the Germans for peace. "The German people have paid harshly for the horrors which were committed in their name by blind and evil leadership. . . . I see in the accession of the German Federal Republic to NATO . . . the expression of the need to overcome the narrow-minded nationalism which, in past decades, was the root of our disaster. . . . Within the community of free nations Germany will be an able and reliable partner and in this community we wish to employ all our efforts for the safeguarding of freedom and human dignity."

The North Atlantic council also welcomed the initiative of the Big Three—the United States, Britain and France—in pro-

posing to the Soviet Union negotiations to find means for resolving outstanding issues, especially the peaceful unification of Germany in freedom and steps toward the reduction, under effective safeguards, of armed forces. For the first time the Atlantic council also reviewed in common the situation in the middle east and in the far east. The Turkish foreign minister reported on the Bandung conference of Asian and African peoples. The Atlantic council welcomed the conclusion of the Turkish-Iraqi pact and of the Manila pact and expressed the hope that there would be no further resort to force in the far east, since this would so clearly endanger world peace. The thorough exchange of political views among the member nations, the council declared, "constitutes a most significant proof of the solidarity of the alliance." The member nations were resolved to continue these procedures in order to develop their policies on the basis of common principles.

Deterioration in the NATO Situation.—In spite of the growing military strength of NATO, there were in the fall of 1955 certain signs of rifts in the cohesive structure of NATO. German nationalist agitation against the Europeanization of the territory of the Saar, as demanded by France and agreed by Chancellor Adenauer, threatened to drive a wedge between the two nations, which were separated by bitter memories of the past and had only slowly begun to tread the paths to conciliation. A similar situation developed on the southeastern flank of NATO. There the age-old hostility between Turkey and Greece had been slowly overcome by wise and moderate statesmanship until nationalist passions flared up again as a result of the triangular dispute over Cyprus between Greece, Turkey and Britain. These three nations played a leading part among the six nations—United States, Britain, France, Italy, Greece and Turkey—which had co-operated to make the Mediterranean safe and free through the NATO southern command. This command established in June 1951, with its headquarters in Naples, Italy, succeeded under U.S. Adm. William M. Fechteler in fusing the forces of the six nations into an integrated whole. However, the neutralization of Austria and the neutralist trends in Yugoslavia complicated the defense of southeastern Europe, which seemed secured in 1954 by the defensive military alliance closely linking Yugoslavia, Turkey and Greece. At a meeting of the defense ministers of the NATO nations in Paris on Oct. 10, 1955, the supreme Atlantic naval commander, Adm. Jerauld Wright stressed that the Soviet Union had more submarines than all other nations combined and that it hoped thereby to drive a "iron wedge" between North America and western Europe. The conviction that Soviet policy was now fundamentally directed toward weakening the unity of NATO was responsible for the growing number of western proposals for broadening the scope of NATO beyond the purely military alliance and thus ensuring the growing solidarity of the peoples of the North Atlantic area.

The Atlantic Community.—In order to make the Atlantic Community "a lasting reality," to use the words concluding the report of the NATO council of April 1953, and to anchor it in the public opinion of the member nations, a conference of parliamentarians from the various NATO countries met in Paris in July 1955 and decided to establish a continuing and permanent association. Premier Mario Scelba of Italy urged in Washington, D.C., on March 29, 1955, that NATO should be developed from a purely military union into an organization for concerted economic, social and political action. "Military defense, while fundamental, is not sufficient alone," he declared. The NATO nations wished to defend not only their existence but a common heritage of liberty under law. To appeal to the western people and to strengthen them in their resistance to totalitarianism they must be reminded, as NATO's Secretary-General Lord Ismay said, that NATO "is something new and exciting and

revolutionary, the most challenging and constructive experiment in international relations ever attempted." The point of view of a growing number of public figures on both sides of the North Atlantic about the need for a strengthening and vitalization of NATO was expressed by the Belgian foreign minister Paul-Henri Spaak when he wrote in the quarterly *Foreign Affairs*: "Let us end our timid efforts, which at best show vague good will more than a clear awareness of realities, and let us accept the consequences of the plain fact that the fate of all of us in the West is inextricably linked. The West is condemned not only to wage war together but to create policy together. Let us continue the military efforts we have begun, but let us urgently set to work to improve our political relations, showing in this field also a sense and purpose of real solidarity." (See also *ARMIES OF THE WORLD*; *EUROPEAN UNITY*; *FOREIGN AID PROGRAMS, U.S.*)

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North Borneo: see BRITISH BORNEO.

North Carolina. A south Atlantic coast state, popularly known as the "Old North state" or the "Tar Heel state," North Carolina is one of the original 13 states of the union. Area: 52,712 sq.mi. (49,097 sq.mi. land, 3,615 sq.mi. water). Pop.: (est. July 1, 1955) 4,190,000; (1950 census) 4,061,929, of which 1,368,101 (33.7%) were urban, 2,693,828 (66.3%) rural and 1,096,720 (27%) nonwhite. Capital: Raleigh, pop. (1950) 65,679; other cities: Charlotte 134,042; Winston-Salem 87,811; Greensboro 74,389; Durham 71,311; Asheville 53,000.

History.—The North Carolina legislature of 1955, the longest in the state's history, was faced by difficult problems of (1) growing state needs (especially in education) and limited tax revenue and (2) the necessity of adjusting to the supreme court's decision outlawing segregation in the public schools. The legislature authorized minor tax increases to raise sufficient revenue to meet necessary expenditures, but it authorized only slight increases in expenditures for state services. The legislature completely revised the state's public school law and made the following major changes: (1) elimination from the law of any reference to race; (2) transfer of authority over enrolment and assignment of pupils from the state board of education to local boards of education; (3) transfer of ownership and operation of the state's school buses to local administrative units; and (4) substitution of yearly contracts for teachers and principals in lieu of continuing contracts. The legislature also established a nine-member state board of higher education to co-ordinate the operation of the state-supported institutions of higher education so as to avoid duplication and overlapping of educational effort.

Gov. Luther H. Hodges appealed to Negroes and whites to continue attending separate schools on a purely voluntary basis. It appeared that the majority of both races approved the governor's advice, for as schools opened in Sept. 1955 there was no integration of the races in the public schools. In September a federal district court invalidated a ruling of the board of trustees of the University of North Carolina preventing the admission of Negroes and three Negroes were admitted to the undergraduate school of the University of North Carolina.

North Carolina suffered heavy loss of life and property from a series of hurricanes that hit the state in 1954 and 1955. In Oct. 1954, hurricane "Hazel" swept through North Carolina, causing the loss of 19 lives, destroying hundreds of buildings at the beach resorts, and inflicting total property losses of \$120,-

000,000. In Aug. and Sept. 1955 hurricanes "Connie," "Diane," and "Ione" hit the coastal areas of the state in quick succession causing the loss of 5 lives and destroying property estimated at \$150,000,000.

The principal state officers in 1955 were Luther H. Hodges, governor (succeeded Gov. William B. Umstead, who died Nov. 7, 1954); Thad Eure, secretary of state; Henry L. Bridges, auditor; Edwin Gill, treasurer; Charles F. Carroll, superintendent of public instruction; William B. Rodman, attorney general; M. V. Barnhill, chief justice; L. Y. Ballentine, commissioner of agriculture; Frank Crane, commissioner of labor; Charles F. Gold, commissioner of insurance.

Education.—In 1953-54 there were 2,241 public elementary schools, with 22,970 teachers, 981 principals and supervisors, and 761,599 enrolled pupils and 937 high schools with 8,081 teachers, 883 principals and supervisors, and 206,467 enrolled pupils. These schools were operated at a cost of approximately \$151,000,000 including about \$10,000,000 of federal funds, \$121,000,000 of state funds, and \$20,000,000 of local funds. The average daily attendance in the public schools was 874,165; the number of inhabitants of school age (6-20) was about 1,200,000. The average salary for elementary school teachers was \$3,200 and for high school teachers \$3,250.

Social Insurance and Assistance, Public Welfare and Related Programs.—In June 1955, public grants amounting to \$1,614,028 were made to 51,780 persons for old-age assistance; \$1,214,685 to 19,756 families for aid to dependent children; \$417,019 to 11,321 persons for aid to the permanently and totally disabled; \$199,368 to 4,897 blind persons; and \$41,054 to 4,689 persons for general relief. For hospitalization of assistance recipients and other indigent persons the total amount expended for June was \$352,470. During the year ending June 1955, the total amount of public relief funds distributed was \$43,235,227, and unemployment benefits amounted to \$30,476,431.

In 1955 the state maintained 12 charitable institutions with 13,875 inmates (on June 30); 5 correctional institutions; and the state prison system with 10,079 prisoners on July 1, 1955.

Communications.—In 1955 the state highway and public works commission maintained 10,883 mi. of state highways, of which 10,746 were hard-surfaced; 55,740 mi. of secondary or county roads, of which 21,633 mi. were hard-surfaced; and 2,493 mi. of city streets, of which 2,170 mi. were hard-surfaced, making a total mileage maintained of 69,116. There were 4,700 mi. of railroads, 870 mi. of city bus routes and 11,912 mi. of passenger bus routes in 1955. There were 140 airports and 6 commercial airlines serving the state. There were 759,986 telephones in use in the state on June 30, 1955.

Banking and Finance.—On June 30, 1955, there were 95 national banks and branches with assets of \$622,072,000 and 438 state banks and branches with deposits of \$1,566,071,872 and assets of \$1,747,832,512. On Jan. 1, 1955, there were 146 building and loan associations operating under state charters with 267,732 members and total assets of \$387,050,993 and 32 federal savings and loan associations with total assets of \$242,659,946. In 1954-55 state receipts were \$868,233,889.19; disbursements \$897,444,350.45. On June 30, 1955, the state gross bonded debt was \$291,768,000, less bonds invested in sinking funds, \$60,531,840.85; net bonded debt \$231,236,159.15. Only \$68,410,000 was general fund

Table I.—Principal Crops of North Carolina

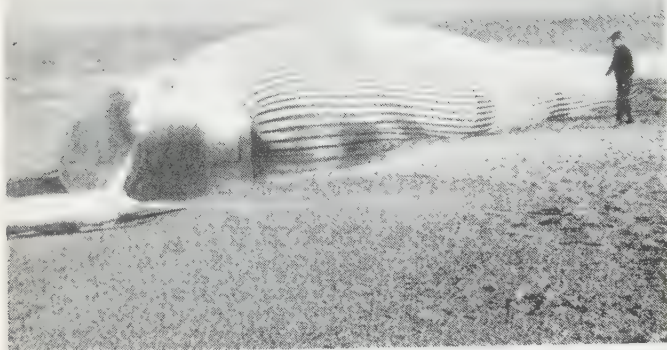
Crop	Indicated 1955	1954	Average 1944-54
Tobacco, lb.	1,043,435	913,874,000	855,264,000
Cotton, bales.	320,000	364,000	492,000
Corn, bu.	63,643,000	50,784,000	62,641,000
All hay, tons	1,253,000	1,081,000	1,266,000
Peasants, lb.	268,450,000	251,980,000	297,142,000
Wheat, bu.	6,966,000	7,436,000	7,178,000
Sweet potatoes, bu.	4,275,000	3,999,000	5,690,000
Irish potatoes, bu.	6,960,000	5,889,000	8,508,000
Oats, bu.	18,480,000	20,397,000	11,734,000
Soybeans, for beans, bu.	4,132,000	4,720,000	3,735,000
Peaches, bu.	1,150,000	1,742,000	1,720,000
Apples, commercial crop, bu.	40,000	1,900,000	1,220,000
Pecans, lb.	725,000	1,000,000	2,371,000

Source: U.S. Department of Agriculture.

Table II.—Principal Industries of North Carolina

	All employees 1953	Salaries and wages 1953 (in 000s)	Value added by manu- facture 1953 (in 000s)	Value added by manu- facture 1952 (in 000s)
Food and kindred products.	19,300	\$ 52,610	\$113,796	\$101,965
Tobacco manufactures.	22,934	68,140	385,481	350,029
Textile mill products.	230,437	598,893	924,511	868,939
Apparel and related products				71,466
Lumber and products (except furniture)	38,135	71,196	118,057	120,803
Furniture and fixtures				115,389
Paper and allied products	8,936	35,597	81,609	72,621
Chemicals and allied products	11,165	39,949	88,344	73,295
Primary metal industries	2,418	8,482	12,345	5,914
Transportation equipment . . . . .				...
Administrative and auxiliary	3,546	15,392	...	...

*Withheld because the estimate did not meet publication standards, either on the basis of the associated standard error of estimate or on the basis of a consistency review.
Source: U.S. Department of Commerce, *Annual Survey of Manufactures, 1953*.



WHALE CARCASS washed up on the North Carolina shore near Kitty Hawk in Feb. 1955

debt; the remaining debt was highway fund debt secured by proceeds from a tax on gasoline sales. The assessed value of property was \$5,943,198,630 on June 30, 1954. In the state and general fund there was a cash balance of approximately \$14,990,937 at the end of the 1955 fiscal year.

Agriculture.—The cash income of North Carolina farmers in 1954 was \$710,051,000 from crops; \$216,440,000 from livestock and livestock products; and \$6,107,000 from government payments. Total acreage harvested was 6,490,000. The average per farm value of the lands and buildings on the 286,900 farms in 1954 was \$8,580 with the average value per acre being about \$121.

The eastern agricultural area suffered heavily from severe hurricanes in the fall of 1954 and the summer of 1955. In response to a request from the governor, 28 counties were declared disaster areas making them eligible for federal emergency crop loans.

Manufacturing.—North Carolina leads the southeast in industrial production and is the nation's largest producer of textile and tobacco products. In recent years chemical, paper manufacturing and electrical machinery have experienced notable growth. In 1954 industrial establishments numbering 7,500 employed 441,000 wage earners at wages of approximately \$1,000,000,000. Estimated industrial production in 1954 was \$6,121,000,000 and electric power production was 14,737,000,000 kw.hr. (Jo. C. S.)

Table III.—Mineral Production of North Carolina
(Short tons, except as noted)

Mineral	1952		1953	
	Quantity	Value	Quantity	Value
Clays	1,358,000	\$ 2,080,000	1,466,000	\$2,535,000
Feldspar	269,000	2,416,000	300,000	3,290,000
Mica, scrap	59,000	1,551,000	57,000	1,429,000
Sheet (lb.)	595,000	664,000	619,000	1,308,000
Sand and gravel	8,725,000	5,665,000	6,911,000	4,993,000
Stone	9,648,000	14,695,000	9,317,000	14,424,000
Talc	115,000	1,772,000	119,000	578,000
Tungsten concentrates (60% WO ₃)	1,200	*	2,000	*
Other minerals . . . . .	...	5,883,000	...	9,889,000
Total		\$34,726,000		\$38,446,000

*Value included with other minerals.

Mineral Production.—Table III shows the tonnage and value of those mineral commodities produced in North Carolina in 1952 and 1953 (preliminary) whose value exceeded \$100,000. In 1953, North Carolina was far in the lead among the states in output of feldspar, was first in mica, second in asbestos, third in talc, and fourth in vermiculite. The state ranked 35th in the value of its mineral output, with 0.27% of the U.S. total.

North Dakota. A west north central state of the United States. North Dakota was admitted to the union Nov. 2, 1889; popular name, "Flickertail state." Area: 70,665 sq.mi., including 608 sq.mi. of water. Pop.: (1950) 619,636; (July 1, 1955 est.) 641,000. Urban pop. (1950) 26.6%. Capital (1950 pop., with 1955 est. in parentheses), Bismarck, 18,640 (23,300); chief cities: Fargo, 38,256 (43,700); Grand Forks, 26,836 (30,500); Minot, 22,032.

History.—State officers in 1955 were: governor, Norman Brunsdale; lieutenant governor, C. P. Dahl; secretary of state, Ben Meier; auditor, Berta E. Baker; treasurer, Albert Jacobson; attorney general, Leslie R. Burgum; commissioner of insurance, A. J. Jensen; commissioner of agriculture and labour, Math Dahl; superintendent of public instruction, M. F. Peterson; tax commissioner, J. Arthur Engen; public service commissioners, Martin Vaaler, Ernest D. Nelson and Anson J. Anderson.

The 34th legislative assembly (Jan. 4–March 4, 1955) enacted 355 bills. It raised the gasoline tax one cent and the auto registration fees 5% and 10% to provide more funds for highways, fixed the daylight speed limit at 65 m.p.h., added nine men to the state highway patrol, established a five-man state board of education, appropriated \$75,500,000, authorized a Garrison diversion conservancy district of 22 counties to plan irrigation, raised the minimum old-age assistance payment to \$60 a month less income, permitted the sale of liquor to Indians and provided that auto licence plates bear the slogan "Peace Garden State."

The embankment of Garrison dam was completed in the fall of 1955 and the generation of electric power was to start in Jan. 1956. It was expected that by June 30, 1956, the Garrison project would be approximately 90% completed. The \$4,200,000 Four Bears bridge, reaching 4,480 ft. across the reservoir at New Town, was opened in Oct. 1955. To June 30, 1956, \$251,780,700 had been appropriated for the Garrison project, including \$20,100,000 for fiscal 1956.

Education.—Public school teaching positions for the year ending June 30, 1954, were 6,815; public school enrolment 121,542 (elementary 92,880; high school 28,662); schools in session 3,051; average salary of teachers including city superintendents \$2,770; average cost per pupil enrolled \$269; total expenditures for public elementary and high schools \$31,820,058. The legislature appropriated \$11,809,252 for nine institutions of higher learning for the 1955–57 biennium. Enrolment in 12 institutions of higher learning with 642 in the faculties totalled 9,615 full-time and 656 part-time students in Oct. 1955.

Social Insurance and Assistance, Public Welfare and Related Programs.—For the year ending June 30, 1955, public assistance totalled \$9,783,065 (federal 44.9%, state 39.0%, county 16.1%). Old-age assistance cost \$6,754,145 (8,252 cases); aid to dependent children \$2,269,788 (4,644 children); aid to the blind \$76,928 (118 persons); aid to the permanently and totally disabled \$722,073 (880 persons); general assistance \$543,871 (764 cases); administrative expense \$936,933. Total expenditures for three charitable and three correctional institutions for fiscal 1955 amounted to \$5,988,134. Number of inmates in Sept. 1955: feeble-minded 1,150; insane 2,157; tubercular 107; penitentiary 202; training school 323; state farm 8.

Communications.—As of Dec. 31, 1954, the highway mileage was: state highways 6,605 mi., local roads 70,375 mi., prairie trails 39,501 mi. State and federal funds expended in 1954 on the state highway system were: for construction \$10,812,624; for maintenance \$4,026,705; for administration \$504,241. Appropriated to counties in 1954: from motor fuel taxes \$1,540,708; from motor vehicle registration fees \$3,213,164; from self-imposed property taxes \$4,435,161. Motor vehicle registration in 1955 to Aug. 31: passenger cars 199,761; trucks 93,397. Six railroads operated 5,259 mi. of track.

Banking and Finance.—On June 30, 1955, the Bank of North Dakota and 115 other state banks had resources of \$364,281,594 and deposits of \$333,717,221. Resources of 38 national banks were \$279,365,100 and deposits were \$256,823,700. State treasury collections for the year ending June 30, 1955, were \$60,162,233; disbursements were \$60,108,524. Total bonded indebtedness was \$20,201,250.

Table I.—Leading Agricultural Products of North Dakota

Crop	Estimated 1955		Average, 1944–53
	1955	1954	
Wheat, bu.	109,866,000	69,896,000	131,707,000
Corn, bu.	29,182,000	25,704,000	25,530,000
Oats, bu.	59,370,000	49,464,000	60,603,000
Barley, bu.	78,039,000	67,568,000	47,264,000
Rye, bu.	7,950,000	4,466,000	2,710,000
Flaxseed, bu.	25,992,000	24,624,000	13,050,000
Potatoes, bu.	14,700,000	20,600,000	19,058,000
Hay, tons	3,900,000	3,675,000	3,183,000
Sugar beets, tons	391,000	418,000	223,000
Soybeans for beans, bu.	1,146,000	1,100,000	201,000

Agriculture.—In 1954 cash farm income totalled \$471,233,000 (65.8% from crops, 32.9% from livestock, 1.3% from government payments), down 1.5% from 1953 and 13% from 1952. Income from livestock was up 6.4% over 1953; wheat accounted for 36% of income in 1954, 41% in 1953.

Table II.—Mineral Production of North Dakota
(Short tons)

Mineral	1952		1953	
	Quantity	Value	Quantity	Value
Coal	2,984,000	\$ 7,068,000	2,803,000	\$ 6,618,000
Sand and gravel	6,557,000	1,841,000	6,174,000	2,165,000
Stone	67,000	5,000	35,000	3,000
Other minerals . . . . .	...	3,143,000	...	10,451,000
Total		\$12,057,000		\$19,237,000

in 1953. On Sept. 15, 1955, the all-commodity index of prices received by farmers stood at 224% (1909–14 base period), compared with 242% a year earlier.

In 1954 there were 61,939 farms in North Dakota (65,401 in 1950); average size 674 ac. (630 ac. in 1950). On Jan. 1, 1954, 28,358 farms had telephones, 55,815 electricity, 11,178 television, 25,400 piped running water, 25,195 home freezers.

In the summer of 1955 high temperatures and adequate moisture pushed wheat along so rapidly that it escaped serious damage from rust,

but temperatures were too high for the best development of small grains.

Employment and Business Activity.—Nonagricultural employment in 1955 (January–August) averaged 113,050, or 0.3% above 1954, but a general decline in employment that set in in May made it doubtful if employment for the full year was as great as in 1954. To some extent declines in employment in construction, trade, transportation and utilities were offset by increases in mining, manufacturing, finance, service and government. In 1955 (January–August) manufacturing workers earned \$69.04 a week (\$66.94 in 1954); on July 1 farm labourers averaged \$147 a month with room and board. (E. R. N.)

Mineral Production.—Table II shows the tonnage and value of those mineral commodities produced in North Dakota in 1952 and 1953 (preliminary) whose value exceeded \$100,000. North Dakota ranked 41st among the states in the value of its mineral output in 1953, with 0.13% of the U.S. total.

Northern Ireland: see GREAT BRITAIN AND NORTHERN IRELAND, UNITED KINGDOM OF.

Northern Rhodesia: see RHODESIA AND NYASALAND, FEDERATION OF.

Northwest Territories. The Northwest Territories comprise all that part of Canada north of the 60th parallel of north latitude, except the portions thereof within the Yukon Territory and the provinces of Quebec and Newfoundland; it also includes the islands in Hudson bay, James bay and Ungava bay, except those within the provinces of Manitoba, Ontario and Quebec. Area: 1,304,903 sq.mi., of which 51,465 sq.mi. is water; pop. (1951 census) 16,004, including 5,344 whites, 3,803 Indians and 6,857 Eskimos.

For purposes of organization and administration, the territories were divided by order in council dated March 16, 1918, into the districts of Mackenzie (527,490 sq.mi.), Keewatin (228,160 sq.mi.) and Franklin (549,253 sq.mi.). The Northwest Territories act, 1952, as amended, provides for the government of the territories by a commissioner under instruction given from time to time by the governor in council or the minister of northern affairs and national resources. Legislative powers are in the hands of a council of nine members, of whom five are appointed and four elected from four constituencies of the Mackenzie district.

During 1955 the commissioner of the Northwest Territories was R. G. Robertson, deputy minister of northern affairs and national resources. Appointed members were: F. J. G. Cunningham, deputy commissioner; L. C. Audette; L. H. Nicholson; C. M. Drury; and Jean Boucher. Elected members were: John Parker; Frank Carmichael; Robert Porritt; and J. W. Goodall.

Education.—In 1955 the department of northern affairs and national resources operated federal schools at Fort Smith, Hay River, Fort Liard, Fort Rae, Fort McPherson, Rocher River, Fort Good Hope, Fort Norman, Fort Franklin, Arctic Red River, Marie River, Lac la Martre, Aklavik, Coppermine, Tuktoyaktuk, Chesterfield Inlet, Cape Dorset on Baffin Island, Coral Harbour on Southampton Island, and also at Fort Chimo and Port Harrison in the province of Quebec. A number of these schools were for Eskimos. A school was operated by the Discovery Yellowknife mines, 60 mi. N. of Yellowknife, and one was also operated by the Eldorado Mining and Refining Ltd. at Port Radium. Schools were operated at a number of the settlements by missions of the various churches with financial assistance from the federal government. Yellowknife had the only organized school districts, where a 12-room public and high school and a 4-room separate school were in operation. Correspondence courses were available, free of charge, to any child whose parents requested them or to any adult who wished to enrol. A vocational training program suitable for natives of the Northwest Territories and a special curriculum for use in Eskimo schools were being developed.

Public Health and Welfare Services.—Schools in most of the settlements are staffed by teachers who assist with welfare needs and organize community recreational programs in addition to their work in the classrooms.

During 1955 11 hospitals were operated in the Northwest Territories, 8 by missions, 1 by a locally elected hospital board at Yellowknife and 2 by private companies. Seven health centres were in operation. All hospitals and health centres received grants from the government of Canada.

Under the National Health Grants program, an eyesight survey was underway in the Mackenzie district, while chest X-rays were carried out during the summer months in conjunction with the department of national health and welfare. Cancer diagnosis, tuberculosis treatment, dental services for children in Yellowknife, Fort Smith and Hay River, and treatment of crippled children was provided without charge.

During 1955 a total of 91 persons received old-age assistance and 18 persons received blind persons' allowance. The territorial council and the government of Canada shared cost of providing allowances up to \$40 a month to residents permanently and totally disabled.

A physician and dentist accompany the annual eastern arctic patrol,

treating persons at points of call and visiting many settlements to make physical examinations and X-ray surveys and to administer preventive inoculations.

Transportation and Communications.—A direct inland water transportation route for a distance of about 1,700 mi. is provided by the Athabasca, Slave and Mackenzie river systems. Subsidiary routes on Lake Athabasca, Great Slave lake and Great Bear river and lake total more than 800 mi. The Mackenzie highway, connecting Grimshaw, Alta., with Hay River on Great Slave lake, continued to provide service during 1955. Scheduled air mail, passenger and express services were operated throughout the year to most of the settlements in the Mackenzie district.

Radio communications between nearly all settlements and trading posts in the territories and outside points were maintained through government and private radio stations.

Eastern Arctic Patrol.—The 1955 annual eastern arctic patrol was carried out by the government ship "C. D. Howe." This ship carried supplies and replacement staff to eastern arctic settlements, including Royal Canadian Mounted Police detachments, schools, hospitals and nursing stations, trading posts and missions. On board were administrative officers of the department of northern affairs and national resources and medical and dental officers of the department of national health and welfare who dealt with cases requiring attention at the places visited.

Agriculture and Fisheries.—Limited farming and horticultural activity is encouraged and assisted by the department of agriculture, which maintains an experimental substation at Fort Simpson. A limited experiment was being carried out with Eskimos at Fort Chimo to determine the feasibility of growing field and garden crops and raising livestock and poultry.

During the summer season of 1954 and the winter season of 1954–55, commercial fishing on Great Slave lake and other waters in that vicinity produced a total catch of 6,700,146 lb., with a market value of \$2,000,000. Whitefish, lake trout and inconnu were the principal species taken.

Hunting and Trapping.—Fur production in the territories during the year ended June 30, 1954, was valued at \$758,512, with a total of 418,867 pelts taken during that period. Fur production the previous year was valued at \$877,345, and 388,653 pelts were taken. A large part of the catch was muskrats. Further decline in the prices of most species and decreased production resulted in less income for the trappers. Trapping remains the principal occupation of the native population and is carried out under the Northwest Territories Game ordinance.

The herds of caribou continued to be one of the chief food resources for the Indians and Eskimos, and every effort was being made to preserve this resource for the natives.

Five semidomesticated reindeer herds were maintained by the federal government in the Mackenzie delta region for the benefit of the native population; three of the herds were under Eskimo management and one was privately owned. At the reindeer roundups in 1954 there were about 7,738 animals in the five herds. Large buffalo herds were also maintained in Wood Buffalo National park. A limited slaughter of reindeer and buffalo for meat production is carried out annually.

Mineral Production.—Mineral production in the Northwest Territories during 1954 was valued at \$10,548,781, of which gold accounted for \$10,193,131 and silver \$47,880. Crude oil is produced and refined at Norman Wells on the Mackenzie river, with 1954 production totalling 297,270 bbl. After being processed at the local refinery, the oil was shipped to various points on the Mackenzie river. (R. G. R.)

A democratic monarchy of northern Europe, Norway is bounded north by the Arctic ocean, east by Finland, the U.S.S.R. and Sweden, south and west by the North sea. Area 149,284 sq.mi. Pop.: (1950 census) 3,278,546; (1954 est.) 3,408,000. Capital: Oslo (1950 census) 434,047; (1954 est.) 450,000. Other principal cities (1950 census): Bergen 112,845; Trondheim 56,669; Stavanger 50,647. Religion: Lutheran Christian. Ruler in 1955: King Haakon VII. Prime ministers: Oscar Torp; after Jan. 22, 1955, Einar Gerhardsen.

Spitsbergen (official name, Svalbard), Norwegian since 1925, is an archipelago lying about midway between northern Norway and the north pole. Area: 23,957 sq.mi. Pop. (1950): about 1,000 Norwegians and an estimated 2,600 Russians.

History.—In connection with the joyful recognition of the tenth anniversary of liberation, May 7–9, 1955, a Norwegian gift of kr. 4,000,000 was presented to Sweden. The gift would be spent for the establishment of a centre for Swedish students and culture in Oslo, where a similar Danish centre had been established shortly after World War II.

The Labour party was firmly entrenched in power, and no fundamental shift in policy was involved when Oscar Torp resigned after three years and his predecessor, Einar Gerhardsen, resumed the position (Jan. 22, 1955). About half the cabinet was new, the rest holdovers, including the foreign minister, Halvard Lange. Torp was elected president of the *storting*, the position vacated by Gerhardsen, and from which Torp had come to the premiership.

The problems of the new government remained primarily economic. Norway, like Denmark, was importing more than it exported, and large sums were being invested in enterprises for future production. In April a loan of \$15,000,000 was negotiated in the United States, and one of \$25,000,000 from the World bank (International Bank for Reconstruction and Development). One heavy postwar investment, the government steel plant at Mo i Rana, began production in April, and was expected to turn out 170,000 tons of rolled steel per year. The hydroelectric power plant for the works lay deep in a mountain, under several hundred feet of rock, with miles of tunnels to carry water to the turbines. The reconstruction of north Norway was almost complete, and the total investment for homes made it possible for one-fifth of all Norwegians to live in houses built since 1945.

Ship tonnage was being steadily increased; at the end of 1954 Norway had a merchant fleet of 6,900,000 tons, about half of it in tankers. For Norwegian account the 34,500 ton "Jara-gua" was launched at Göteborg, Swed., in May; this would be the largest vessel in Scandinavia. Princess Astrid christened the 18,000 ton "Bergensfjord" being built at Newcastle, Eng., for the Norwegian America line. But the outlay for these achievements was great, and the government felt it necessary to impose curbs on both investment and spending. New taxes were levied and the interest rate was increased from 2½% to 3½%. The government also passed new land use laws in an attempt to increase the size and efficiency of farms. Farms could no longer be divided without permission from a provincial commission; the established alodial system was modified and the state assumed the right to expropriate and purchase lands to be sold to farmers who needed more acreage.

Total fish production continued to be good, but the spring fishing at Lofoten was again disappointing. Whaling continued important, and progress was made in popularizing whalemeat not only for mink farms but for human consumption, notably in New York.

King Haakon fell and broke his thigh, but made good recovery; he celebrated his 83rd birthday on Aug. 3 and the fiftieth anniversary of his rule in November. This also marked 50 years of Norway's independence. In Bergen the famous Hansa quay was swept by fire in July, and almost half destroyed. A new main base for the Norwegian navy was begun at Haakonsvern, near Bergen; partner nations in NATO were to contribute the major portion of the costs.

(F. D. S.)

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Education.—Schools (1951-52): primary 5,505, pupils 337,420, teachers 12,159; secondary 281, pupils 38,319, teachers 2,482; folk high and continuation schools 560, pupils 21,619; vocational (1952-53) 477, pupils 38,649. Teachers' training schools (excluding state teachers' training college) 17, students 2,746. Institutions of higher education (1952-53) 10, including 2 universities; university students 3,656.

Finance and Bankings.—Monetary unit: krone (pl. kroner), with an exchange rate of kr. 7.143 to the U.S. dollar. Budget: (1955-56 est): revenue kr. 4,454,000,000; expenditure kr. 3,901,000,000; (1954-55) revenue kr. 4,129,000,000, expenditure kr. 3,903,000,000. Internal debt (1953): kr. 4,233,600,000, external debt kr. 1,221,700,000. Currency circulation: (Mar. 1955) kr. 3,029,000,000; (July 1954) kr. 3,027,000,000. Deposit money: (Mar. 1955) kr. 6,333,000,000; (July 1954) kr. 6,483,000,000. Gold and foreign exchange (Central bank only, May 1955; Dec. 1954 in parentheses): U.S. \$134,100,000 (\$137,700,000).

Foreign Trade.—(1954) Imports kr. 7,277,000,000; exports kr. 4,163,000,000. Main sources of imports: U.K. 20%; Sweden 16%; Germany 15%; other continental European Payments union countries 20%; U.S. and Canada 12%. Main destinations of exports: U.K. 19%; Sweden 10%; Germany 10%; other continental European Payments union countries 23%; U.S. and Canada 9%. Main exports: fish 18%; wood pulp 14%; paper 13%.

Transport and Communications.—Roads (June 1953): 46,270 km. Motor vehicles in use (1954): cars 90,456, commercial vehicles 70,713. State railways (1954) 4,492 km.; passenger-km. (June 1952-53) 1,508,000,000; freight, ton-km. (1954) 1,434,000,000. Shipping, merchant vessels of 100 gross tons and over (July 1954): 2,288; total tonnage 6,806,004; gross freight earnings (1953) kr. 3,650,000,000. Air transport (1954): passenger-km. 264,515,000; freight, ton-km. 7,976,000. Telephones (June 1953) 530,827. Radio receiving sets (1953): 895,000.

Agriculture and Fisheries.—Main crops (metric tons, 1954): wheat 41,000; barley 233,000; oats 159,000; rye 2,000; potatoes 1,130,000. Livestock (Sept. 1954): cattle 1,181,000; sheep 1,957,000; horses 159,000; chickens 5,284,000; (June 1953) pigs 379,000; goats 119,000. Food production (metric tons, 1954): milk, delivered 1,052,600; butter 10,400; cheese 29,800; meat (1953): beef and veal 43,000; mutton and lamb 17,000; pork 40,000. Fisheries (metric tons 1953): total catch 1,505,500; whale oil production (antarctic only, 1953-54) 174,200; value (1954) kr. 297,000,000.

Industry.—Fuel and power (1954): coal 338,400 metric tons; manufactured gas 48,560,000 cu.m.; electricity 21,370,000,000 kw.hr. Timber production (cubic metres, 1953): sawn softwood 1,714,000; sawn hardwood 25,000. Raw materials (metric tons, 1954): iron ore (metal content 65%) 1,209,600; pig iron 232,600; crude steel 120,700; copper, smelter 12,900; zinc, smelter 43,300; aluminum, smelter 65,000; pyrites (1953) 739,000; nitrogenous fertilizers, N content (1953-54) 245,600. Manufactured goods (metric tons, 1953): wood pulp, mechanical 527,000; chemical 544,000; newsprint 162,000; other paper 300,000; cement (1954) 783,800. Index of industrial production (Jan. 1955; 1948=100): mining 166, manufacturing 147, export (Feb. 1955) 248. Unemployed (1954) 1.3%.

Nose and Throat, Diseases of: see EAR, NOSE AND THROAT, DISEASES OF.

Nova Scotia. Second smallest of the Atlantic provinces of Canada, Nova Scotia entered the confederation in 1867. Area: 21,068 sq.mi. Pop: (1951) 642,584; (June 1, 1955, official est.) 683,000. Capital: Halifax, pop. (1951) 85,589; other large centres (pop. 1951): Sydney 31,317, Glace Bay 25,586, Dartmouth 15,037, Truro 10,756, New Waterford 10,423.

History.—During 1954 there was a continued slump in the coal industry, but the general level of production throughout the economy of the province remained high. The \$23,000,000 Canso causeway and the \$10,500,000 Halifax-Dartmouth suspension bridge were completed and opened in 1955, the former in August and the latter in April, alleviating two serious travel bottlenecks. The Liberal government of Premier Henry D. Hicks continued its policy of a systematic drive to establish new industries.

Education.—Latest available statistics for provincially controlled schools were for the calendar year 1953 when \$17,677,435 was expended on education. Total public-school enrolment for the school year 1953-54 was 141,454, with 5,096 teachers engaged and an average daily attendance of 125,470.

Public Health and Welfare.—On March 31, 1954, there were 3,206 patients registered in 68 public hospitals. For the year ending March 31, 1953, the federal government made family allowance payments of \$16,297,170 on behalf of 227,298 Nova Scotian children, old-age security pensions of \$17,259,287 to 36,150 pensioners, old-age assistance payments of \$893,059 to 4,789 recipients and pensions of \$253,718 to 722 blind. For the same period, provincial mothers' allowances of \$1,405,765 were paid to 2,405 mothers.

Transportation and Communications.—In 1953 there were 88,985 passenger automobiles registered. On March 31, 1954, 1,544 of the 15,111 mi. of highways had been paved. By March 31, 1953, there were nine airports, an increase of one over the previous year. In 1951 there were 116,041 telephones in use. On March 31, 1953, there were 104,167 radio receiving sets in the province.

Banking and Finance.—At March 31, 1954, the net direct provincial debt, less sinking funds, totalled \$120,598,095, while the net direct debt, less sinking funds, was \$4,254,384. At Sept. 30, 1953, there were 221 credit unions, and they lent \$5,426,342 for the fiscal year ending at that date. On Jan. 1, 1953, there were 148 branches of chartered banks throughout the province.

Agriculture.—Farm cash income for 1953 was \$40,566,000, the second highest year on record. Field crop production yielded \$16,830,000. Chief sources of cash income were: potatoes \$791,000; fruits \$1,525,000; vegetables \$927,000; forest products \$7,289,000; cattle and calves \$5,525,000; hogs \$2,829,000; dairy products \$11,649,000; poultry \$3,937,000; eggs \$4,644,000. On June 1, 1953, there were an estimated 202,000 cattle, 95,000 sheep and 39,000 swine on farms.

Fisheries, Furs and Forestry.—The landed value of fish for 1953 was \$21,410,000. Forestry production value was \$58,048,000. Both were increases over the previous year. Fish landings for 1953 totalled 365,500,000 lb. At Dec. 31, 1953, the value of fur-bearing animals in captivity was estimated at \$129,603. Beaver, the only fur-bearing animal for which trapping was reported, netted \$29,390 in 1953. Lumber production for 1953 was 234,058,000 bd.ft. The value of wood products manufactured was \$36,545,000 in 1953, while the value of paper products was \$21,503,000.

Manufacturing.—No accurate production statistics or estimates were available before 1951 when 30,512 employees in 1,474 establishments earned \$63,975,745 by converting \$172,115,336 worth of raw materials into products with a gross value of \$303,619,234. The relative positions of the chief industries were available only to 1950, when the largest (with employees in parentheses) in terms of value of products was fish

processing, \$36,357,774 (3.805); in second position, primary iron and steel, \$36,326,915 (4.535); third, sawmills, \$15,772,588 (3.111). In 1950 total value of all industrial products stood at \$255,887,499.

Mining.—Preliminary figures set mineral production value at \$63,541,471, but fully revised statistics were for 1951, when the production value was \$59,727,256. In 1951 the three leading minerals in terms of value were: coal \$49,113,932; gypsum \$4,107,822; salt, \$1,631,904. In 1951, 13,799 employees, working in 615 mines or plants, earned \$37,388,122 in wages and used fuels and processing supplies worth \$10,963,266, to make shipments with a net value of \$49,170,075. (L. S. L.)

Nuclear Studies: see PHYSICS.

Nursing. The American Nurses' Foundation, Inc., was established by the American Nurses' association in Jan. 1955 to conduct studies, surveys and research in the field of nursing, provide scholarships and fellowships and make grants to public and private nonprofit educational institutions. The foundation would continue the research carried on by the association during the past five years. Under this program 23 separate projects had been financed in 17 states.

The U.S. public health service made \$625,000 available for research grants and fellowships in the nursing field during the fiscal year which began July 1, 1955.

A new system of collecting uniform data regarding nursing throughout the nation was being developed through a new registration form for use of state boards of nursing. Twenty-seven state boards planned to use the new form in 1956.

The number of nurses had increased rapidly in recent years, but the profession had not been able to satisfy the demand for its services, brought on by the growth in population, increasing use of health insurance and medical and scientific advances. The greatest shortage was in supervisory, administrative and nursing education personnel.

The trend toward shorter hospital stays had brought about an expansion of programs for home care of the sick. The result was a greater demand on public health nursing for care in the home and greater community needs for expanded public health service. Plans were begun in 1955 to examine this area of need to the end that organized nursing care would eventually be available to everyone.

In 1955, 324 schools of nursing in the United States were fully accredited and 649 had temporary accreditation, out of a total of 1,139 state approved schools. Nursing education was experimenting with a two-year program in junior colleges to prepare nurses for staff positions. During 1955 the Commonwealth foundation made available a grant of \$150,000 for fellowship aid for students of nursing.

Great strides were taken in improving the service of nursing aides who work in hospitals. In the first nine months of the year regional teacher-trainer institutes were held and 104 teacher-trainers were prepared. An estimated 72,000 nursing aides had been reached through this program since Feb. 1954.

Four regional councils of state leagues for nursing, which are constituents of the National League for Nursing, were formed in order to work more effectively with other regional groups to study the needs and plan to meet the social and health needs of each region.

The differences between professional and practical nursing and areas of responsibility of nurses in medical practice was clarified. A definition of the practice of nursing for purposes of law was developed by the American Nurses' association in 1955 and was being recommended for inclusion in state licensing laws. The definition reads: "The practice of professional nursing means the performance for compensation of any act in the observation, care and counsel of the ill, injured or infirm, or in the maintenance of health or prevention of illness of others, or in the supervision and teaching of other personnel, or the administration of medications and treatments as pre-

scribed by a licensed physician or dentist; requiring substantial special judgment and skill and based on knowledge and application of the principles of biological, physical and social science. The foregoing shall not be deemed to include acts of diagnosis or prescription of therapeutic or corrective measures.

"The practice of practical nursing means the performance for compensation of selected acts in the care of the ill, injured or infirm under the direction of a registered professional nurse or a licensed physician or a licensed dentist; and not requiring the substantial specialized skill, judgment and knowledge required in professional nursing."

On Aug. 9, Pres. Dwight D. Eisenhower signed a bill to provide commissions for qualified men nurses and other medical specialists' services. This amendment to the Army-Navy act of 1947 ended a decade of effort on the part of the nursing profession to achieve this legislation.

When the Associated Hospitals Service Inc. and United Medical Service Inc. approved extension of protracted sickness and accident insurance at its national meeting, benefits included private duty nursing service, covering 80% of such charges for 240 hours of service after the first 24 hours. (G. Gs.; J. L. CN.)

Nutrition, Experimental. **Exercise and Obesity.**—In order to evaluate experimentally the influence of physical activity upon body weight, J. Mayer and coworkers subjected mature rats and mice to a program of forced exercise on an electrically driven treadmill. The first phase of the work was aimed at an evaluation of different amounts of work on both food intake and body weight. Twelve rats were exercised each day for varying periods of time up to two hours, six rats for periods of three to six hours and three rats for periods greater than six hours. For short durations of time (20 minutes to one hour) there was no corresponding increase in food intake, in fact, food intake decreased slightly but significantly. Body weight also decreased. For longer durations of exercise (one to six hours) food intake increased in proportion to the increase in physical activity and weight was maintained. For long durations of exercise (more than six hours) the animals lost weight, their food intake decreased and their appearance deteriorated. This work showed that it may not be correct to assume that an individual's caloric needs can be calculated as the sum of his basal (inactive) caloric expenditure plus the calories required for his physical activities.

The other part of the study involved an examination of the influence of exercise on the development of obesity in mice. Nonobese and genetically obese mice, all accustomed to a sedentary existence, were exercised on a treadmill for one hour a day. Changes in weight were compared with those of nonobese and obese mice not exercised. The inactive obese mice showed a progressive increase in body weight. The exercised obese mice also increased their body weights during this time, but the weight gain was only one-half that of the inactive group. The difference in the rate of weight gain occurred even though the exercised obese mice ate one and one-half times as much food as the inactive ones. Exercise did not affect the weight of the nonobese mice. There was no difference in the body weights of the exercised and inactive nonobese mice throughout the experiment. The results of this study illustrated again the importance of considering exercise as well as food intake in problems of obesity.

Radiation in Food Processing.—Foods are processed primarily to inactivate enzymes and to kill harmful microorganisms. For years research had been conducted on the possibility of sterilizing foods by bombarding them with electrons or X-rays (the so-called cold sterilization of foods). Radiation-sterilized foods packaged in thin aluminum or plastic containers would

obviate the necessity for refrigeration and, in addition, effect a saving in space.

Such a method would have value for the civilian market and the military. H. F. Kraybill reported some of the possibilities and problems of the radiation process and its nutritive effects on foods. Radiation sterilization was successful in breaking the trichina larval cycle in pork, controlling insect infestation of cereal products, extending fivefold the shelflife of prepackaged meats and inhibiting the sprouting of potatoes. Potential hazards from the radiation process, the costs of shielding and the effect on nutritive quality of the processed food were problems which had to be considered. The dosage required for food sterilization and enzyme inactivation produced certain undesirable off-flavours, odours, colours and texture changes.

The changes in nutritive value of foods exposed to high-energy radiations was the subject of extensive investigations. In work done with milk and milk products, vitamin A, tocopherols and ascorbic acid were highly sensitive to gamma-radiation at the sterilization dose, carotenoids and riboflavin were moderately sensitive and the enzyme phosphatase was only slightly changed. Certain naturally occurring protective substances or radioresistant compounds were found in foods. It was observed that cysteine and ascorbic acid can be used to eliminate off-flavours in foods.

During irradiation some degradative changes also occur in the macronutrients, especially fats and proteins with sulphur-containing dipeptides. These changes and pigmental changes which not only give rise to discoloration but also result in off-flavours were produced in meats. Large-scale animal feeding experiments concerned with the nutritional and physiologic aspects of feeding irradiated foods to test animals had been initiated only in the past few years. Experiments with rats fed on irradiated foods showed that there was an impairment in the fertility of the male and increased mortality in litters, probably as a result of the destruction of vitamin E. More research such as this was necessary before commercial irradiation of foods could become a reality.

Dental Caries.—Although much experimental work had been done on the relation of diet to the incidence of dental caries, little attention was paid to the possible effects of the physical consistency of the diet. J. H. Shaw, in a study of the effect of increased mastication on the incidence of caries, discovered some interesting but perplexing facts. In one experiment, using postweanling cotton rats of a caries-susceptible strain, some rats were fed exclusively on a caries-producing diet while the ration of other rats was diluted with a nonnutrient material to force a greater food intake and thus more extensive mastication. The inclusion of 10% agar or amounts of cellulose flour varying from 10% to 100% did not alter the dental caries incidence. In a second experiment, similar in design to the first, the inclusion of 10% to 50% cellulose flour in the caries-producing diet did not alter the dental caries incidence in the animals. The third and fourth experiments involved the use of a synthetic resin low-molecular-weight polyvinyl acetate in the ration. The inclusion of amounts varying from 5% to 20% of a finely powdered polyvinyl acetate in the ration of a purified diet caused a much lower incidence of dental caries than in animals fed only the caries-producing diet. However, the inclusion of 20% polyvinyl acetate in the ration in such a way as to produce a firm cake which required a great deal of mastication did not reduce the dental caries incidence further than the inclusion of 20% polyvinyl acetate in finely powdered form. In the last experiment the effectiveness of the low-molecular-weight polyvinyl acetate used in experiments 3 and 4 was compared with that of a high-molecular polyvinyl acetate, natural chicle and arochem. All supplements were fed at the 10% level,

and all were effective in reducing the incidence and severity of caries.

These data as a whole did not provide any concrete evidence that the amount of mastication required in the consumption of a caries-producing diet is a determining factor in the incidence of dental caries. The author suggested that the effective supplements used in his experiments exerted some cleansing action in the oral cavity or specifically on the tooth surface. Another possibility might be that these substances deposited a protective film on the teeth. He noted that rats receiving the protective supplements had cleaner mouths and glossier teeth than did animals receiving the basal ration alone.

Algae for Food.—Since ancient times many people in various parts of the world have eaten seaweed as a food. Today alginic acid, prepared from algae, is used in large amounts as a stabilizer by the food industry. An interesting preliminary study on the possible future mass production and processing of the algae *Chlorella* as a food for humans was reported by Y. Morimura and N. Tamiya. The authors used the dried cells of *Chlorella ellipsoidea* in a powdered form, which was green in colour, to enrich French bread, rolls, noodles, Japanese-style green tea and ice cream in amounts ranging from 2% to 20%. These products were described as "tasty" and "agreeable" by several Japanese and American adults and were said to be an "agreeable" light green colour.

Various soups as well as a substitute for soy sauce were all successfully prepared using *Chlorella* cells. Significant amounts of protein, fat, minerals and certain vitamins were contributed to the nutrient composition of the foods by the *Chlorella* cells. The large amounts of vitamin A and ascorbic acid in the food products were particularly outstanding. By direct analysis each gram (dried weight) of the *Chlorella* cells contained 5,000 I.U. of vitamin A (as carotene) and 2 to 5 mg. of ascorbic acid. Further studies such as these were important because of the possibility they offered for stretching future world food supplies. The acceptability of these foods would depend largely on economic conditions and changing food habits in the future. (See also VITAMINS AND NUTRITION.)

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Nuts. The nut supply of 1955, both domestic and foreign, was the smallest in a decade; most types were below average in supply, thus reducing the feasibility of substitution. The 1955 U.S. crop of tree nuts was a small one, approximating the small one of 1954 and about 6% below the average for 1944-53. A late March freeze in the pecan area of the south did much damage; high temperatures in California reduced the walnut crop by 15,000 tons and lowered quality.

Pecan production, indicated at 91,550,000 lb., was slightly larger than the small crop of 1954 but far below the 141,437,000-lb. average for 1944-53. Wild or seedling varieties, produced mostly in Oklahoma, Texas and Louisiana, were indicated at 68,430,000 lb. as compared with 51,550,000 lb. in 1954 and an average 76,387,000 lb.

Improved varieties were only one-third of a normal crop amounting to 23,120,000 lb. as compared with 38,960,000 lb. in 1954. Georgia, sometimes the leading producer, had only one-tenth of an average crop. Early contract prices were approximately twice as high as those of 1954.

The California almond crop of 37,600 tons was 15% less than

1954 and below average. Early prices were about 45 cents per pound as compared with 32 cents in 1954. The foreign almond crop was indicated as smaller than in 1954, and the quota limitation of 5,000,000 lb., of which less than half was filled in 1954-55, was continued for 1955-56. Italy and Spain were indicated as producing a short crop of 44,000 tons as compared with 52,000 tons in 1954.

The 1955 U.S. filbert crop of 6,800 tons, mostly from Oregon, was more than one-fifth below that in 1954 and 12% below average. The opening price of 29 cents per pound was a ten-year high, 2 cents more than in 1954. With prospects of a smaller foreign crop the quota limitations on imports of 7,500,000 lb. were continued for 1955-56. Excess would be assessed a ten cent special fee per pound. The filbert crop of Italy was indicated as a bumper one of 44,000 tons as compared with 23,000 tons in 1954. Turkey, the dominant producer, was indicated for a small crop of 50,000 tons as compared with a record 125,000 tons in 1954. Spain had another small crop.

The 1955 U.S. crop of Persian (English) walnuts, produced mostly in California, was indicated at 76,700 tons, as compared with 75,400 tons in 1954 and 72,310 tons average for 1944-53. Opening prices were as high as 45 cents per pound.

The Turkish 1955 crop was reported as providing an export surplus of 2,000 tons as compared with 3,800 tons in 1954. Prices were strong. The Italian crop was estimated at 22,000 tons compared with only 12,700 tons in 1954.

India entered the world walnut trade after having harvested about 11,000 tons in Kashmir late in 1954. (See also PEANUTS.) (J. K. R.)

Nyasaland: see RHODESIA AND NYASALAND, FEDERATION OF.

Oats. The 1955 U.S. oat crop was a record large one of 1,636,-030,000 bu.; that of 1954 was 1,499,579,000 bu., and the 1944-53 average crop was 1,323,321,000 bu. The acreage sown for all purposes was 47,634,000 ac. and the harvested acreage was indicated at 42,009,000 ac., as compared with 42,151,000 ac. in 1954 and 39,556,000 ac. average for 1944-53. Average yields were 38.9 bu. per acre, as compared with 35.6 bu. per acre in 1954 and 33.4 bu. per acre for the decade 1944-53. Iowa, as usual, was the leading producer (264,910,000 bu.), followed by Minnesota (202,734,000 bu.) and Illinois (182,115,000 bu.).

Table I.—U.S. Oat Crops

	Indicated 1955	1954	Average, 1944-53
Total production (thousands of bushels)	1,636,030	1,499,579	1,323,321
Acreage harvested (thousands)	42,009	42,151	39,556
Yields (bushels per acre)	38.9	35.6	33.4

Carry-over stocks from previous crops were 315,000,000 bu., 23% higher than the 233,000,000 bu. in 1954 and 10% above the 266,000,000 bu. average for 1944-53. Imports prior to Oct. 1 were only about 20,000,000 bu., as compared with a quota of 40,000,000 bu. and actual imports in 1953 of about 80,000,000 bu. Consequently, a new limiting quota was not imposed. The official support price on the 1955 crop was reduced to 61 cents per bushel at the farm, as compared with 75 cents on the 1954 crop. Prices, too, declined to about 59 cents per bushel to the producer in October against 73 cents a year earlier. Nearly 75,-000,000 bu. from the 1954 crop were placed under price support, as compared with about 56,000,000 bu. in 1953 and 21,700,000 bu. in 1952. Exports, largely of government-held oats, were 12,000,000 bu. in 1954-55, as compared with minor amounts in the previous year.

An indicated world oat crop of 4,335,000,000 bu. was the largest of the post-World War II period and comparable with 4,295,000,000 bu. in 1954 and a prewar (1935-39) average of 4,365,000,000 bu. Production in Europe and the U.S.S.R. was

not up to prewar, partly because of acreage shifts to other crops. The Canadian crop was about one-third larger than in 1954. Only 1,281,000 tons of oats moved in world trade in

Table II.—Oat Production of the Principal Producing Countries

Country	(In thousands of bushels) Indicated 1955*	1954	Average, 1945-49	Average, 1935-39
United States	1,636,030	1,499,579	1,376,527	1,045,329
U.S.S.R. . . . .	...	...	720,000	1,165,000
Canada	409,991	306,793	341,612	338,071
France	244,140	246,220	221,821	329,304
United Kingdom	179,550	170,800	204,692	138,628
Western Germany	171,340	170,370	144,500	194,500
Argentina . . . . .	...	61,320	47,782	50,182

*Preliminary estimate.

1954-55, compared with 2,187,038 tons in the preceding year. Exports from Canada were less than one-third of those in 1953-54. (J. K. R.)

Obituaries. The following is a selected list of prominent men and women, of the United States and other countries, who died during the year 1955:

Abend, Hallett Edward, U.S. journalist and author (b. Portland, Ore., Sept. 15, 1884—d. Sonora, Calif., Nov. 27, 1955).

Abt, Isaac Arthur, U.S. pediatrician (b. Wilmington, Ill., Dec. 18, 1867—d. Chicago, Ill., Nov. 22, 1955), helped establish pediatrics as an important separate branch of medical practice at a time when children's diseases were considered almost identical with those of adults. Graduating from Chicago Medical college (then an affiliate of Northwestern university) in 1891, Abt took postgraduate work in Vienna and Berlin, and began to specialize in diseases of children both as teacher and physician. From 1909 until his retirement in 1942 he was professor at the Northwestern university medical school in Chicago. Abt was author-editor of an eight-volume classic *System of Pediatrics*, prepared in collaboration with other specialists, and of many other books and professional articles on the diseases of children.

Adler, Julius Ochs, U.S. publisher and army officer (b. Chattanooga, Tenn., Dec. 3, 1892—d. New York, N.Y., Oct. 3, 1955), was a member of the family long associated with publication of the *New York Times* and *Chattanooga Times* (Tenn.). Aside from his managerial positions with both papers (vice-president and general manager of the former and president and publisher of the latter from 1935 until his death), Adler acquired separate prominence in a military career. A year after graduation from Princeton university in 1914 he attended the first civilian training camp for officers at Plattsburg, N.Y., and was commissioned second lieutenant of cavalry in 1917, later advancing to the rank of major general, reserve, in 1948. In World War I he served with distinction as an infantry officer of the U.S. 77th division in France, and received the distinguished service cross and the silver star. Continuing as a reserve officer between the two world wars, he was appointed assistant commander of the U.S. 6th infantry division in Sept. 1941, and later saw action against the Japanese in New Guinea and Papua. Gen. Adler retired from the army in Dec. 1954 but continued his military career as chairman of the National Security Training commission.

Agganis, Harry, U.S. athlete (b. Lynn, Mass., 1929?—d. Cambridge, Mass., June 27, 1955).

Agnew, Hugh Elmer, U.S. marketing authority (b. Hillsdale County, Mich., Jan. 31, 1875—d. Manhasset, N.Y., July 30, 1955).

Aikman, Duncan, U.S. newspaperman and author (b. Terre Haute, Ind., 1889—d. Chevy Chase, Md., Dec. 14, 1955).

Albert, Archduke, OF THE HOUSE OF HABSBURG-LORRAINE, PRINCE OF HUNGARY AND DUKE OF TESCHEN (b. July 24, 1897—d. Buenos Aires, Arg., July 23, 1955).

Alington, Very Rev. Cyril Argentine, British clergyman, educator and author (b. Ipswich, Eng., Oct. 22, 1872—d. Treago, Eng., May 16, 1955).

Allee, Warder Clyde, U.S. zoologist (b. near Bloomingdale, Ind., June 5, 1885—d. Gainesville, Fla., March 18, 1955).

Allen, William Ray, U.S. zoologist and author (b. Ossian, Ind., March 8, 1885—d. Lexington, Ky., April 7, 1955).

Alness, Robert Munro, 1ST BARON OF, British lawyer and politician (b. Alness, Ross, Eng., May 28, 1868—d. Bournemouth, Eng., Oct. 6, 1955).

Altrincham, Edward William Macleay, 1ST BARON OF, British journalist and politician (b. Sept. 8, 1879—d. Badminton, Eng., Dec. 1, 1955).

Amery, Leopold Charles Maurice Stennett, British politician (b. Gorakhpur, India, Nov. 22, 1873—d. London, Eng., Sept. 16, 1955).

Ames, Adelbert Jr., U.S. optics authority (b. Lowell, Mass., Aug. 19, 1880—d. Hanover, N.H., July 3, 1955).

Archibald, Raymond Clare, U.S. mathematician (b. Colchester, N.S., Oct. 7, 1875—d. Sackville, N.B., July 26, 1955).

Arciszewski, Tomasz, Polish statesman (b. Vitebsk, Byelorussia, Nov. 22, 1877—d. London, Eng., Nov. 20, 1955).

Arida (ANTOINE PIERRE), 102nd Lebanese Maronite patriarch (b. Becharré [Bsherr] Leb., Aug. 2, 1863—d. Beirut, Leb., May 19, 1955), was leader of the Maronites, a Syriac religious body in communion with the Roman Catholic Church since 1736. Trained at the Maronite college in Rome and ordained on June 29, 1890, Msgr. Arida often visited Europe with his predecessor, later becoming secretary of the patriarchal court. He was made bishop of Tripoli (Lebanon) in 1908 and in this high position his abilities as administrator and pastor, linked with his political impartiality, led to his election as patriarch of Antioch and all the orient in 1932.

Arnett, Trevor, U.S. finance authority (b. Little Hereford, Eng., Nov. 8, 1870—d. Fort Lauderdale, Fla., March 31, 1955).

Arnheim, Gus, U.S. band leader and song writer (b. Philadelphia, Pa., Sept. 11, 1897—d. Beverly Hills, Calif., Jan. 19, 1955).

Arze, José Antonio, Bolivian educator and lawyer (b. Cochabamba, Bol., Jan. 13, 1904—d. Cochabamba, Aug. 23, 1955).

Ascarì, Alberto, Italian auto racing driver (b. 1918?—d. Monza, It., May 26, 1955).

Aswell, James, U.S. author and newspaperman (b. Baton Rouge, La., April 27, 1906—d. Natchitoches, La., Feb. 23, 1955).

Avila Camacho, Manuel, Mexican statesman (b. Teziutlán, Mex., April 24, 1897—d. near Mexico City, Mex., Oct. 13, 1955), participated in the successful revolution against Victoriano Huerta in 1914, attaining the rank of general. In the cabinet of A. L. Rodríguez, elected president in 1932 to fill an unexpired term, Avila Camacho was minister of war and navy; and in the cabinet of Pres. Lázaro Cárdenas (1934-40) he was minister of national defense. Cárdenas personally selected Avila Camacho as his successor and he was elected president of Mexico July 7, 1940, by an overwhelming vote—2,476,641 to 151,101. He took office the following Dec. 1.

Avila Camacho's administration was more moderate in its domestic policies than were those of his predecessors, and was marked by friendship for the U.S. Under his leadership, Mexico declared war on Germany, Italy and Japan in June 1942 and joined the United Nations. His government also introduced a national campaign against illiteracy and re-established amicable relations with the Catholic Church. His term of office expired Dec. 1, 1946, when he was succeeded by Miguel Alemán Valdés.

Ayers, Roy Elmer, U.S. lawyer, politician and congressman (b. near Lewistown, Mont., Nov. 9, 1882—d. Lewistown, May 23, 1955).

Bahadur, Maharaja Sir Bhopal Sinhi, Indian prince (b. Feb. 22, 1884—d. Udaipur City, Ind., July 4, 1955).

Baird, David Jr., U.S. senator and business executive (b. Camden, N.J., Oct. 10, 1881—d. Camden, Feb. 28, 1955).

Baker, Leonard Theodore, U.S. educator (b. Charleston, S.C., Jan. 22, 1868—d. Columbia, S.C., Jan. 5, 1955).

Ball, George Alexander, U.S. manufacturer, financier and philanthropist (b. near Greensburg, O., Nov. 5, 1862—d. Muncie, Ind., Oct. 22, 1955), helped organize, with three of his brothers, the vast Mason fruit jar industry at Muncie, Ind., acting as president of the Ball Brothers company from 1944 to 1947 and chairman of the board thereafter. For a short time in 1935 he had control of the Van Sweringen railroad properties and in that year founded the George and Frances Ball philanthropic foundation.

Ball, Suzan, U.S. actress (b. Buffalo, N.Y., Feb. 3, 1934—d. Hollywood, Calif., Aug. 5, 1955), was a model after attending high school in North Hollywood, Calif., and made her motion-picture debut in *Untamed Frontier* in 1952. She appeared in several other pictures before undergoing amputation of her right leg, infected with cancer. A short time later, in April 1954, she married Richard Long, an actor with whom she appeared in a television play about a handicapped girl that received national attention. Her last motion picture, *Chief Crazy Horse*, in which she starred with Victor Mature, opened in New York city a few months before her death of cancer.

Ballou, Richard Boyd, U.S. educator (b. Worcester, Mass., Aug. 26, 1910—d. Highland Park, N.J., April 18, 1955).

Bara, Theda (THEODOSIA GOODMAN), U.S. motion-picture actress (b. Cincinnati, O., 1890—d. Los Angeles, Calif., April 7, 1955), was one of the most publicized feminine "vampires" of the silent motion-picture era. As an unknown extra, she was first starred in William Fox's *A Fool There Was* (1914), one of the most successful movie "hits" of the time. In the following years she appeared in 40 or more Fox productions, including notably the roles of Carmen (1915), Juliet (1916) and Cleopatra (1917). Other pictures of hers were *Madame Du Barry*, *The Tiger Woman*, *Forbidden Path* and *Her Greatest Love*. Her acting career did not long survive the coming of the sound motion picture and came to a close in the early 1920s. She was married to Charles J. Brabin, a director, in 1921.

Barclay, Edwin James, Liberian politician (b. 1882—d. Liberia, Nov. 6, 1955).

Bauer, Marion Eugenia, U.S. composer and author (b. Walla Walla, Wash., Aug. 15, 1887—d. South Hadley, Mass., Aug. 9, 1955).

Baumeister, Willi, German painter (b. Stuttgart, Ger., Jan. 22, 1889—d. Stuttgart, Sept. 1, 1955).

Bay, Charles Ulrick, U.S. diplomat (b. Rensselaer, N.Y., Sept. 5, 1888—d. New York, N.Y., Dec. 31, 1955).

Baydur, Hüseyin Ragip, Turkish diplomat (b. Island of Rhodes, 1890—d. London, Eng., Feb. 26, 1955).

Beazley, Sir (Charles) Raymond, British historian (b. Blackheath, Eng., April 3, 1868—d. Birmingham, Eng., Feb. 1, 1955).

Beecher, Janet, U.S. actress (b. Jefferson City, Mo., Oct. 21, 1884—d. Washington, Conn., Aug. 6, 1955).

Bentley, Madison, U.S. psychologist, author and editor (b. Clinton, Iowa, June 18, 1870—d. Palo Alto, Calif., May 29, 1955).

Berkey, Charles Peter, U.S. geologist (b. Goshen, Ind., March 25, 1867—d. Palisade, N.J., Aug. 22, 1955).

Bernardes, Arthur da Silva, Brazilian statesman (b. Viçosa, Minas Gerais, Braz., Aug. 18, 1875—d. Rio de Janeiro, Braz., March 23, 1955), received his law degree from the University of São Paulo in 1900 and served as federal deputy and senator; he was president of the state of Minas Gerais from 1918 to 1922 and president of Brazil from 1922 to 1926. The start of his administration was marked by a policy of strict retrenchment in the post-World War I boom, but he was soon beset by an economic collapse and by a series of military revolts. Bernardes, founder of the Brazilian Republican party, remained active in national politics until shortly before his death.

Bethune, Mary McLeod, U.S. educator (b. Mayesville, S.C., July 10, 1875—d. Daytona Beach, Fla., May 18, 1955), graduated from the normal school of Scotia seminary, Concord, N.C., in 1893, and from the Moody Bible insti-

tute, Chicago, Ill., two years later. After teaching in two southern schools she helped found, in 1904, the Daytona (Fla.) Normal and Industrial School for Girls—subsequently renamed Bethune-Cookman college. A long time leader in U.S. Negro affairs, she was a director of the Division of Negro Affairs of the National Youth administration from 1936 to 1944 and a special adviser to Pres. Franklin D. Roosevelt on problems of U.S. minorities. She was also a vice-president of the National Association for the Advancement of Colored People and a Spingarn medalist.

Bhatnagar, Sir Shanti Swarupa (b. Bhera, Shahipur district, Punjab, India, Feb. 21, 1895—d. New Delhi, India, Jan. 1, 1955), was widely considered to be India's greatest contemporary scientist. Educated at Lahore, London and Berlin universities, he was from 1924 to 1940 director of the chemical laboratories of the University of the Punjab, during which period he wrote numerous papers on physical chemistry. In 1940, he undertook scientific work for the government and was later appointed secretary of the Indian ministry of natural resources and scientific research. Bhatnagar made an outstanding contribution to industrial progress (especially since 1947), encouraging multifarious projects including the building of scientific institutions and the manufacturing of plastics and textiles. He was knighted in 1941.

Bigelow, Maurice Alpheus, U.S. biologist and writer (b. Milford Center, O., Dec. 8, 1872—d. Peekskill, N.Y., Jan. 6, 1955).

Blackwell, Carlyle, U.S. actor and director (b. Troy, Pa., 1888—d. Miami, Fla., June 17, 1955).

Boas, Ernst Philip, U.S. heart specialist (b. Worcester, Mass., Feb. 4, 1891—d. New York, N.Y., March 9, 1955).

Bonham-Carter, Sir Charles, British army officer and administrator (b. Feb. 25, 1876—d. Petersfield, Hamps., Eng., Oct. 21, 1955).

Booth, George Francis, U.S. editor and publisher (b. Hartford, Conn., Nov. 11, 1870—d. Bass Rock, Mass., Sept. 1, 1955).

Booth, Hubert Cecil, British inventor (b. Glasgow, Scot., 1871—d. Croydon, Eng., Jan. 14, 1955).

Boucher, Chauncey Samuel, U.S. historian and educator (b. Chicago, Ill., June 14, 1886—d. Petoskey, Mich., Aug. 13, 1955).

Braun, Otto, German statesman (b. Königsberg, Ger., Jan. 28, 1872—d. Lugano, Switz., Dec. 14, 1955).

Breguet, Louis Charles, French aircraft manufacturer (b. Paris, Fr., Jan. 2, 1880—d. Paris, May 4, 1955).

Bridoux, Eugène, French army officer and politician (b. Doulon, Fr., June 24, 1888—d. Madrid, Sp., June 6, 1955).

Brown, Sir (John Alfred) Arnesby, British painter (b. Nottingham, Eng., 1866—d. Haddiscoe, Eng., Nov. 16, 1955).

Brown, Fred Herbert, U.S. senator (b. Ossipee, N.H., April 12, 1879—d. Somersworth, N.H., Feb. 3, 1955).

Brown, Louise Fargo, U.S. historian (b. Buffalo, N.Y.—d. Norfolk, Va., May 1, 1955).

Brues, Charles Thomas, U.S. zoologist and author (b. Wheeling, W.Va., June 20, 1879—d. Crescent City, Fla., July 22, 1955).

Bruno, Frank John, U.S. sociologist (b. Florence, It., June 1, 1874—d. Lebanon, Ind., Aug. 7, 1955).

Bryan, Charles Faulkner, U.S. composer (b. McMinnville, Tenn., July 26, 1911—d. Pinson, Ala., June 7, 1955).

Bryan, William Lowe, U.S. educator (b. near Bloomington, Ind., Nov. 11, 1860—d. Bloomington, Nov. 21, 1955).

Bryant, Eliot Hinman, U.S. naval officer (b. Rusheville, Ill., Aug. 21, 1896—d. Annapolis, Md., Oct. 16, 1955).

Buchanan, George, British politician (b. Glasgow, Scot., Nov. 30, 1890—d. Glasgow, June 28, 1955).

Buchanan, Vera Daerr, U.S. politician (b. Wilson, Pa., July 20, 1902—d. McKeesport, Pa., Nov. 26, 1955).

Burkhard, Willy, Swiss composer (b. Evillard-sur-Bienne, Switz., April 17, 1900—d. Zurich, Switz., June 18, 1955).

Burns, Edward H(arold), U.S. sports writer (b. Frankfort, Ind., Jan. 17, 1891—d. Chicago, Ill., Jan. 27, 1955).

Burns, Robert Elliott, U.S. ex-convict author (b. Brooklyn, N.Y., 1891?—d. East Orange, N.J., June 5, 1955), was sentenced as a young man to 6-10 years' imprisonment in Atlanta, Ga., for taking part in a robbery. He escaped from a convict's chain gang in Georgia in 1922 and for seven years remained at liberty, becoming a successful magazine editor in Chicago, Ill. Returned to prison in Georgia in 1929, he escaped again the following year and fled to New York City, where he wrote the best-selling *I Am a Fugitive from a Georgia Chain Gang* (1932). Later his prison sentence was voided and his full civil rights were restored by the Georgia authorities.

Burns, Tommy (NOAH BRUSSO), Canadian-U.S. boxer (b. Hanover, Ont., June 17, 1881—d. Vancouver, B.C., May 10, 1955), won the heavyweight boxing championship of the world in 1906 (although it was temporarily disputed) and lost it two years later to Jack Johnson at Sydney, Austr. After Burns' retirement from boxing in 1920 he was at one time an evangelist. During 60 professional bouts in his boxing career he lost only five.

Busse, Henry, U.S. orchestra leader and composer (b. Magdeburg, Ger., May 19, 1894—d. Memphis, Tenn., April 23, 1955).

Butler, Robert, U.S. diplomat and business executive (b. St. Louis, Mo., July 16, 1897—d. New York, N.Y., Sept. 15, 1955).

Cahill, Lily, U.S. actress (b. Texas, 1886?—d. San Antonio, Tex., July 20, 1955).

Cameron, George Toland, U.S. publisher and industrialist (b. Red Bluff, Calif., March 16, 1873—d. San Francisco, Calif., Oct. 3, 1955).

Cannon, John Kenneth, U.S. army officer (b. Salt Lake City, Utah, March 9, 1892—d. Arcadia, Calif., Jan. 12, 1955).

Carnegie, Dale, U.S. author, lecturer and popularizer of courses in public speaking and personality development (b. Maryville, Mo., Nov. 24, 1888—d. Forest Hills, N.Y., Nov. 1, 1955), was perhaps best known for his book *How to Win Friends and Influence People*, which sold almost 5,000,000 copies in 29 languages from the time it was first published in 1936 until its author's death. Graduating from the State Teachers college at Warrensburg, Mo., in 1908, Carnegie was a salesman before becoming a teacher of public speaking.

in 1912 in New York city. His courses in this subject were taken by an estimated 450,000 people up to the time of his death, principally in the U.S. but also in 15 other countries. Carnegie was the author of several other works, including a biography of Abraham Lincoln (1932) and another best-selling book on the philosophy of successful living, *How to Stop Worrying and Start Living* (1948).

Carpenter, Alfred Francis Blakeney, British admiral (b. Sept. 17, 1881—d. Gloucestershire, Eng., Dec. 27, 1955).

Carter, Amon Giles, U.S. newspaper publisher (b. Crafton, Tex., Dec. 11, 1879—d. Fort Worth, Tex., June 23, 1955), was born of an impoverished family and left school at the age of 11. He worked as a salesman and in the advertising business, and in 1906 he and two associates founded the *Fort Worth Star* (Tex.). This paper was later merged with the *Telegram* of that city to become one of the nation's most successful dailies, the *Fort Worth Star-Telegram*. Successful also in oil and other ventures, he established the multi-million-dollar Amon G. Carter foundation, primarily for educational philanthropy.

Chace, Malcolm Greene, U.S. industrialist (b. Central Falls, R.I., 1875—d. Hyannis, Mass., July 16, 1955).

Chambellan, René Paul, U.S. sculptor (b. West Hoboken, N.J., Sept. 15, 1893—d. Cliffside Park, N.J., Nov. 29, 1955).

Charles, Sir (James) Ronald (Edmonton), British army officer (b. June 26, 1875—d. Ilminster, Eng., Dec. 24, 1955).

Charney, Samuel (S. NIGER), Yiddish author (b. Dukor, Minsk, Russia, June 15, 1884—d. New York, N.Y., Dec. 24, 1955).

Chase, Beatrice (OLIVE KATHARINE PARR), British novelist (b. Harrow-on-the-Hill, Eng., July 5, 1874—d. Newton Abbot, Eng., July 3, 1955).

Chase, Harry Woodburn, U.S. educator (b. Groveland, Mass., April 11, 1883—d. Sarasota, Fla., April 20, 1955), graduated from Dartmouth college, Hanover, N.H., with a bachelor's degree in 1904, took his master's degree there in 1908, and his Ph.D. at Clark university, Worcester, Mass., in 1910. In the latter year he became professor of psychology at the University of North Carolina, Chapel Hill, and was elected president of that institution in 1919. In 1930 he resigned to accept the presidency of the University of Illinois, Urbana, and from 1933 until his retirement in 1951 he was chancellor of New York university, New York city. A confirmed liberal, Chase strove for the twin beliefs of equal educational opportunity and full academic freedom.

Chatterjee, Sir Atul Chandra, Indian politician (b. Nov. 24, 1874—d. Bexhill, Eng., Sept. 8, 1955).

Chaumeix, André, French journalist and editor (b. Felletin [Creuse], Fr., June 7, 1874—d. Paris, Fr., Feb. 23, 1955).

Chever, David, U.S. surgeon and educator (b. Boston, Mass., June 25, 1876—d. Wellesley, Mass., Aug. 13, 1955).

Chipkin, Israel Solomon, U.S. educator and author (b. Vilna, Pol., March 31, 1891—d. New York, N.Y., Oct. 25, 1955).

Clarendon, George Herbert Hyde Villiers, 6TH EARL OF, British administrator (b. June 7, 1877—d. London, Eng., Dec. 13, 1955).

Clark, David Worth, U.S. senator (b. Idaho Falls, Ida., April 2, 1902—d. Los Angeles, Calif., June 19, 1955).

Clark, Walter Ernest, U.S. educator and author (b. Defiance, O., June 9, 1873—d. Reno, Nev., May 1, 1955).

Claudel, Paul Louis Charles Marie, French poet, dramatist and diplomat (b. Villeneuve-sur-Fère-en-Tardenois, Aisne, Fr., Aug. 6, 1868—d. Paris, Feb. 23, 1955). Descended from a family closely connected with the land, Claudel received his early education at Bar-le-Duc and privately at Nogent-sur-Seine. In 1881 he went to Paris, where he attended the Lycée Louis-le-Grand. Although he failed his *baccalauréat*, he went on to study philosophy and law, and it was then that he discovered the poetry of Arthur Rimbaud, whose *Illuminations* not only had a profound influence on his work, but also first drew him toward Roman Catholicism, to which he became converted in 1886. The first version of his dramatic poem *Tête d'or*, which illustrated his rejection of classical French prosody, appeared in 1890. In 1892 he entered the French diplomatic service and in 1895 went to New York and Boston as vice-consul. Further appointments followed at Shanghai (1906) and Foochow. In 1901 he returned home to meet André Gide, with whom he had already corresponded and whom he tried for 25 years to convert to Catholicism, a struggle revealed by the publication of *Correspondance avec André Gide* (1949). He continued to serve in China and various parts of the far east, where his experience provided the material for *La connaissance de l'Est* and the play *Parlage de midi*. In 1909 he was assigned to Prague, then to Frankfurt-am-Main, Hamburg and Rome. He was appointed minister to Rio de Janeiro in 1916, to Copenhagen in 1919 and then served successively as ambassador to Japan, the United States and Belgium. In 1935, when he retired, the Académie Française rejected his application for membership, although he was admitted in 1946 without seeking election. A close associate of Mallarmé, Claudel was, in his work, at once individual and bewildering. His experiments with blank verse produced a supple, lyrical form peculiarly his own, which is seen at its best in the *Cinq grandes odes*. His dramatic work was always excited and dominated by his religious conviction, and achieved its greatest expression in *L'Annonce faite à Marie* (1912), *L'Otage* (1911) and

Le Soudier de satin (1924).

Clayton, John Bell, U.S. novelist (b. Craigsville, Va., Oct. 28, 1906—d. Newport Beach, Calif., Feb. 10, 1955).

Clement, William Tardy, U.S. marine corps officer (b. Lynchburg, Va., Sept. 27, 1894—d. Bethesda, Md., Oct. 17, 1955).

Coffin, Robert Peter Tristram, U.S. poet (b. Brunswick, Me., March 18, 1892—d. Portland, Me., Jan. 20, 1955), graduated from Bowdoin college, Brunswick, Me., in 1915 and took a master's degree at Princeton university the next year. Also in 1916 he was named Rhodes scholar at Oxford university, Eng., where, after a two-year service with the U.S. army as an artillery officer in France during World War I, he took two bachelor's degrees (1920-21). From 1921 to 1934 he taught English at Wells college, Aurora, N.Y., then returned to his alma mater, Bowdoin, as professor of English. His first volumes of verse appeared in the early 1920s, and thereafter he was a prolific writer, receiving the Pulitzer prize for poetry in 1936 for his *Strange Holiness*. His poetry and prose (including several novels) were based mostly on New England farm and seafaring life.

Collier, Constance (LAURA CONSTANCE HARDIE), British-U.S. actress (b. Windsor, Berks., Eng., Jan. 22, 1878?—d. New York, N.Y., April 25, 1955), made her first stage appearance in babyhood (her parents were Shakespearean actors) and by 1893 was in an operetta chorus, soon becoming one of the "Gaiety girls" of the 1890s. Her first starring role was in *One Summer's Day* in London in 1898. In 1901 she joined Sir Herbert Beerholm Tree's company in London and played in a number of Shakespearean roles. She made her Broadway debut in Oct. 1908 with William Gillette and subsequently starred in numerous plays both in England and the United States. In 1915 she entered motion pictures, appearing in notable roles in both silent and sound productions. Following her retirement from the stage and motion pictures she was a dramatic teacher and lecturer. Her autobiography, *Harlequinade*, was published in 1930, and she collaborated in writing several plays.

Colvin, Mamie White (MRS. DAVID LEIGH COLVIN), U.S. temperance leader (b. Westview, O., June 12, 1883—d. Clearwater, Fla., Oct. 30, 1955), was president of the Women's Christian Temperance union from 1944 to 1953, having served previously with various prohibition organizations since her graduation from Wheaton (Ill.) college in 1905. Her husband was the Prohibition party's candidate for president of the United States in 1936.

Comfort, William Wistar, U.S. educator (b. Philadelphia, Pa., May 27, 1874—d. Haverford, Pa., Dec. 24, 1955).

Conchoso Valdes, Aurelio Fernandez, Cuban diplomat (b. Sancti Spiritus, Las Villas, Cuba, June 27, 1896—d. near Patzcharo, Mex., Nov. 11, 1955).

Conroy, Peter Joseph, U.S. educator (b. Watervliet, N.Y., Oct. 26, 1894—d. Crestwood, N.Y., June 17, 1955).

Cooley, Anna Maria, U.S. educator (b. New York, N.Y., Sept. 16, 1874—d. Pawling, N.Y., May 6, 1955).

Cooper of Culross, Thomas Mackay Cooper, 1ST BARON OF DUNNET IN CAITNESS, Scottish jurist (b. Sept. 24, 1892—d. Edinburgh, Scot., July 15, 1955).

Cooper, Wyllis, U.S. motion picture and television writer and producer (b. Pekin, Ill., Jan. 26, 1899—d. Flemington, N.J., June 22, 1955).

Corbett, James Edward, British army officer, big-game hunter and author (b. Naini Tal, India, 1875—d. Nyeri, Ken., April 20, 1955).

Coty, Germaine, wife of the president of the French Republic (b. Le Havre, Fr., April 9, 1886—d. Rambouillet, Fr., Nov. 12, 1955).

Coudert, Frederic René Sr., U.S. lawyer (b. New York, Feb. 11, 1871—d. New York, April 1, 1955).

Courthope, George Loyd, 1ST BARON OF, British politician, barrister and naturalist (b. Whiligh, Sussex, Eng., June 12, 1877—d. Wadhurst, Sussex, Eng., Sept. 2, 1955).

Crane, Arthur Griswold, U.S. educator and state official (b. Davenport Center, N.Y., Sept. 1, 1877—d. Cheyenne, Wyo., Aug. 11, 1955).

Crouch, Paul, U.S. communist informer (b. North Carolina 1903?—d. San Francisco, Calif., Nov. 18, 1955).

Crowther, Frank, U.S. congressman (b. Liverpool, Eng., July 10, 1870—d. Pueblo, Colo., July 20, 1955).

Crozier, William John, U.S. physiologist (b. New York, N.Y., Aug. 28, 1892—d. Cambridge, Mass., Nov. 2, 1955).

Culbertson, Ely (Ilya), U.S. contract-bridge expert and crusader for world peace (b. Poyana de Vervilao, Rum., July 22, 1891—d. Brattleboro, Vt., Dec. 27, 1955), was the son of a U.S. oil prospector in Russia. Educated at Geneva (Switz.) university and at the Sorbonne in Paris, Fr., Culbertson in his youth was a revolutionary agent in the Russian Caucasus, Mexico and Spain. In 1921 he emigrated to the United States, where previously he had studied for a time at Yale and Cornell universities. Within a decade he became the world's leading authority on contract bridge, which became the most popular card game in the U.S. Culbertson founded and edited the *Bridge World* magazine and wrote many successful books and articles on bridge and other card games. After the outbreak of World War II Culbertson founded the World Federation, an organization designed to promote world peace through international police regulation. Following the foundation of the United Nations, the World Federation was converted into the Citizens Committee for United Nations Reform, of which Culbertson became chairman. One of the main objectives of the new organization was to persuade the UN to form an international police force.

1955 OBITUARIES: Theda Bara, U.S. motion-picture actress; Dale Carnegie, J.S. author; Robert P. Tristram Coffin, U.S. poet; Albert Einstein, German-Swiss-U.S. physicist; Sir Alexander Fleming, British bacteriologist



Cumberland, William Wilson, U.S. economist and educator (b. La Verne, Calif., Jan. 2, 1890—d. Englewood, N.J., Feb. 20, 1955).

Curley, William A., U.S. editor (b. New York, N.Y., 1874—d. New York, Oct. 23, 1955).

Curry, Lionel George, British publicist (b. Ledbury, Eng., Mar. 7, 1872—d. Kidlington, Eng. Nov. 24, 1955).

D'Amico, Silvio, Italian author, journalist and critic (b. Rome, It., Feb. 3, 1887—d. Rome, April 1, 1955).

Darlington, The Rev. Dr. Henry Vane Bearns, U.S. Episcopal clergyman (b. Brooklyn, N.Y., June 9, 1889—d. New York, N.Y., Dec. 20, 1955).

Darnley, Esme Ivo Bligh, 9th Earl of, British politician and artist (b. Oct. 11, 1886—d. Gravesend, Kent, Eng., May 29, 1955).

Davenport, Charles Edward ("Cow Cow"), U.S. composer and song writer (b. Anniston, Ala., April 26, 1895—d. Cleveland, O., Dec. 2, 1955).

Dávila, Carlos Guillermo, Chilean diplomat and journalist (b. Los Angeles, Chile, Sept. 15, 1887—d. Washington, D.C., Oct. 19, 1955), studied law at the University of Santiago but abandoned a legal career for journalism, founding the newspaper *La Nación* at Santiago in 1917. From 1927 to 1932 he was Chilean ambassador to the United States and in this post participated in the successful U.S. arbitration of the Tacna-Arica boundary dispute between Peru and Chile (May 1929). Returning to Chile in 1932, he founded the news magazine *Hoy* and in the same year was provisional president of Chile for three months (June-Sept.) under a military junta. Dávila then moved to New York city, where he founded a press service of U.S. news for Latin-American newspapers. From July 1954 until his death he was secretary-general of the Organization of American States in Washington, D.C.

Davis, Jesse Buttrick, U.S. educator (b. Chicago, Ill., March 2, 1871—d. Newton, Mass., Nov. 2, 1955).

Davis, John William, U.S. attorney and diplomat and Democratic candidate for president of the U.S. in 1924 (b. Clarksburg, W.Va., April 13, 1873—d. Charleston, S.C., March 24, 1955), graduated from Washington and Lee university, Lexington, Va., with a bachelor's degree in 1892, taking his law degree there three years later. In 1897 he became a partner in his father's law firm at Clarksburg and in 1899 was elected to the West Virginia state house of delegates. In 1910 he was elected to the U.S. house of representatives as a Democrat from the first West Virginia district, being re-elected in 1912 and serving on the house judiciary committee. He resigned a year later to accept appointment as U.S. solicitor general, serving until 1918, when he returned briefly to private law practice before his nomination as U.S. ambassador to Great Britain. During his ambassadorship (1918-21) he was an adviser to Pres. Woodrow Wilson at the Paris peace conference following World War I. A "dark horse" in the Democratic national convention of 1924, he was nominated for the presidency after 102 ballots had failed to resolve a deadlock between Alfred E. Smith and William G. McAdoo. In the following November national election he was defeated by the Republican candidate, Calvin Coolidge. Returning again to private practice, Davis continued active in his profession until shortly before his death. Two of his last cases were both decided against him in 1954—the U.S. supreme court's decision that public school segregation was unconstitutional, and the Atomic Energy commission's final ruling that J. Robert Oppenheimer was a security risk. (See also *Encyclopædia Britannica*.)

Deakin, Arthur, British trade unionist (b. Sutton Coldfield, Warwickshire, Eng., Nov. 11, 1890—d. Leicester, May 1, 1955), a cobbler's son, started work at the age of 13 in a steel plant near Merthyr Tydfil. He studied at night and by 1919 was a full-time official of the Dock, Wharf, Riverside and General Workers' union which later by amalgamation became the Transport and General Workers' union. In 1932 he became national secretary of the General Workers' group in London, where he formed a close association with Ernest Bevin, whose assistant he became in 1935 and whom he succeeded as general secretary of the T.&G.W.U. and on the general council of the Trades Union congress during and after World War II. He was chairman of the T.U.C. general council in 1951-52 and deputy chairman in 1952-53. In 1948 he was appointed a director of the *London Daily Herald*. Besides attending several International Labour organization conferences he was an official of the International Transport Workers' federation. During and after World War II he sat on many governmental and intergovernmental advisory committees, dealing in particular with transport, productivity and postwar reconstruction. In this way, and also by firmly opposing unofficial strike action, he showed his awareness of the transformed character of the trade union movement, seeking the welfare of labour not by strife but by co-operation, by patient negotiation and by increased productivity. He forcefully resisted the Communist element in the movement and in 1948, while presiding at a meeting of the World Federation of Trade unions in Paris, he denounced this body as a Communist instrument and led the withdrawal of the British and other delegations. He was then made a vice-president of the International Confederation of Free Trade unions. Deakin played an active part in averting the strike of locomotive engineers and firemen set for May 1, 1955, and while addressing a May day rally he collapsed and died.

Dean, James, U.S. motion picture actor (b. Marion, Ind. 1931—d. Paso Robles, Calif., Sept. 30, 1955).

Déat, Marcel, French politician and journalist (b. Guerigny, Fr., March 7, 1894—d. Turin, It., Jan. 5, 1955).

De Jong, Johannes, Dutch Roman Catholic prelate, (b. Nes, on the Frisian Island of Ameland, Sept. 10, 1885—d. Amersfoort, Sept. 8, 1955).

deMille, William Churchill, U.S. playwright (b. Washington, N.C., July 25, 1878—d. Los Angeles, Calif., March 5, 1955).

Denny, George Hutcheson, U.S. educator (b. Old Church, Va., Dec. 3, 1870—d. Lexington, Va., April 2, 1955).

Deutsch, Monroe Emanuel, U.S. educator (b. San Francisco, Calif., Aug. 17, 1879—d. San Francisco, Oct. 21, 1955).

Devoe, Alan (Taylor), U.S. naturalist and author (b. Montclair, N.J., Oct. 13, 1909—d. New York, N.Y., Aug. 17, 1955).

De Voto, Bernard (Augustine), U.S. author and critic (b. Ogden, Utah, Jan. 11, 1897—d. New York, N.Y., Nov. 13, 1955), ranged in his literary production from magazine fiction to notable works on U.S. history, biography and

literary criticism; he was an acknowledged authority on Mark Twain.

De Voto's undergraduate career at Harvard university was interrupted by infantry service in World War I, after which he received his bachelor's degree. He taught English at Northwestern university, Evanston, Ill., from 1922 to 1927 and while there published his first novels, *The Crooked Man* (1924) and *The Chariot of Fire* (1926). From 1929 to 1936 he taught and lectured at Harvard; he was editor of the *Saturday Review of Literature* from 1936 to 1938 and of the "Easy Chair" department of *Harper's Magazine* from 1935 until his death. His volume of U.S. western history, *Across the Wild Missouri* (1947; part of a trilogy, *The Course of Empire*, published in 1952) was awarded the Pulitzer history prize in 1948. That same year he also received one of the original two Bancroft prizes, awarded by Columbia university for distinguished historians.

An often intemperate critic, De Voto was especially intolerant of mediocrity in literature and all types of social pretense. His volumes on Mark Twain include *Mark Twain's America* (1932), *Mark Twain at Work* (1941) and *Mark Twain in Eruption* (1940).

Dingell, John David, U.S. congressman (b. Detroit, Mich., Feb. 2, 1894—d. Washington, D.C., Sept. 19, 1955).

Dinneen, William Henry (Bill), U.S. baseball player and umpire (b. Syracuse, N.Y., April 25, 1876—d. Syracuse, N.Y., Jan. 13, 1955).

Dirksen, Herbert von, German diplomat (b. Berlin, Ger., April 2, 1882—d. Munich, Ger., Dec. 19, 1955).

Donnelley, Thomas Elliot, U.S. printing executive (b. Chicago, Ill., Aug. 18, 1867—d. Lake Forest, Ill., Feb. 6, 1955).

Dowling, John Graham, U.S. foreign correspondent (b. Philadelphia, Pa., March 5, 1914?—d. Cuatro Mojones, Par., June 16, 1955).

Downes, (Edwin) Olin, U.S. music critic (b. Evanston, Ill., Jan. 27, 1886—d. New York, N.Y., Aug. 22, 1955), studied piano, music analysis and harmony as a youth, and then taught piano. From 1906 to 1924 he was music critic of the *Boston Post* and from 1924 until his death music critic of the *New York Times*, where he came to be regarded generally as the dean of his profession. Widely known also as a lecturer, he was the author of *The Lure of Music* (1918) and *Symphonic Masterpieces* (1932), editor of *Songs of Russia* and co-editor of *A Treasury of American Song*.

du Cros, Sir Arthur Philip, British politician and business executive (b. Dublin, Ire., Jan. 26, 1871—d. Oxley, Herts., Eng., Oct. 28, 1955).

Dudley, Albertus True, U.S. educator and author (b. Paris, N.Y., Jan. 19, 1881—d. Exeter, N.H., Feb. 11, 1955).

Duff, The Rt. Hon. Sir Lyman Poore, Canadian jurist (b. Meaford, Ont., Jan. 1865—d. Ottawa, Can., April 26, 1955).

Dunbabin, Thomas James, British archaeologist (b. Australia, 1911—d. Clarendon, Eng., March 31, 1955).

Dunbar, Sir Alexander, British steel industrialist (b. Glasgow, Scot., Sept. 2, 1888—d. Sheffield, Eng., Oct. 14, 1955).

Dunn, Robert (Steed), U.S. journalist and explorer (b. Newport, R.I., Aug. 1, 1877—d. Katonah, N.Y., Dec. 24, 1955).

Dunyevsky, Isaak O., Soviet composer (b. Lokhvitsy, U.S.S.R., Jan. 30, 1900—d. Moscow, U.S.S.R., July 25, 1955).

Durkin, Martin Patrick, U.S. labour leader and cabinet member (b. Chicago, Ill., March 18, 1894—d. Washington, D.C., Nov. 13, 1955), served less than nine months as secretary of labour under Pres. Dwight D. Eisenhower. He resigned Sept. 10, 1953, charging that the administration had failed to carry out an agreement to sponsor amendments to the Taft-Hartley labour law that he had considered inimical to the interests of U.S. labour. Durkin's resignation marked the start of strained relations between the Eisenhower administration and the American Federation of Labor and the Congress of Industrial Organizations.

The son of Irish immigrants, Durkin left school at 14 to become a steamfitter apprentice in Chicago. After military service in France during World War I he became interested in labour organization and was appointed business manager of a steamfitters local at Chicago in 1921. From 1933 to 1939 he was Illinois state director of labour. In the latter year he was named secretary-treasurer of the United Association of Journeymen Plumbers & Steamfitters, a member union of the A.F. of L.; and he was elected president of the union in 1943. After resignation as U.S. secretary of labour Durkin returned to his union office.

Easton, Florence Gertrude (Mrs. Stanley Rogers), U.S. concert singer (b. Middlesbrough-on-Tees, Eng., Oct. 25, 1884—d. New York, N.Y., Aug. 1, 1955).

Edson, Merritt Austin, U.S. marine corps officer (b. Rutland, Vt., April 1, 1897—d. Washington, D.C., Aug. 14, 1955), left his studies at the University of Vermont, Burlington, to join the marine corps after U.S. entrance in World War I. He received his wings as a naval aviator in 1922 and in 1929 served with distinction in Nicaragua. In World War II he acquired fame as a commander of a marine battalion known as "Edson's Raiders" during the Tulagi-Guadalcanal campaigns of 1942, following which he received the congressional medal of honour. Edson also participated in the attacks on Tarawa, Saipan and Tinian, and in the final months of World War II he commanded the service command of the Pacific fleet marine force. He was promoted to brigadier general in 1943 and retired from the marine corps as major general in 1947. Later he was head of the Vermont state police and executive director of the National Rifle association. Shortly before his death, apparently of suicide, he had worked on the new code of conduct for U.S. prisoners of war, promulgated Aug. 17, 1955.

Eggen, Arne, Norwegian composer (b. Trondheim, Nor., Aug. 28, 1881—d. Oslo, Nor., Oct. 26, 1955).

Egloff, Gustav, U.S. scientist (b. New York, N.Y., Nov. 10, 1886—d. Chicago, Ill., April 29, 1955), was one of the foremost petroleum chemists of his time. He graduated from Cornell university, Ithaca, N.Y., in 1912, and took master's degree and Ph.D. at Columbia university, New York city. He was research director from 1917 of Universal Oil Products company, Plaines, Ill., he was given world-wide recognition as an authority on

chemistry of petroleum and received a number of international awards and other honours for his research and discoveries.

Einstein, Albert, German-Swiss-U.S. mathematician and physicist and Nobel prize winner (b. Ulm, Ger., March 14, 1879—d. Princeton, N.J., April 18, 1955), was best known for his principle of relativity. The son of a German Jewish industrialist, he attended school at Aarau, Switz., and later the polytechnic school at Zürich (where he also taught physics and mathematics) and the University of Zürich, where he received his Ph.D. degree. While studying for his doctorate and working in the Swiss patent office at Berne, Einstein in 1905 published his first restricted principle of relativity. At the time there seemed to be no way to test such matters experimentally and Einstein's restricted principle of relativity failed to obtain much acceptance at first except by some theoretical scholars in Germany. Ten years later Einstein announced his general theory of relativity, a broad and highly technical generalization of his special theory. It turned out that certain astronomical implications might be tested observationally, and serious consideration was finally accorded to Einstein's theory. There was one very important implication from the theory of relativity—that the two forms of universal energy most readily available for human measurement, that contained in matter itself and that of all types of radiation, were in a sense equivalent: the energy E (ergs), locked up in matter, being equal to its mass, or inertia, M , multiplied by the square of that uniform and ultimate velocity c , which radiation alone can possess

$$E=mc^2.$$

It took a Rutherford and his colleagues first to verify the mass-energy relation of Einstein in a few individual cases where individual atomic particles could be observed, then a James Chadwick to discover the neutron, then an Enrico Fermi to utilize it in transmuted about half the elements of the periodic table, then an Otto Hahn, a Lise Meitner and an Otto Frisch to recognize the fissionable capacity of a certain uranium isotope and finally a Fermi again to design, build and set going the first controlled nuclear reactor before the Einstein law was abundantly verified.

From about 1916 Einstein spent most of his energies setting up an all-inclusive explanation of the energy in all scientific phenomena—including those of electric, magnetic and gravitational fields of force—in a unified field theory. This theory, however, failed to find support among leading physicists when it was published in 1953, and Einstein himself expressed his disappointment in not finding any possible kind of experimental test of its validity. Meanwhile Einstein engaged in other scientific research which led to his recognition as one of the greatest thinkers of modern times. Notable were his extensions of Max Planck's quantum theory, his explanation of the Brownian movement and his discovery of the law of photoelectric effect—one basis of modern electronics. For the latter he received the 1921 Nobel prize in physics. Einstein, who had become a Swiss citizen as a youth, returned to his native Germany in 1913 to become director of the Kaiser Wilhelm Physical Institute. In 1932 he was offered a staff position at the Institute for Advanced Study, Princeton, N.J. He did not accept at once but sailed for the U.S. later that year after it had become evident that Adolf Hitler was about to come to power in Berlin. After returning briefly to Belgium, he settled permanently at Princeton as a lifetime member of the staff of the Institute for Advanced Study in 1933. He became a U.S. citizen in 1940.

In his famous letter to Pres. Franklin D. Roosevelt dated Aug. 2, 1939, Einstein called attention to the clear possibility of constructing a new and "extremely powerful" weapon—the atomic bomb. Roosevelt promptly investigated and set the Manhattan project in motion. A somewhat ironic aspect of this prelude to the atomic age was that Einstein had been a confirmed pacifist who as a German citizen had publicly opposed Germany's invasion of Belgium at the start of World War I. In the United States Einstein periodically expressed his views on social justice, and he was a fervent Zionist. Throughout his adult life he was an exponent of socialism, world government with certain restrictions and total disarmament. Einstein died on April 18, 1955, at his home in Princeton, N.J., and was cremated at Trenton, N.J., the same day.

Enesco, Georges, Rumanian violinist and composer (b. Dorohoi, Rum., Aug. 9, 1881—d. Paris, Fr., May 4, 1955), was well known as a virtuoso violinist for his interpretations of Bach, especially the Brandenburg concertos and the D minor double violin concerto, of which he made a notable recording with his pupil Yehudi Menuhin. As an executant he was in the French classical tradition, he went to Paris in 1893 and studied under Massenet and Fauré, but as a composer he retained elements of Rumanian romanticism and his *Rumanian Rhapsody* for orchestra and the opera *Oedipe* (produced, 1936) draw their strength from folk music.

Strand, Stuart David, U.S. novelist (b. Chicago, Ill., March 13, 1905—d. Los Angeles, Calif., Sept. 9, 1955).

Tagle y Tagle, Concha, Spanish author (b. Santander, Castille, Sp., April 15, 1880—d. Madrid, Sp., May 19, 1955).

Tins, Silliman, U.S. publisher and political leader (b. Joshua, Tex., April 2, 1894—d. Fort Worth, Tex., June 25, 1955), began his journalistic career as a reporter in 1913, later becoming Washington correspondent for the *Fort Worth Star-Telegram*. He also was interested in commercial aviation and politics, becoming an officer and director of American Airlines and its predecessor company, American Airways, Inc., and shepherding the switch of John N. Garner's votes to Franklin D. Roosevelt at the 1932 Democratic national convention in Chicago, Ill. In later years, after he had bought the *Nashville Tennessean* (Tenn.), he was the political mentor of Sen. Estes Kefauver of Tennessee, spearheading the latter's unsuccessful effort to get the Democratic presidential nomination at Chicago in 1952. For several years Evans was also publisher of the *Chicago Sun*, retiring from that position in 1944.

Tore, Emile, French playwright (b. Metz, Fr., March 24, 1869—d. Paris, Fr., Sept. 25, 1955), the son of a stage manager, was administrator of the Comédie Française from 1915 to 1936. In 1894, continuing the pursuit of writing and producing he had begun at the age of 13, he staged *Comme ils sont tous*, his first success, and thereafter a series of political and social satires: *L'Argent* (1895); *La vie publique* (honoured by the Académie Française); *Les ventres dorés* (1905) and *Les sauterelles* (1911) which attacked colonial administra-

tion. Other plays included a series of family tragedies and adaptations of two Balzac novels. During this time at the Comédie Française he devoted all his energies to the successful development of the institution with not only classical but also carefully chosen contemporary repertory. He was made a commander of the Legion of Honour.

Farjeon, Joseph Jefferson, British author (b. London, Eng., June 4, 1883—d. Hove, Eng., June 6, 1955).

Fermoy, Edmund Maurice Burke-Roche, 4TH BARON OF, British soldier and politician (b. May 15, 1885—d. King's Lynn, Eng., July 8, 1955).

Field, Guy Cromwell, British educator (b. Birmingham, Eng., Jan. 15, 1887—d. Bristol, Eng., April 28, 1955).

Finnegan, Richard James, U.S. editor (b. Chicago, Ill., Sept. 5, 1884—d. Evanston, Ill., May 6, 1955).

Fishburn, Junius Blair, U.S. publisher (b. Boone Mill, Va., Sept. 27, 1865—d. Roanoke, Va., April 1, 1955).

Fisher, Hammon Edward ("Ham"), U.S. cartoonist (b. Wilkes-Barre, Pa., 1900?—d. New York, N.Y., Dec. 27, 1955), created in 1930 the famous newspaper comic strip "Joe Palooka," read daily by an estimated 50,000,000 people. The strip had as its principal character an amiable prize fighter who became mythical heavyweight boxing champion of the world and retained his title throughout his creator's career. Joe Palooka was also the subject of books, motion pictures, radio programs and monthly comic books, and had a statue erected in his honour at Bedford, Ind. Fisher died an apparent suicide.

Fite, Warner, U.S. educator and author (b. Philadelphia, Pa., March 5, 1867—d. Philadelphia, June 23, 1955).

Flack, Joseph, U.S. diplomat (b. Grenoble, Pa., Dec. 5, 1894—d. at sea enroute to New York, N.Y., May 8, 1955).

Flannagan, John William Jr., U.S. congressman (b. Trevilians, Va., Feb. 20, 1885—d. Bristol, Va., April 27, 1955).

Fleming, Sir Alexander, British bacteriologist (b. Lochfield, near Darvel, Ayrshire, Scot., Aug. 6, 1881—d. London, March 11, 1955), was acclaimed as the introducer of a new era in the treatment of disease and his name linked with those of Pasteur, Lister and Hunter. He was the son of a farmer and went first to the village school and afterward to Kilmarnock academy. When he was 14 he moved to London to live with a brother who was studying medicine and continued his education at the Regent Street polytechnic. In 1902, encouraged by his brother and enabled to enter St. Mary's hospital medical school by a small legacy, his savings and the senior entrance scholarship in natural science, he embarked on what was to be an outstanding medical career. The year of his qualification, 1906, was significant also for his meeting with the bacteriologist Sir Almroth Wright, whose assistant he became and whom he succeeded as director of the Wright-Fleming institute. In 1919 he was made assistant director of the inoculation department at St. Mary's and in 1928 professor of bacteriology at London university. His dominant interest lay in investigating the human body's natural defenses and in 1922 he had discovered lysozyme, a naturally occurring antibiotic. In Sept. 1928, when examining an agar plate culture of staphylococci, he noticed that a mould had formed around which the staphylococci were disappearing: "I found that the mould made a powerful and nonpoisonous antiseptic which I christened penicillin." Although Fleming discovered it and realized its implications, he was not immediately concerned with penicillin as an internal therapeutic agent, and it was Howard Florey and Ernest Chain (awarded the Nobel prize for medicine in 1945 jointly with Fleming) who purified and developed it therapeutically. Sir Alexander Fleming was knighted in 1944.

Fleming, Philip Bracken, U.S. army officer and government official (b. Burlington, Iowa, Oct. 15, 1887—d. Washington, D.C., Oct. 6, 1955).

Flugel, John Carl, British psychologist (b. June 13, 1884—d. London, Eng., Aug. 6, 1955).

Fox, Howard Francis, U.S. baseball player (b. Coburg, Ore., March 1, 1921—d. San Antonio, Tex., Oct. 9, 1955).

Francis, Robert Charles, U.S. motion picture actor (b. Glendale, Calif., Feb. 26, 1930—d. Burbank, Calif., July 31, 1955).

Friganza, Trixie (DELIA O'CALLAHAN), U.S. actress in vaudeville and musical revues (b. Grenola, Kan., Nov. 29, 1870—d. Flintridge, Calif., Feb. 27, 1955), made her stage debut in 1889 and had her first starring part five years later, in *A Christmas Night*. Later "hits" of hers included *Sally in Our Alley*, *The Girl from Paris* and *The Sweetest Girl in Paris*. She also played leading roles in a number of motion pictures, among them *The Road to Yesterday*, *Free and Easy* and *Myri and Marge*. She retired in 1939, except for occasional appearances in U.S. veterans' hospitals.

Fry, Clements Collard, U.S. psychiatrist (b. Jersey City, N.J., Nov. 15, 1892—d. Wallingford, Conn., Nov. 24, 1955).

Gaither, Frances Jones (MRS. RICE GAITHER), U.S. novelist (b. Somerville, Tenn., May 21, 1889—d. Rockledge, Fla., Oct. 28, 1955).

Gallagher, Richard S. ("Skeets"), U.S. comedian (b. Terre Haute, Ind., July 28, 1900—d. Santa Monica, Calif., May 22, 1955), forsook the study of law at Indiana university, Bloomington, for a career in vaudeville. He made his first Broadway appearance in the early 1920s in *Up in the Clouds*. His later starring roles included a number of musical comedies, such as *No, No, Nanette*, *Rose Marie* and *Lucky*. In 1927 he played a part in his first motion picture, *The Potlers*, starring W. C. Fields. During the next 12 years he appeared in a number of other films, notably *Idiot's Delight* with Norma Shearer in 1939. Gallagher starred in the stage play *Good Night Ladies* which set an all-time Chicago record of 100 weeks in that city in 1942-44. He retired from the stage in 1951.

Garbett, Cyril Forster, primate of England (b. Tongham, Surrey, Eng., Feb. 6, 1875—d. Bishopthorpe, York, Eng., Dec. 31, 1955), the son of a country vicar, was educated at Portsmouth grammar school, at Keble college, Oxford and at Cuddesdon theological college, from which he was ordained in 1900. His experience first as one of a team of curates (1900-09) and later as vicar in a large parish in Portsea developed his gifts as pastor and adminis-

trator and in 1919 he was appointed bishop of Southwark. He became an expert on housing and nutrition, launched a successful Twenty-Five Churches fund and undertook a notable series of pilgrimages on foot into his rural parishes which he continued after his translation to Winchester in 1932. While there he organized the 1935 Church congress at Bournemouth, was chairman of the Church assembly's missionary council, and served on various national committees on town and country planning, rural housing and on the Religious Advisory committee of the B.B.C. As unofficial ambassador of the Anglican communion, he visited Moscow in 1943, the U.S. in 1944, the Netherlands, Italy and Greece in 1945, the middle east in 1946, Czechoslovakia and Yugoslavia in 1947 and Australia and the far east in 1951-52. The vigour of his pronouncements on such varied problems as divorce, Communism, the hydrogen bomb and the dogma of the Assumption was unabated. In 1947 he published *The Claims of the Church of England*, the first of a trilogy completed by *Church and State in England* (1950) and *In an Age of Revolution* (1952). His last book, *World Problems Today*, appeared in 1955.

Gasser, Lorenzo Dow, U.S. army officer (b. Lykins, O., May 3, 1876—d. Washington, D.C., Oct. 29, 1955).
Gearhart, Bertrand Wesley, U.S. politician (b. Fresno, Calif., May 31, 1890—d. San Francisco, Calif., Oct. 11, 1955).
Gessler, Otto Karl, German statesman (b. Ludwigsburg, Ger., Feb. 6, 1875—d. Lindenburg, Ger., March 24, 1955).

Ghavam (Qavam) es-Saltaneh, Ahmed, Iranian politician (b. Persian Azerbaijan, 1882—d. Tehran, Iran, July 23, 1955), entered the court of the shah as a scribe in 1898. He rose to the position of minister of justice in 1909 and became minister of the interior in the following year. In 1918 he was appointed governor of Khurasan province and three years later was nominated prime minister. He was in office from 1921 to 1922 and again from 1922 to 1923 when he was accused of plotting against the shah's life and was exiled until 1928. He was again prime minister in 1942, but resigned in 1943 following the Tehran bread riots. Restored to office in Jan. 1946, he was successful in bringing about the withdrawal of Soviet troops from Iran Azerbaijan (with its Soviet-sponsored regime) and setting up a Soviet-Persian oil company, but the agreement concerning the latter aroused the opposition of the *majlis* and he failed to win their vote of confidence. He thereupon left Iran in 1947, but returned home to become prime minister for the fourth time in July 1952. His ministry was short-lived, however, for the shah had deprived him of the military forces necessary to quell the riots which had broken out in the capital, so that Ghavam's resignation after four days was inevitable. He was arrested and an order was made for the confiscation of his property. He was not brought to trial, however, and in 1954 the order of confiscation was rescinded.

Gil, Martin, Argentine astronomer and author (b. Córdoba, Arg., Oct. 23, 1868—d. Buenos Aires, Arg., Dec. 9, 1955).
Gill, Basil, British actor (b. Birkenhead, Eng., March 10, 1877—d. Hove, Eng., April 23, 1955).
Glasgow, Sir (Thomas) William, Australian army officer and politician (b. Tiaro, Queens., June 6, 1876—d. Brisbane, Austr., July 4, 1955).
Glass, Carter Jr., U.S. publisher (b. Lynchburg, Va., March 29, 1893—d. Lynchburg, Dec. 1, 1955).

Goddard, Calvin Hooker, U.S. army officer and criminologist (b. Baltimore, Md., Oct. 30, 1891—d. Washington, D.C., Feb. 22, 1955), graduated from Johns Hopkins university, Baltimore, in 1911, and took his medical degree from the same institution four years later. He served as a medical officer with the U.S. army in Europe during World War I. Shortly thereafter he became interested in firearms identification and he originated the branch of criminology known technically as forensic ballistics (scientific linking of weapons with bullets or cartridges fired from them). Goddard was director of the Northwestern University Scientific Crime Detection laboratory (later transferred to administration of the city of Chicago) from 1929 to 1933. During World War II he served again as an army officer and after that war he founded a crime detection laboratory for the U.S. army occupation forces in Tokyo, Jap., advancing to the rank of colonel. During the latter part of his career he was military editor of *Encyclopedia Britannica* and an editorial adviser for a 40-volume history of medicine during World War II.

Golden, John, U.S. theatrical producer, actor, playwright and songwriter (b. New York, N.Y., June 27, 1874—d. New York, N.Y., June 17, 1955), at various times in his youth studied architecture, music and law, but always returned to the theatre. He wrote verses, plays and songs, and composed the music for a number of musical comedies, collaborating also with Oscar Hammerstein, Irving Berlin and others; among his most successful popular songs were "Goodbye Girls, I'm Through" and "Poor Butterfly." Probably best known as a producer, however, Golden produced or co-produced more than 100 plays in New York city, including *Lightnin'*, which established a new Broadway record of 1,291 consecutive performances after its opening in 1918. *Three Wise Fools*, *Susan and God*, *Claudia*, *The Male Animal*, etc. He was also the author of several short plays.

Gooden, Stephen, British engraver (b. 1892—d. Chesham Bois, Eng., Sept. 21, 1955).

1955 OBITUARIES: Clark C. Griffith, U.S. baseball executive; Walter Hampden, U.S. actor; Cordell Hull, U.S. statesman; Robert R. McCormick, U.S. publisher; Bernarr Macfadden, U.S. physical culturist

Goodhart, Albert S., U.S. song writer (b. New York, N.Y., Jan. 26, 1905—d. New York, Nov. 30, 1955).

Gorton, Neville Vincent, British bishop of Coventry (b. Manchester, Eng. 1888—d. London, Eng., Nov. 30, 1955).

Govorov, Leonid Aleksandrovich, Russian army officer (b. St. Petersburg [Leningrad], U.S.S.R., 1896—d. Moscow, March 19, 1955), commanded the artillery which broke the Mannerheim line during the Soviet-Finnish War of 1939-40. When Germany attacked the U.S.S.R. he was a lieutenant general. In 1942 he was given command of the Leningrad front and on Jan. 27, 1944, he succeeded in routing the German besiegers and entered Estonia. On June 10 he launched for the second time a drive through the Karelian isthmus, culminating in the Soviet-Finnish armistice of Sept. 1944. He had been promoted marshal of the Soviet Union on June 18, 1944. After World War II Govorov was a deputy minister of defense, an alternate member of the central committee of the Communist party and a member of the supreme soviet.

Gray, Carl Raymond, Jr., U.S. business executive and government official (b. Wichita, Kan., April 14, 1889—d. St. Paul, Minn., Dec. 2, 1955), was head of the Veterans administration from 1948 until his resignation in 1953 because of ill health. Graduating from the University of Illinois, Urbana, in 1911, he later held a number of railroad and banking executive positions. During World War II he was a general officer in charge of all military railway transportation in the European theatre of operations. After his return to civilian life in 1946 Gray was executive vice-president of the Chicago and North Western railroad, until his appointment as VA administrator by Pres. Harry S. Truman.

Graziani, Rodolfo, Italian army officer (b. Filetino, near Frosinone, I., Aug. 11, 1882—d. Rome, Jan. 11, 1955), was commissioned in 1908 and was sent to Eritrea. Sent as captain to the Austrian front in 1915, he was colonel at 36. His ruthlessness and brilliance as a commander against native forces were shown during 1921-30, when he undertook the subjection of revolted territories in Tripolitania and Cyrenaica; his maxim that "the enemy forgiven is more dangerous than 1,000 foes" was exemplified against the Senussi, whom he subdued by concentration camps, by "flying tribunals" which executed rebels in the villages and by the filling in of wells. Commander of the Libyan forces, 1930-34, he became governor and commander in chief in Italian Somaliland in 1935 and as leader of the southern campaign, played a notable part in the conquest of Ethiopia. For his victory against Harar he was made marshal and marquis of Neghelli. As viceroy, 1936-38, he consolidated the victory by such measures as the execution of 1,600 natives after an attack on his life (1937). In Nov. 1939 he became chief of staff of the Italian army and commander of the army of the Po and in July 1940 he succeeded Gen. Italo Balbo as governor general of Libya and commander of Italian troops in Africa. Failure to integrate his forces and timidity in attack led to his defeat by General Wavell, and in March 1941 he was relieved of his command. In Sept. 1943 he emerged from disgrace to become minister of defense in Mussolini's Republican Fascist government in north Italy, but failed to organize an army and in April 1945 was captured by the Allies. In 1948 he was sentenced by an Italian tribunal, but released under amnesty after three months' imprisonment and later became president of the neo-Fascist Italian Socialist movement.

Greene, Josiah E., U.S. novelist (b. Duluth, Minn., March 22, 1911—d. Duluth, June 12, 1955).

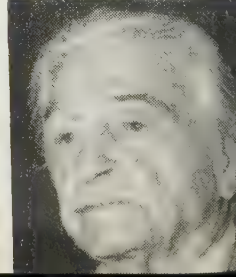
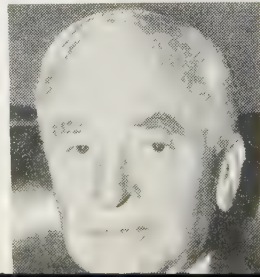
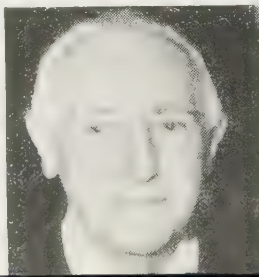
Greenstone, Rev. Julius Hillel, U.S. educator and author (b. Russia, April 1873—d. Philadelphia, Pa., March 7, 1955).

Greenwood, Ernest, U.S. legislator (b. Yorkshire, Eng., Nov. 25, 1884—d. Bayside, N.Y., June 15, 1955).

Griffith, Clark C., U.S. baseball player and executive (b. near Nevada, Mo., Nov. 20, 1869—d. Washington, D.C., Oct. 27, 1955), was known as the "fox" of baseball because of the shrewd trades of baseball players he made as manager and later owner of the Washington, D.C., Senators in the American League. He began his professional baseball career at the age of 18 as pitcher for the Bloomington, Ill. club, continuing in the minor leagues (American association, Pacific coast and Rocky mountain leagues) until 1893, when he joined the old Chicago Colts, managed by Adrian C. "Pop" Anson. In 1901 he joined the Chicago White Sox as pitcher-manager and led that team to its first league pennant. There he also helped organize the new American league. In 1903 he organized the New York Highlanders, predecessor team of the Yankees, and from 1909 to 1911 he was manager of the Cincinnati Reds in the National league. He then went to Washington as manager of the Senators, later (1919) becoming co-owner of that team. Griffith was elected to baseball's hall of fame in 1946.

Grossley, Richard Sylvester, U.S. educator (b. Gloster, Miss., July 11, 1883—d. New York, N.Y., Nov. 17, 1955).

Gulbenkian, Calouste Sarkis, British financier and industrialist (b. Scutari, Istanbul, Tur., Mar. 24, 1869—d. Lisbon, Port., July 20, 1955), came of an Armenian merchant family, who sent him for education to Marseilles at 16, to London where he graduated at King's college in engineering and applied sciences. In 1895 he began his association with British oil leaders and first employed his talent for complex manipulation in the organization of the Royal Dutch Shell group. In 1902 he became a British subject. Already adviser to the Turkish embassies in London and Paris, he was appointed in 1910 director of the National Bank of Turkey and in 1912



quired in the newly negotiated Turkish Petroleum company a 15% holding which, to admit the rival Anglo-Persian company in 1913-14, he voluntarily reduced to 5%, but henceforth never relinquished, earning the nickname "Mr. 5%." Heavy losses during World War I were recuperated by a successful claim to the Northern Iraq oil concessions and former German interests in the renamed Iraq Petroleum company were, at his instigation, ceded to France, whose refining industry benefited from his wartime collaboration with the government. On his advice the company manoeuvred to include rather than oppose U.S. interests, but their independent prospecting in Saudi Arabia after World War II was lengthily contested by Gulbenkian. From 1942 he led a solitary life in Portugal. He amassed private collections unrivalled in scale, reflecting an independent and eclectic taste in and knowledge of sculpture, ceramics, furnishings, jewellery, coins and, predominantly, painting. He was a devout member of the Armenian church, being particularly solicitous for the patriarchate of Jerusalem where, in 1930, he founded the Gulbenkian library. By his will he established in Lisbon the Gulbenkian foundation to administer his vast fortune and art collections for charitable, artistic, educational and scientific purposes on a specifically international basis, and to continue his lifelong but unpublicized philanthropic work.

Gumpert, Martin, U.S. physician (b. Berlin, Ger., Nov. 13, 1897—d. New York, N.Y., April 18, 1955).

Hale, William Jay, U.S. organic chemist (b. Ada, O., Jan. 5, 1876—d. Midland, Mich., Aug. 8, 1955).

Halford, Frank Bernard, British aircraft engine designer (b. Nottingham, Eng., March 7, 1894—d. Northwood, Middlesex, April 17, 1955), was educated at Felsted school and at Nottingham university. During World War I he served in the R.F.C. and the R.A.F. For a short time before this he had been an engine examiner in the aeronautical inspection department of the air ministry. In 1915 he was recalled from France to design an engine larger than the Austro-Daimler. This 230-h.p. Beardmore-Halford-Pullinger (B.H.P.) was used in the D.H. 4 aircraft and later in the D.H. 9. Subsequently Halford joined H. R. Ricardo in work on the Ricardo supercharger and introduced an inverted in-line engine. He then worked independently on the development of small high-rotational-speed engines for motorcycles and racing cars, but in 1924 he began an association with A.D.C. Aircraft Ltd., and designed the Cirrus, Airdisco, Napier and Nimbus engines. In 1927 he joined de Havilland's and designed the Gipsy engine, which he continued to develop for a number of years. At the same time he worked on the 305-h.p. Rapier, employing a double crankshaft, for the Napier company. During World War II he concentrated on jet engines, producing the Napier Sabre and Dagger, and the de Havilland Goblin and Ghost engines. In 1953 it was announced that Halford and his assistants had produced the axial-flow gas turbine Gyron, still secret at the time of his death. From 1935 to 1944, when the de Havilland Engine company was formed under his direction, Halford had been technical director of Napier's. He was also a director of the de Havilland Aircraft company from 1945. He was president of the Royal Aeronautical society for 1951-52.

Hammerstein, Arthur, U.S. producer (b. New York, N.Y., 1876—d. Palm Beach, Fla., Oct. 12, 1955).

Hampden, Walter (WALTER HAMPDEN DOUGHERTY), U.S. actor (b. Brooklyn, N.Y., June 30, 1879—d. Hollywood, Calif., June 11, 1955), graduated from Brooklyn Polytechnic institute in 1900 and shortly thereafter joined a Shakespearean troupe of actors in England. His first notable success was as a substitute Hamlet in 1905. Returning in 1907 to the United States, he made his first Broadway appearance with Mme. Alla Nazimova. Subsequently he starred in a number of Shakespearean parts and in 1923-24 made a great hit as Cyrano in Edmond Rostand's *Cyrano de Bergerac*. In 1925 he leased the old Colonial theatre in New York city, renamed it Hampden's, and there starred in plays by Sir James Barrie, Henrik Ibsen and other modern dramatists, in addition to his well-known Shakespearean roles. He played Cyrano more than 1,000 times after his original revival of it in 1923. Hampden also starred in many radio, television and motion-picture productions. His last stage appearance was in 1953 on Broadway.

Hansen, Martin A., Danish author (b. Strobj Sogn, Stevns, Den., Aug. 20, 1909—d. Copenhagen, Den., June 28, 1955).

Harger, Charles Moreau, U.S. editor (b. Phelps, N.Y., Jan. 23, 1863—d. Abilene, Kans., April 3, 1955).

Harris, Henry Wilson, British journalist and politician (b. Plymouth, Eng., Sept. 21, 1883—d. Hove, Eng., Jan. 11, 1955).

Harrison, Earl Grant, U.S. lawyer and educator (b. Philadelphia, Pa., April 27, 1899—d. near Sabel, N.Y., July 28, 1955).

Hartman, Grace (MRS. NORMAN ABBOTT), U.S. dancer (b. San Francisco, Calif., 1907—d. Van Nuys, Calif., Aug. 8, 1955).

Hartman, Rev. Dr. Lewis Oliver, U.S. Methodist clergyman and editor (b. La Grange, Ind., May 3, 1876—d. Newton, Mass., June 30, 1955).

Harvey, Thomas Edmund, British historian and social reformer (b. Leeds, Eng., Jan. 4, 1875—d. Leeds, May 3, 1955).

Hathway, Marion (MRS. THEODORE R. PARKER), U.S. educator (b. North Tonawanda, N.Y., July 31, 1895—d. Bryn Mawr, Pa., Nov. 18, 1955).

Hayden, Josiah Willard, U.S. philanthropist (b. Boston, Mass., May 2, 1874—d. Arlington, Mass., June 15, 1955).

Hayes, Edward Arthur, U.S. politician (b. Morrisonville, Ill., Jan. 5, 1893—d. Chicago, Ill., April 1, 1955).

Hayes, Frank Witman, U.S. baseball player (b. Jamesburg, N.J., Oct. 13, 1915—d. Point Pleasant, N.J., June 22, 1955).

Hayes, Ira, U.S. marine (b. 1922?—d. near Bapchule, Ariz., Jan. 24, 1955), was one of the six marines who raised the U.S. flag atop Mt. Suribachi, Iwo Jima, in Feb. 1945 during the marines' bloody conquest of that island from the Japanese in World War II. The flag-raising was made historic through a photograph taken by Joe Rosenthal of the Associated Press and was the subject of the heroic bronze memorial dedicated in Arlington, Va., Nov. 10, 1954.

Hayes, a Pima Indian, was buried in Arlington national cemetery near the monument. His death, the result of alcoholism and overexposure

on the Sacaton Indian reservation in Arizona, left only two survivors of the original flag-raising ceremony.

Hedtoft, Hans Christian, Danish statesman (b. Aarhus, Jutland, April 21, 1903—d. Stockholm, Swed., Jan. 29, 1955), began his career at 14 as a lithographer. Deeply interested in political and social affairs, he became a member of the National Social Democratic Youth organization and its president in 1928. As secretary of the Social Democratic party he was elected to the Folketing (lower house) in 1935, but was forced to resign (1941) after the German invasion of 1940. He took an active part, however, in the resistance movement and returned as minister of labour and social affairs in 1945. He was prime minister from 1947 to 1950 and again from 1953. An advocate of a strong national defense and Scandinavian unity, he promoted the Nordic council (at which he was representing Denmark at the time of his death) and urged Denmark's admission to the North Atlantic Treaty organization.

Hempel, Frieda, German-U.S. singer (b. Leipzig, Ger., June 26, 1885—d. Berlin, Ger., Oct. 7, 1955), studied at the Leipzig music conservatory. She made her debut at the Berlin royal opera in 1905 and first appeared at the Metropolitan opera in New York city in 1912. She became a U.S. citizen in 1918. Among her better known starring soprano roles were those in *Die Meistersinger*, *La Traviata*, *The Barber of Seville*, *Rigoletto* and *Der Rosenkavalier*. From 1919, when she left the Metropolitan, until her retirement in 1949, she appeared mostly in solo concert recitals.

Henderson, Daniel MacIntyre, U.S. novelist and editor (b. Baltimore, Md., May 27, 1880—d. Flemington, N.J., Nov. 12, 1955).

Hess, Julius Hays, U.S. pediatrician (b. Ottawa, Ill., Jan. 26, 1876—d. Los Angeles, Calif., Nov. 2, 1955).

Himstead, Ralph Elbner, U.S. editor and educator (b. Blue Mound, Ill., Jan. 31, 1893—d. Washington, D.C., June 9, 1955).

Hodiak, John, U.S. actor (b. Pittsburgh, Pa., April 16, 1914—d. Tarzana, Calif., Oct. 19, 1955), had his first major motion-picture role in *Lifeboat* (1944) with Tallulah Bankhead. His later starring roles were of many different types and included more than 20, such as *A Bell for Adano*, *Desert Fury*, *Homecoming*, *The Miniver Story* and *Trial*, the latter released a few days before his death. Hodiak also appeared in a number of stage productions, notably as Lieutenant Maryk in *The Caine Mutiny Court Martial* of Herman Wouk, and was starred in television plays.

Hofer, Karl Christian Ludwig, German painter (b. Karlsruhe, Ger., Oct. 11, 1878—d. Berlin, Ger., April 3, 1955).

Holder, Charles Adams, U.S. diplomat, physician and banker (b. New York, N.Y., Nov. 2, 1872—d. Boston, Mass., April 3, 1955).

Holding, Elisabeth Sanxay, U.S. author (b. Brooklyn, N.Y., June 8, 1889—d. New York, N.Y., Feb. 7, 1955).

Holt, Rev. Harold, U.S. Episcopal minister and educator (b. Cortland, N.Y., May 31, 1886—d. Elmhurst, Ill., May 28, 1955).

Holt, Rush Dew, U.S. politician (b. Weston, W.Va., June 19, 1905—d. Bethesda, Md., Feb. 8, 1955), was the youngest person ever elected to the U.S. senate. Educated at Salem college, Winston-Salem, N.C., from which he graduated in 1924, he taught school until his election to the West Virginia house of delegates, where he served from 1931 to 1935. In 1934 he was elected to the U.S. senate as a Democrat from West Virginia but was not seated until the following June 21, two days after he had reached the legal age for senators (30) provided by the U.S. constitution. In the senate he surprised his colleagues by becoming an enemy of the New Deal on almost all scores, domestic and foreign; he was a leading noninterventionist prior to World War II. Defeated for re-election in 1940, he later served several additional terms in the West Virginia house of delegates as both a Democrat and a Republican.

Honegger, Arthur, Swiss composer (b. Le Havre, Fr., March 10, 1892—d. Paris, Nov. 27, 1955), decided at the age of nine to become a composer. He studied at Zürich and at Paris conservatoire, where he was a pupil of André Gédalge, C.-M. Widor and Vincent d'Indy and a contemporary of Darius Milhaud and Francis Poulenc, with whom during World War I he formed the group known as "Les Six." Their impudent attitude to established forms influenced such early works as *Le Dit des jeux du monde* (1916) but by 1920, when he produced sonatas for viola and piano, cello and piano and unaccompanied violins and the *Pastorale d'été*, his natural vigour and austerity had asserted themselves. His later, strongly contrapuntal, style owed much to his acknowledged master, Bach. In 1921 appeared *Le Roi David*, originally written as incidental music to a play by René Morax, but later reorchestrated as an oratorio; in it he used massive choruses, strong rhythms and bold harmonies to create an impression of great tragic power. Other similar works included his incidental music for Jean Cocteau's *Antigone* (1922) and for Paul Claudel's *Jeanne d'Arc au bûcher* (1939); and the oratorio *Judith* (1925). His *Symphonie Liturgique* (1946), *Symphonie "di tre re"* (1950) and *Cantate de Noël* (1953) showed an equal seriousness and the "honest workmanship" which he once claimed as his ambition. More spectacular are three symphonic pieces of program music, *Pacific 231* (1924) which describes orchestrally the movement of an express train; *Rugby* (1928); and *No. 3* (1933). Honegger also wrote an operetta, *Le Roi Pausole* (1931); music for films and ballet; and many songs, as well as three other symphonies and much chamber music. (See also *Encyclopedia Britannica*.)

Hoover, Theodore Jesse, U.S. engineer and educator (b. West Branch, Iowa, Jan. 28, 1871—d. near Santa Cruz, Calif., Feb. 5, 1955).

Horder, Thomas Jeeves Horder, 1ST BARON, OF ASHFORD IN THE COUNTY OF SOUTHAMPTON, British physician (b. Shaftesbury, Eng., Jan. 7, 1871—d. Petersfield, Eng., Aug. 13, 1955).

Horovitz, Bela, Hungarian-born publisher (b. Budapest, Hung., April 18, 1898—d. New York, N.Y., March 7, 1955), founded the Phaidon press in Vienna in 1923. Having transferred the business to England in 1938, he introduced there the series of reasonably priced fine art books already notable for their large monochrome and colour plates and now furnished with an English text. The press also began publishing a catalogue of the

drawings in the Royal library, Windsor castle, of which 11 volumes had appeared by the time of Horovitz' death.

Hottes, Alfred Carl, U.S. educator and floriculturist (b. Ithaca, N.Y., March 16, 1891—d. La Jolla, Calif., Feb. 28, 1955).

Houston, Herbert Sherman, U.S. editor and publisher (b. Champaign, Ill., Nov. 23, 1866—d. New York, N.Y., May 15, 1955).

Howard, Shemp, U.S. comedian (b. Brooklyn, N.Y., March 17, 1900—d. Los Angeles, Calif., Nov. 22, 1955).

Howard (Black), Tom, U.S. actor (b. County Tyrone, Ire., June 16, 1885—d. Long Branch, N.J., Feb. 27, 1955), emigrated to the United States with his parents as an infant. He entered vaudeville in 1905, starring during the next few years as a comedian in burlesque. Later he was featured in a number of successful Broadway musical comedies, including *Smiles* (with Marilyn Miller), *The Gang's All Here* and *Greenwich Village Follies*. During World War II he entered radio, becoming nationally famous as the master of ceremonies of the quiz program "It Pays to Be Ignorant," subsequently also featured on television. Howard also made a number of short motion-picture comedies.

Howe, George, U.S. architect (b. Worcester, Mass., June 17, 1886—d. Philadelphia, Pa., April 16, 1955).

Hoyt, Julia (MRS. JULIA ROBBINS GILES), U.S. actress (d. New York, N.Y., Oct. 31, 1955).

Huerta, Adolfo de la, Mexican politician (b. Gaymas, Mex., 1881—d. Mexico City, Mex., July 9, 1955).

Hughes, Helen Sard, U.S. educator (b. Chicago, Ill., July 9, 1882—d. Boston, Mass., May 7, 1955).

Hulett, George Augustus, U.S. chemist (b. Ranch, Ill., July 15, 1867—d. Princeton, N.J., Sept. 6, 1955).

Hull, Cordell, U.S. statesman (b. Overton [later Pickett] county, Tenn., Oct. 2, 1871—d. Bethesda, Md., July 23, 1955), took his law degree from Cumberland university in 1891, was admitted to the Tennessee bar the same year, and in 1893 was elected to the Tennessee house of representatives. He was an infantry captain of volunteers in the Spanish-American war. From 1903 to 1907 he was judge of Tennessee's fifth judicial circuit and in the latter year was elected as a Democrat to the U.S. house of representatives from the 4th Tennessee district, serving except for the term 1921-23 until 1931 and specializing in income and inheritance tax and tariff legislation. He was elected U.S. senator from Tennessee in 1931 but resigned two years later to become secretary of state in Pres. Franklin D. Roosevelt's first cabinet. Hull meanwhile had been chairman of the Democratic national committee, from 1921 to 1924. As secretary of state until his resignation Nov. 27, 1944, because of failing health, Hull fought successfully for lower international tariffs, securing passage of the original U.S. reciprocal trade agreements act in March 1934. He also initiated the "good neighbour" policy of nonintervention in Latin-American internal affairs. As World War II drew near and ultimately engulfed the United States at Pearl Harbor, Hull worked to establish the "bipartisan" foreign policy of U.S. Democrats and Republicans. Toward the end of the war he took a prominent part in organizing the United Nations, particularly at the Dumbarton Oaks conference of 1944 at Washington, D.C. For this work he was awarded the Nobel peace prize of 1945. After his resignation from the Roosevelt cabinet Hull lived in semi-retirement in the nation's capital.

Hutchinson, Ely Champion, U.S. construction engineer and editor (b. San Francisco, Calif., Feb. 10, 1882—d. Washington, D.C., Nov. 12, 1955).

Innitzer, Theodor, Austrian Roman Catholic primate (b. Weipert [now Veprty], Bohemia, Dec. 25, 1875—d. Vienna, Oct. 9, 1955).

Inverforth, Andrew K. Weir, 1ST BARON OF, British industrialist (b. Kirk Cady, Scot., April 24, 1865—d. London, Eng., Sept. 17, 1955).

Isham, Ralph Heyward, U.S. manuscript collector (b. New York, N.Y., July 2, 1890—d. New York, N.Y., June 13, 1955), studied at Cornell and Yale universities, then travelled abroad. He joined the British army in 1916 and rose to the rank of colonel during World War I, being made a commander of the Order of the British Empire. In 1927 Isham bought a few of the private papers of James Boswell, later discovering and purchasing about 2,800 letters written to or by Samuel Johnson's biographer, in addition to about 1,300 manuscript pages of *The Life of Samuel Johnson*, many of them previously unpublished. The Isham collection was secured by Yale university in 1950 and, under the supervision and editorship of Professor Frederick A. Pottle of Yale, published in a series of books: *Boswell's London Journal* (1950), *Boswell in Holland* (1952), *Sir Joshua Reynolds' Portraits* (1952) and *Boswell on the Grand Tour* (1953 and 1955).

Jacks, Lawrence Pearsall, British theologian and philosopher (b. Nottingham, Eng., Oct. 9, 1860—d. Oxford, Feb. 17, 1955).

Jackson, Joseph Henry, U.S. literary critic and author (b. Madison, N.J., July 21, 1894—d. San Francisco, Calif., July 15, 1955), studied at Lafayette college, Easton, Pa., in 1915-17, and later served in World War I. In 1920 he joined the staff of *Sunset* magazine as associate editor and subsequently was managing editor and (1926-28) editor. From 1930 until his death he was book editor of the *San Francisco Chronicle*, establishing himself as an authority on U.S. far western culture. He also broadcast a Pacific coast network radio program, "Bookman's Guide," from 1924 into the early 1940s. Jackson was the author of a number of books dealing with true crime episodes and with far western historical topics. He received the Commonwealth club medal for his *Anybody's Gold* (published in 1941) and the Edgar Allan Poe award for his *Bad Company* (1949).

James, Lionel, British soldier and war correspondent (b. 1871—d. Berkshire, Eng., May 31, 1955).

James, Marquis, U.S. historian (b. Springfield, Mo., Aug. 29, 1891—d. Rye, N.Y., Nov. 19, 1955), was principally known as a biographer of historical U.S. personalities and corporations. His life of Sam Houston, *The Raven* (1929), won the 1930 Pulitzer prize for biography, and his two-volume life of Andrew Jackson (1937) was co-winner of the same prize in 1938. In addi-

tion, James wrote biographies of John N. Garner (1939) and Alfred du Pont (1941). As an industrial historian he wrote documentary accounts of several leading U.S. corporations, including the Texaco company and the Metropolitan Life Insurance company. James was educated in the public schools of Enid, Okla., and later was a reporter for several midwestern, southern and eastern dailies. From 1919 to 1923 he was national publicity director of the American Legion, after serving as an infantry officer with the American expeditionary forces during World War I. James was an original staff member of the *New Yorker* magazine.

Jansen, Harry A. ("Dante"), U.S. magician (b. Copenhagen, Den., 1883?—d. Northridge, Calif., June 16, 1955).

Jardine, William M., U.S. educator and cabinet officer (b. Oneida county, Ida., Jan. 16, 1879—d. San Antonio, Tex., Jan. 17, 1955), graduated from the Utah State Agricultural college at Logan in 1904, and later attended the University of Illinois. From 1904 to 1906 he taught at the Utah Agricultural college, after which he was for three years a field investigator for the U.S. department of agriculture. In 1910 he was named to the faculty of Kansas State College of Agriculture, Manhattan, serving later as president of that college from 1918 to 1925, when Pres. Calvin Coolidge appointed him U.S. secretary of agriculture. From 1930 to 1933 he was U.S. minister to Egypt. In 1934 he returned to private life as president of the Municipal University of Wichita, Kan., remaining in that office until his retirement in 1949.

Jarman, Pete, U.S. envoy and congressman (b. Greensboro, Ala., Oct. 31, 1892—d. Washington, D.C., Feb. 17, 1955).

Jensen, Elmer C., U.S. architect (b. Chicago, Ill., March 18, 1870—d. South Haven, Mich., April 24, 1955).

Jevons, (Herbert) Stanley, British economist (b. Oct. 8, 1875—d. London, Eng., June 28, 1955).

Johnson, Adelaide (MRS. ALEXANDER JENKINS JOHNSON), U.S. sculptress and suffragette (b. Plymouth, Ill., Sept. 26, 1847—d. Washington, D.C., Nov. 10, 1955).

Johnson, Allan Chester, U.S. educator (b. Loch Broom, N.S., Aug. 11, 1881—d. Princeton, N.J., March 2, 1955).

Johnson, James Price, U.S. pianist and composer (b. New Brunswick, N.J., Feb. 1, 1894—d. Jamaica, N.Y., Nov. 17, 1955).

Jones, Margo, U.S. theatrical producer (b. Livingston, Tex., Dec. 12, 1913—d. Dallas, Tex., July 24, 1955), graduated from Texas State College for Women, Denton, Tex., then studied at the Southwestern School of the Theatre at Dallas, Tex. She was later associated with various groups of community and university players and produced or co-produced several successful Broadway productions, including plays by Tennessee Williams, Herman Shumlin and Maxwell Anderson. Her own "theatre in the round," established at Dallas in 1945, became world famous.

Jones, Thomas H., British economist (b. Rhymney, Eng., 1870—d. London, Eng., Oct. 15, 1955).

Joseph, Mother Mary (MARY JOSEPHINE ROGERS), U.S. educator (b. Jamaica Plains, Mass.—d. New York, N.Y., Oct. 9, 1955).

Joyce, Alice, U.S. motion-picture actress (b. Kansas City, Mo., Oct. 1, 1890—d. Hollywood, Calif., Oct. 9, 1955), was one of the most famous actresses-beauties of the silent motion-picture era. She appeared in such pictures as *Stella Dallas* (1925), *Beau Geste* (1926), *13 Washington Square* (1929) and *The Green Goddess* (1930).

Károlyi, Count Michael, Hungarian politician (b. March 4, 1875—d. Vence, Fr., March 20, 1955).

Kasner, Edward, U.S. mathematician (b. New York, N.Y., April 2, 1878—d. New York, Jan. 7, 1955).

Keeling, Sir Hugh Trowbridge, British engineer (b. London, Eng., April 14, 1865—d. London, Feb. 3, 1955).

Keith, Sir Arthur, British anthropologist and surgeon (b. Old Machar, Aberdeen, Scot., Feb. 5, 1866—d. Downe, Kent, Jan. 7, 1955).

Kelley, Mrs. Camille McGee, U.S. judge (b. Trenton, Tenn.—d. Little Rock, Ark., Jan. 28, 1955).

Kelley, Michael Joseph, U.S. baseball player, manager and owner (b. Otter River, Mass., Dec. 2, 1876—d. Minneapolis, Minn., June 6, 1955).

Kemp, Alexander Nesbitt, U.S. financier (b. San Francisco, Calif., June 22, 1879—d. Los Angeles, Calif., Aug. 13, 1955).

Kennard, Sir Howard William, British diplomat (b. Brighton, Eng., March 23, 1878—d. Bath, Eng., Nov. 12, 1955).

Kimball, Fiske, U.S. museum director (b. Newton, Mass., Dec. 8, 1888—d. Munich, Ger., Aug. 14, 1955).

Kim Sung Soo, South Korean politician (b. Korea, 1891?—d. Seoul, Kor., Feb. 18, 1955).

Kirkwood, David Kirkwood, 1ST BARON OF BEARSDEN, British engineer and politician (b. Glasgow, Scot., July 8, 1872—d. Glasgow, April 16, 1955).

Kleberg, Richard Mifflin Sr., U.S. cattleman and congressman (b. Corpus Christi, Tex., Nov. 18, 1887—d. Hot Springs, Ark., May 8, 1955).

Kramer, Alexander Milton, U.S. composer (b. New York, N.Y., Sept. 13, 1893—d. New York, Aug. 25, 1955).

Kreger, Edward Albert, U.S. army officer and lawyer (b. near Keota, Iowa, May 31, 1868—d. San Antonio, Tex., May 24, 1955).

Kress, Samuel Henry, U.S. merchant, art collector and philanthropist (b. Cherryville, Pa., July 23, 1863—d. New York, N.Y., Sept. 22, 1955), taught school after graduating from high school, then bought his first store, at Natcoke, Pa., in 1887. One of the first to organize retail chains successfully, he acquired 12 "five-and-ten-cent" stores by 1900, with headquarters in New York city; by the time of his death S. H. Kress & Co. operated 26 retail outlets in the U.S. and Hawaii. Kress became one of the nation's leading philanthropists and art collectors, specializing in Italian masterpieces of painting and sculpture. In 1929 he established the Samuel H. Kress foundation, which made many notable gifts of art treasures to public institutions, including one to the National Gallery of Art at Washington, D.C., in 1939 valued at \$25,000,000. The foundation also made large cash donations for medical, educational and other purposes, including a gift of

\$8,000,000 to New York University-Bellevue Hospital Medical centre.

La Rue, Carl Downey, U.S. botanist (b. Williamsville, Ill., April 22, 1888—d. Ann Arbor, Mich., Aug. 19, 1955).

Latimer, Wendell Mitchell, U.S. chemist (b. Garnett, Kans., April 22, 1893—d. Oakland, Calif., July 6, 1955).

Leal, Newton Estillac, Brazilian politician (b. Rio de Janeiro, Braz., Oct. 6, 1893—d. Rio de Janeiro, May 1, 1955).

Legal, Ernst Otto Eduard, German actor and director (b. Halle, Ger., May 2, 1881—d. Berlin, Ger., June 29, 1955).

Léger, Fernand, French painter (b. Argentan, Normandy, Feb. 4, 1881—d. near Paris, Aug. 17, 1955), was the son of a prosperous cattle grazier. He went to Paris in 1898 and trained for a time as an architectural draftsman. As a painter he largely taught himself, but in 1901 he entered the École des Beaux Arts where he studied under Léon Gérôme and Gabriel Ferrier. An interest in geometry and mechanics predisposed him, however, to the art of Seurat and Cézanne and by 1911 he was exhibiting as a Cubist with Braque and Picasso. In the 1920s Léger started painting flat pattern, semi-cubist pictures in which the mechanical elements were partly derived from his experience as an artillery engineer in World War I. He illustrated many books and designed settings and costumes for ballets and films, notably for the Swedish ballet *La Création du Monde* (1922), and for Serge Lifar's *David triomphant* (1937). Léger's preference for concrete objects and interest in modern architecture, which led to his association with Le Corbusier and Amédée Ozenfant, found expression in his use of pure strong colours and curved planes to depict urban life on a monumental scale. Many of his later paintings were in the form of mural decorations. In 1940 Léger went to New York city where he stayed for five years, returning to France after the liberation. In 1950 a large exhibition of his paintings and drawings was held at the Tate gallery, London, and in 1953 his work was exhibited in the United States. There was a small retrospective exhibition of his work at the Marlborough gallery, London, in 1954.

Leigh, William Robinson, U.S. artist (b. Berkeley county, W.Va., Sept. 23, 1866—d. New York, N.Y., March 11, 1955).

Lentaigne, Walter David Alexander, British army officer (b. Burma, July 15, 1899—d. London, Eng., June 24, 1955).

Lewisohn, Ludwig, German-U.S. author and Zionist leader (b. Berlin, Ger., May 30, 1883—d. Miami, Fla., Dec. 31, 1955), emigrated to the United States as a child and was educated at the College of Charleston (S.C.). After several years of free-lance writing he taught German at the University of Wisconsin, Madison (1910–11), and was then professor of German at Ohio State university, Columbus (1911–19). He was drama editor, then associate editor of the *Nation* magazine from 1919 to 1924. Among Lewisohn's many works of fiction, history, biography and criticism, perhaps the best was a two-volume biography of Goethe, published in 1949. A lifelong Zionist, Lewisohn was editor of the *New Palestine* from 1943 to 1948 and wrote extensively on Jewish contemporary thought. In his later years he was a faculty member of Brandeis university at Waltham, Mass.

Lins de Barros, João Alberto, Brazilian diplomat (b. Recife, Pernambuco, Braz., June 16, 1897—d. Rio de Janeiro, Braz., Jan. 26, 1955).

Locke, Jesse D(wight), U.S. ambassador to Liberia (b. Cincinnati, O., May 31, 1891—d. Monrovia, Lib., April 10, 1955).

Loeb, Philip, U.S. actor (b. Philadelphia, Pa., 1894—d. New York, N.Y., Sept. 1, 1955).

Londonderry, Edward Charles Stewart Robert Vane-Tempest-Stewart, 8TH MARQUESS OF, British politician (b. Nov. 18, 1902—d. London, Eng., Oct. 18, 1955).

Lord, Daniel Aloysius, U.S. Roman Catholic clergyman and author (b. Chicago, Ill., April 23, 1888—d. St. Louis, Mo., Jan. 15, 1955), graduated from Loyola university, Chicago, Ill., in 1909. He was ordained priest as a Jesuit in 1923, meanwhile having served as professor of English at St. Louis university from 1917 to 1920. From 1913 to 1925 he was associate editor and, from 1925 to 1948, editor of *The Queen's Work*, a national Catholic magazine. He was also national director of the Sodality of Our Lady. Father Lord was well known for the religious pageants he produced and directed in various cities of the U.S. and Canada; also for his hymns and for his books, including *Armchair Philosophy* and *His Passion Forever*.

Loudon, John, Dutch diplomat (b. The Hague, Neth., 1866—d. The Hague, Nov. 12, 1955).

Loveday, William Carroll, U.S. composer (b. Sept. 23, 1896—d. New York, N.Y., June 19, 1955).

Loveman, Amy, U.S. editor and author (b. New York, N.Y., May 16, 1881—d. New York, N.Y., Dec. 11, 1955).

Lowry, Frank J(acob), U.S. naval officer (b. Cresco, Iowa, Feb. 15, 1888—d. Vallejo, Calif., March 26, 1955).

Lowsley, Oswald Swinney, U.S. urologist and surgeon (Santa Barbara, Calif., Sept. 4, 1884—d. Stamford, Conn., June 4, 1955).

McBride, Francis Scott, U.S. temperance leader (b. Carroll county, O., July 29, 1872—d. St. Petersburg, Fla., April 23, 1955).

McClelland, George William, U.S. educator (b. Dobbs Ferry, N.Y., June 18, 1880—d. Little Deer Isle, Me., Aug. 20, 1955).

McClure, Charles Freeman Williams, U.S. zoologist (b. Cambridge, Mass., March 6, 1865—d. Princeton, N.J., July 23, 1955).

McCormick, Robert Rutherford, U.S. publisher (b. Chicago, Ill., July 30, 1880—d. Wheaton, Ill., April 1, 1955), was the son of Robert S. McCormick, U.S. diplomat, and grandson of William McCormick, harvester manufacturer, and Joseph Medill, early editor of the *Chicago Tribune*. He attended Ludgrove school near Wokingham, Berks., Eng., Groton preparatory school in Massachusetts, and Yale university (B.A., 1903), later studied law at Northwestern university in Chicago, and was admitted to the Illinois bar in 1907. In 1904 he was elected Republican alderman of the Chicago city council and in the next year president of the board of trustees of the Chicago sanitary district, holding the latter office until 1910. In 1911 he became president of the *Chicago Tribune* and in 1914 joint editor-publisher with his cousin, Joseph M. Patterson. In the early part of World War I he was a war

correspondent on both the eastern and western fronts in Europe and in 1916, after his return to the U.S., served briefly with the U.S. army in the Mexican expedition of that year. After U.S. entry into World War I he was first an aide to Gen. John J. Pershing and then an artillery officer, being advanced to the rank of colonel and receiving the distinguished service medal for action during the battles of Cantigny, Soissons and St. Mihiel in France. Resuming active management of the *Tribune* after the war, Colonel McCormick became engaged in a long legal and editorial battle with William Hale Thompson, the mayor of Chicago, over alleged misuse of city funds. Previously he had tangled with Henry Ford, who had sued the *Tribune* for \$1,000,000 when the paper criticized Ford's views on U.S. military preparations during the Mexican border crisis; a jury later set damages at six cents. Colonel McCormick was one of the earliest political enemies of Pres. Franklin D. Roosevelt in 1933. The initial break came when McCormick objected strenuously to the National Recovery administration's proposed newspaper code on the grounds that it would end freedom of the U.S. press. The *Tribune's* attack soon broadened to embrace almost every domestic and foreign facet of the New Deal's program except its war measures after the Japanese attack on Pearl Harbor. With the same vehemence McCormick denounced Republican leaders whose political philosophies in his view coincided too closely with those of the Roosevelt and Truman administrations; he was particularly critical of Republican presidential candidates Wendell L. Willkie and Thomas E. Dewey on this score, and he supported Gen. Dwight D. Eisenhower only with reservations during the 1952 campaign. A keystone of the *Tribune's* editorial policy throughout this period was nonintervention in foreign entanglements of any kind. With Joseph M. Patterson, Colonel McCormick founded the *New York Daily News* in 1919, and from 1951 to 1954 he was publisher of the *Washington Times-Herald* (D.C.). He also developed vast newsprint properties in Canada. He was the author of several works on U.S. history and military subjects.

McCoy, Horace, U.S. novelist and scenarist (d. Beverly Hills, Calif., Dec. 15, 1955).

McDermott, Michael James, U.S. press officer and diplomat (b. Peabody, Mass., July 2, 1894—d. Washington, D.C., Aug. 5, 1955).

McDonald, Ellice, U.S. cancer research specialist and biochemist (b. Fort Ellice, Man., Oct. 27, 1876—d. near Wilmington, Del., Jan. 30, 1955).

McDonald, Harl, U.S. composer and conductor (b. near Boulder, Colo., July 27, 1899—d. Princeton, N.J., March 30, 1955).

Macfadden, Bernarr, U.S. publisher and physical culturist (b. near Mill Springs, Mo., Aug. 16, 1868—d. Jersey City, N.J., Oct. 12, 1955), achieved wealth as a magazine publisher and a degree of fame as an advocate of health measures that at times verged on cultism. His first venture into publishing was with the magazine *Physical Culture* (1898), followed by such other successful magazines as *True Story*, *True Romances*, *True Detective Mysteries* and *Master Detective*. On these publications Macfadden built a fortune devoted in part to propagation of his ideas about health and physical culture—including vegetarianism, hard exercise and periodic fasting. He personally demonstrated the results of this regimen by such acts as parachuting 2,500 ft. into the Hudson river on his 83rd birthday. From 1924 to 1930 Macfadden published the daily *New York Evening Graphic* and from 1931 to 1942 the magazine *Liberty*.

Mackie, Thomas Turlay, U.S. tropical disease authority (b. Great Barrington Mass., May 10, 1895—d. Westport, Conn., Oct. 5, 1955).

McLaren, Sir Charles Northrup, British civil servant (b. Glasgow, Scot., Oct. 14, 1898—d. London, Eng., June 8, 1955).

Macnab, Alexander J., U.S. army officer and big-game hunter (b. Salmon, Ida., 1878?—d. Honolulu, T.H., Nov. 4, 1955).

MacNaghten, Sir Frederic Fergus, British lawyer (b. May 19, 1867—d. London, Eng., Nov. 18, 1955).

McNally, Rev. Paul Aloysius, U.S. Jesuit and educator (b. Philadelphia, Pa., Oct. 14, 1890—d. Washington, D.C., March 4, 1955).

McNeil, Hector, British statesman, journalist and publisher (b. Garelochhead, Dunbartonshire, March 10, 1907?—d. New York, N.Y., Oct. 11, 1955), the son of a journeyman shipwright, was educated at Woodside school, Glasgow, and at Glasgow university. Shortly after graduating he joined the Scottish *Daily Express*, eventually becoming its night editor. In 1941 he entered parliament, unopposed, as Labour member for Greenock, retaining the seat until his death. After a year he became parliamentary private secretary to Philip Noel Baker at the ministry of war transport, and after Labour's victory in 1945, he became parliamentary under secretary of state at the foreign office. Ernest Bevin's frequent absences abroad resulted in important responsibilities falling to McNeil as government spokesman on foreign policy in the house of commons. He played an important part at the Paris Peace conference and in Oct. 1946 he was promoted to the newly created position of minister of state at the foreign office. In the same year he became the youngest member of the privy council. During the next four years he first, through UNRRA and the UN Economic and Social council, became deeply involved in the rehabilitation of Greece and other liberated European peoples; secondly, as leader of the British delegation to the UN general assembly (vice-president, 1947), he was one of the first to stand up to the browbeating of the Soviet delegate, A. Vishinsky. In speeches during 1947–49 he repeatedly criticized the Soviet bloc for its unco-operative and threatening attitude in the United Nations. In March 1950 he was promoted secretary of state for Scotland and a member of the cabinet. After Labour went into opposition in Oct. 1951 McNeil withdrew from politics. In that year he took up an appointment with Encyclopædia Britannica, Ltd., becoming chairman of the British company of that U.S. publishing firm in 1953. He had a stroke while travelling on business to the United States on the "Queen Mary" and died in a hospital a few days later.

McNutt, Paul Vories, U.S. political leader, attorney and diplomat (b. Franklin, Ind., July 19, 1891—d. New York, N.Y., March 24, 1955), took his B.A. degree from Indiana university, Bloomington, in 1913 and his law degree from Harvard law school in 1916. From 1917 to 1925 he taught law at Indiana university and was dean of the university's law school from 1925 to 1933, when he resigned after election on the Democratic ticket in 1932 as governor of Indiana for the term 1933–37. Meanwhile he had been elected national commander of the American Legion for 1928–29 (he had served as an artil-

- lery officer in World War I). From 1937 to 1939 McNutt was U.S. high commissioner to the Philippine Islands and in the latter year he was appointed first administrator of the Federal Security administration. Pres. Franklin D. Roosevelt in 1942 appointed McNutt chairman of the War Manpower commission. In 1945 Pres. Harry S. Truman named him to his former office of high commissioner to the Philippines, and the next year McNutt became first U.S. ambassador to the new Republic of the Philippines, serving in this office until 1947.
- Magnus-Levy, Adolph**, U.S. physician and scientist (b. Berlin, Ger., Sept. 9, 1865—d. New York, N.Y., Feb. 6, 1955).
- Malcolm, Sir Douglas Orme**, British business executive (b. Epsom, Eng., Aug. 6, 1877—d. London, Eng., Aug. 30, 1955).
- Mann, Thomas**, German novelist (b. Lübeck, June 6, 1875—d. Zürich, Switz., Aug. 12, 1955). For his early career see *Encyclopaedia Britannica*. In Italy, in 1897, he began to write *Buddenbrooks*, a lengthy novel chronicling a mercantile family's decline in the person of an artist; it appeared late in 1900 and Mann was "snatched up in a whirl of success." Before 1914 he wrote a series of short stories, *Tristan* (1903), which included "Tonio Kröger"; a novel *Königliche Hochzeit* (1909); and the short *Der Tod in Venedig*, "Death in Venice" (1912). He also wrote a play, *Fiorenza* (1906). In 1905 he married Katja Pringsheim by whom he had six children; the eldest, Erika, married the poet W. H. Auden. Mann's *Betrachtungen eines Unpolitischen*, "Reflections of an Unpolitical Man" (1918) showed the strength of his belief then in the destiny of the German people. Among his other writings of this period were the essays *Friedrich und die grosse Koalition* (1915) and the important *Der Zauberberg*, "The Magic Mountain" (begun 1912, published 1924). In the period before his exile he wrote short works such as *Mario der Zauberer*, "Mario the Magician" (1930). His polemic inclinations were growing restive at the coming of the dictatorships and in 1933 he left Germany. He travelled in Europe and America and, after being deprived of German citizenship, became a Czechoslovak citizen, later moving to the United States where he was naturalized. During World War II he made anti-Nazi broadcasts to the German people, and in 1954 he settled in Zürich. His exile had not diminished his output, which included most of the large biblical tetralogy *Joseph und Seine Brüder* (1933-43), *Lotte in Weimar* (1939) and, in addition to fiction, some political writings. After World War II appeared *Doktor Faustus* (1947), a difficult novel on a famous theme, followed by *Der Erwählte* (1951), known in English as "The Holy Sinner," and *Die Betrogene* (1953), known in English as "The Black Swan," both rather macabre works. His last work, begun in the 1920s and growing with successive editions (1922, 1932, 1954), was *Bekenntnisse des Hochstaplers Felix Krull*, a comic novel about a rogue. Thomas Mann was awarded the Nobel prize for literature in 1929.
- March, Peyton Conway**, U.S. general and chief of staff in World War I (b. Easton, Pa., Dec. 27, 1864—d. Washington, D.C., April 13, 1955), was awarded his bachelor's degree in 1884 and his master's degree in 1887 from Lafayette college, Easton, where his father was professor of philology, and graduated with honours from the U.S. military academy in 1888. Commissioned lieutenant of artillery, he graduated from the army artillery school at Ft. Monroe, Va., in 1898 and in the same year commanded a volunteer mountain battery in the Philippines during the war with Spain. Following that war he saw further service in the Philippines, on the staff of Maj. Gen. Arthur MacArthur, father of Douglas MacArthur, and in 1904 was a military attaché to the Japanese army in Manchuria during the Russo-Japanese war. Shortly after the U.S. declaration of war against Germany in April 1917 March was made U.S. army artillery commander in France, having by this time attained the rank of major general. Recalled to Washington as acting chief of staff in March 1918, he was appointed chief of staff the following May 20 with the rank of full general. As chief U.S. military officer he merged the various branches of the regular and volunteer armies and directed a mobilization program that ultimately transported 2,000,000 men to France before the end of World War I. General March retired in 1921 but continued to serve the government as adviser on matters of national security. He received the special thanks of the U.S. congress by joint resolution in 1953 for his military services to the nation.
- Markovic, Lazar**, Yugoslav politician and lawyer (b. 1883—d. Belgrade, Yugo., April 15, 1955).
- Marks, Lionel Simeon**, U.S. engineer and professor (b. Birmingham, Eng., Sept. 8, 1871—d. Cambridge, Mass., Jan. 6, 1955).
- Marquet, Adrien**, French politician (b. 1885?—d. Bordeaux, Fr., April 3, 1955).
- Martin, Clarence Eugene**, U.S. lawyer and politician (b. Martinsburg, W.Va., March 13, 1880—d. Martinsburg, April 24, 1955).
- Martin, Glenn L.**, U.S. aviation pioneer and industrialist (b. Macksburg, Ia., Jan. 17, 1886—d. Baltimore, Md., Dec. 4, 1955), was one of the earliest U.S. certified pilots and later helped design and construct some of the most famous U.S. military and commercial aircraft. Martin left Kansas Wesleyan university, Salina, before graduation to spend full time designing and flying gliders, and in 1909 he built and flew his first powered aircraft—constructed principally of silk and bamboo. Two years later he received one of the first U.S. pilot's licenses. In 1912 he made the first U.S. over-water flight, from Catalina Island to the California mainland. A year before he had organized the Glenn L. Martin company at Santa Ana, Calif., to manufacture planes, and this corporation was awarded its first government contract in 1913. Later Martin's company, re-established after a temporary merger with another, moved to Cleveland, O., and in 1929 to Baltimore, Md. The Martin bomber became famous during the 1920s, as later did the company's trans-oceanic "Clippers," the huge flying boat "Mars," and the Martin jet fighters during and after the Korean war. In 1955 the company was awarded the primary U.S. contract to build and launch earth-circling satellites. Martin in 1933 received the Collier trophy, top U.S. aviation award.
- Marvel, Josiah Jr.**, U.S. diplomat (b. Wilmington, Del., Nov. 26, 1904—d. Wilmington, Dec. 29, 1955).
- Matthison, Edith Wynne** (MRS. CHARLES RANN KENNEDY), U.S. actress (b. Birmingham, Eng., Nov. 23, 1875—d. West Los Angeles, Calif., Sept. 23, 1955).
- Maximos, Demetrios**, Greek banker and politician (b. Patras, Gr., July 6, 1873—d. Athens, Gr., Oct. 16, 1955).
- May, Samuel Chester**, U.S. educator (b. Portland, Ore., Dec. 7, 1887—d. New York, N.Y., Sept. 30, 1955).
- Mayer, Oscar F.**, U.S. meat packer (b. Kaesingen, Ger., May 29, 1859—d. Chicago, Ill., March 11, 1955).
- Mayne, Sir (Ashton Gerard Oswald) Mosley**, British army officer (b. Bruton, Somerset, Eng., April 24, 1889—d. London, Dec. 17, 1955).
- Mellanby, Sir Edward**, British physician (b. West Hartlepool, Eng., 1884—d. London, Jan. 30, 1955).
- Merriam, Frank Finley**, U.S. politician (b. Hopkinton, Iowa, Dec. 22, 1865—d. Long Beach, Calif., April 25, 1955).
- Merrill, Frank D.**, U.S. army officer (b. Woodville, Mass., Dec. 4, 1903—d. Fernandina Beach, Fla., Dec. 11, 1955), organized and led the famous "Merrill's Marauders," a group of trained jungle troops that helped free northern Burma from the Japanese in 1944 and thus open up communications between China and India during the latter phases of World War II. After serving as an enlisted man in the regular U.S. army since 1922, Merrill was admitted to the U.S. military academy at West Point, N.Y., graduating in 1929 with a lieutenant's commission. He also received an engineering degree from the Massachusetts Institute of Technology, Cambridge, in 1932. In 1938 he was appointed assistant military attaché at Tokyo, Jap., and there became proficient in Japanese and Chinese. In Nov. 1941, a month before the Japanese attack on Pearl Harbor, he was appointed intelligence officer on Gen. Douglas MacArthur's staff in the Philippines. Merrill was sent almost immediately to Burma and there was military aide to Gen. Joseph W. Stilwell during the latter's retreat into India in 1942. In Oct. 1943 Merrill began training his "Marauders," who started harassing Japanese communications in Burma the following February and within six months were in Myitkyina, key city of northern Burma, near the Chinese border. Advanced to the rank of major general in 1944, he was commander of the Sixth army with headquarters at San Francisco, Calif., after World War II, retiring in 1947. From 1949 until his death he was state highway commissioner of New Hampshire.
- Milione, Louis G. Sr.**, U.S. sculptor (b. Padula, It., Feb. 22, 1884—d. Philadelphia, Pa., March 26, 1955).
- Miller, Bob**, U.S. song writer (b. Memphis, Tenn., Sept. 20, 1895—d. Nyack, N.Y., Aug. 26, 1955).
- Milles, Carl Wilhelm Emil**, Swedish sculptor (b. Lagga, near Uppsala, June 23, 1875—d. Stockholm, Sept. 19, 1955), was apprenticed to a carpenter in Stockholm and won a scholarship which took him in 1897 to Paris where he studied under Auguste Rodin for eight years. In 1901 he entered an open competition for a monument to a Swedish national hero, Sten Sture, although it was more than ten years before he was awarded the commission and it was not until 1925 that the bronze group was finally set up in Uppsala. After he returned to Sweden his work increased greatly and his monuments and fountains, in which he specialized, adorned many places in Europe and the United States, where he spent long periods in later life. Milles taught at Cranbrook academy, Michigan, from 1936 and became a U.S. citizen in 1945, but he never relinquished his Swedish home. The best known of this versatile artist's works include the massive Poseidon at Göteborg, the Folke Filbyter memorial at Linköping and his Triton fountains in Stockholm and Chicago. He worked in many materials, preferring bronze and granite, and was particularly interested in animal subjects. His remarkable museum house at Lidingö, Swed., known as Milles garden, is furnished with his statues.
- Milton, George Fort**, U.S. author and editor (b. Chattanooga, Tenn., Nov. 19, 1894—d. Washington, D.C., Nov. 12, 1955).
- Minewitch, Borrah**, U.S. musician (b. Kiev, Russia, 1902?—d. Paris, Fr., June 26, 1955).
- Minger, Rudolf**, Swiss politician (b. Muelchi, Switz., Nov. 13, 1881—d. Schuepfen, Switz., Aug. 23, 1955).
- Mings, Howard L.**, U.S. writer and artist (b. Athens, Pa., April 24, 1891—d. New York, N.Y., Dec. 29, 1955).
- Miranda, Carmen** (MARIA DO CARMO MIRANDA DA CUNHA), Brazilian dancer and actress (b. Lisbon, Port., 1913—d. Beverly Hills, Calif., Aug. 5, 1955), was taken in babyhood by her parents to Rio de Janeiro, Braz. Educated in a Catholic convent there, she later took up singing and dancing and by the early 1930s had become a well-known radio and stage performer in Brazil. She went to the United States in 1939, appearing in *Streets of Paris* on Broadway that year, and later starring in night club shows and in 1940 making her first motion picture, *Down Argentine Way*. Many movie starring roles and television performances followed for the "South American bombshell," as she was known.
- Mirkin-Guetzevitch, Boris**, French educator (b. Kiev, U.S.S.R., Jan. 1, 1892—d. Paris, Fr., April 1, 1955).
- Mitchell, Charles Edwin**, U.S. banker (b. Chelsea, Mass., Oct. 6, 1877—d. New York, N.Y., Dec. 14, 1955).
- Mitchell, Harry Brown**, U.S. newspaperman and government official (b. Scotland, 1867?—d. Great Falls, Mont., Sept. 30, 1955).
- Mitchell, William DeWitt**, U.S. attorney and cabinet member (b. Winona, Minn., Sept. 9, 1874—d. Syosset, L.I., N.Y., Aug. 24, 1955), graduated from the University of Minnesota, Minneapolis, in 1895, took his law degree there the next year, and began practice in St. Paul, Minn. He served in both the Spanish-American war and World War I. Although a Democrat, he was appointed U.S. solicitor general by Pres. Calvin Coolidge in 1925, serving until 1929. Pres. Herbert Hoover named Mitchell attorney general in 1929 and he remained in that cabinet office throughout the Hoover administration. His was the unpopular duty of enforcing the 18th (Prohibition) amendment. In 1933 Mitchell re-established private law practice in New York city. In 1945 he was chief counsel of the joint congressional committee investigating the Japanese attack on Pearl Harbor.
- Moniz, Antonio Caetano de Abreu Freire Egas**, Portuguese surgeon and diplomat (b. Avanca, Port., Nov. 29, 1874—d. Lisbon, Port., Dec. 13, 1955).
- Moore, Carl Richard**, U.S. zoologist (b. near Springfield, Mo., Dec. 5, 1892—d. Chicago, Ill., Oct. 16, 1955).

Moore, Ernest Carroll, U.S. educator (b. Youngstown, O., July 20, 1871—d. Los Angeles, Calif., Jan. 23, 1955).
Moore, Frank Gardner, U.S. educator (b. West Chester, Pa., Sept. 25, 1865—d. Cleveland, O., Nov. 18, 1955).
Moore, Tom, Irish-American actor (b. County Meath, Ire., 1885—d. Santa Monica, Calif., Feb. 12, 1955).
Morey, Charles Rufus, U.S. educator and author (b. Hastings, Mich., Nov. 20, 1877—d. Princeton, N.J., Aug. 28, 1955).
Morgan, John Hartman, British jurist and army officer (b. Ystrad, Wales, March 20, 1876—d. Wootton Bassett, Eng., April 8, 1955).

Morrow, Elizabeth Reeve Cutter (MRS. DWIGHT WHITNEY MORROW), U.S. educator and author (b. Cleveland, O., May 29, 1873—d. Englewood, N.J., Jan. 23, 1955), was the wife of Dwight W. Morrow (1873-1931), U.S. diplomat, and the mother of Anne Spencer Morrow (Mrs. Charles A. Lindbergh). She was graduated from Smith college, Northampton, Mass., in 1896 and took graduate work at the Sorbonne in Paris, Fr. As acting president of Smith college in 1939-40 she was the first woman chief executive of that institution. Mrs. Morrow published several works in verse and prose, including *Quatrains for My Daughter* (1931), *A Pint of Judgment* (1939) and *My Favorite Age* (1943).

Moseley, John Ohleyer, U.S. educator and fraternity executive (b. Meridian, Miss., Oct. 21, 1893—d. Chicago, Ill., Oct. 10, 1955).

Mott, John Raleigh, U.S. religious leader and Nobel prize winner (b. Livingston Manor, N.Y., May 25, 1865—d. Orlando, Fla., Jan. 31, 1955), graduated from Cornell university, Ithaca, N.Y., in 1888 and in the same year became identified with the international committee of the Young Men's Christian association as student secretary. He was general secretary of this committee from 1915 to 1931. Participating in many other U.S. and world groups of the Y.M.C.A., Mott also was active in promoting international missionary movements and was a leader of the World Federation of Churches movement. In 1946 he was named co-winner of the Nobel peace prize, with Emily Greene Balch.

Mudd, Harvey Seeley, U.S. mining engineer (b. Leadville, Colo., Aug. 30, 1888—d. Beverly Hills, Calif., April 12, 1955).

Munson, Ona, U.S. actress (b. Portland, Ore., June 16, 1906—d. New York, N.Y., Feb. 11, 1955).

Murphy, Daniel Francis, U.S. baseball player (b. Philadelphia, Pa., Aug. 11, 1876—d. Jersey City, N.J., Nov. 22, 1955).

Murray-Jacoby, Herman, U.S. diplomat, explorer, author and economist (b. Nov. 25, 1892—d. West Palm Beach, Fla., Jan. 26, 1955).

Musselwhite, Harry Webster, U.S. congressman (b. near Coldwater, Mich., May 23, 1868—d. San Mateo, Calif., Dec. 14, 1955).

Myer, Walter Evert, U.S. educator and publisher (b. Winfield, Kans., April 16, 1889—d. Washington, D.C., Oct. 25, 1955).

Myers, Henry Alonzo, U.S. educator (b. Newburgh, N.Y., April 9, 1906—d. Ithaca, N.Y., May 2, 1955).

Neal, Josephine Bicknell, U.S. physician (b. Belmont, Me., Oct. 10, 1880—d. New York, N.Y., March 19, 1955).

Neal, John Mandt, U.S. congressman (b. Burke, Wis., Oct. 10, 1870—d. Madison, Wis., Jan. 29, 1955).

Neuburger, Max, Austrian historian and neurologist (b. Vienna, Aus., 1868—d. Vienna, March 15, 1955).

Nevils, Rev. William Coleman, U.S. Jesuit and educator (b. Philadelphia, Pa., May 29, 1878—d. New York, N.Y., Oct. 12, 1955).

Noble, Sir Percy Lockhart Harnam, British naval officer (b. Jan. 16, 1880—d. London, Eng., July 25, 1955).

Nordfeldt, Bror Julius Olsson, U.S. artist (b. Sweden, April 13, 1878—d. Henderson, Tex., April 21, 1955).

Norman, Herman Cameron, British diplomat and classical scholar (b. Bromley Common, Eng., June 8, 1872—d. London, Sept. 8, 1955).

O'Brien, Robert Lincoln, U.S. publisher (b. Abington, Mass., Sept. 14, 1865—d. Washington, D.C., Nov. 23, 1955).

Ochs, Milton Barlow, U.S. publisher (b. Cincinnati, O., Jan. 29, 1864—d. Chattanooga, Tenn., April 30, 1955).

Oglesby, Woodson Ratcliffe, U.S. congressman and lawyer (b. near Shelbyville, Ky., Feb. 9, 1867—d. Quincy, Fla., April 30, 1955).

Ohrstrom, George Lewis, U.S. financier and industrialist (b. Ford River, Mich., Aug. 16, 1894—d. The Plains, Va., Nov. 9, 1955).

O'Leary, Rev. William Doris, U.S. Roman Catholic priest and educator (b. Augusta, Ga., Aug. 31, 1895—d. New Orleans, La., Feb. 1, 1955).

Ortega y Gasset, José, Spanish philosopher and writer (b. Madrid, Sp., May 9, 1883—d. Madrid, Oct. 18, 1955).

Orton, Helen Fuller (MRS. JESSE F. ORTON), U.S. author (b. Pekin, N.Y., Nov. 1, 1872—d. New York, N.Y., Feb. 16, 1955).

Orwin, Charles Stewart, British economist (b. Warnham, Eng., 1876—d. Blewbury, Eng., June 30, 1955).

Oursler, Grace Perkins (MRS. FULTON OURSLER), U.S. novelist and editor (b. Boston, Mass., Aug. 20, 1900—d. New York, N.Y., Dec. 16, 1955).

Packard, Laurence Bradford, U.S. history professor (b. Brockton, Mass., Jan. 20, 1887—d. Amherst, Mass., Jan. 14, 1955).

Paget, Sir Richard, British barrister and scientist (b. Jan. 13, 1869—d. London, Eng., Oct. 23, 1955).

1955 OBITUARIES: Hector McNeil, British statesman; Paul V. McNutt, U.S. politician; Thomas Mann, German novelist; Glenn L. Martin, U.S. industrialist; Carmen Miranda, Brazilian dancer

Palmer, John McAuley, U.S. army officer (b. Carlinville, Ill., April 23, 1870—d. Washington, D.C., Oct. 26, 1955).

Pani, Alberto J., Mexican engineer and diplomat (b. Aguascalientes, Mex., June 12, 1878—d. Mexico City, Mex., Aug. 25, 1955).

Papagos, Alexandros, Greek army officer and statesman (b. Athens, Gr., Dec. 9, 1883—d. Athens, Oct. 4, 1955), son of Gen. Leonidas Papagos and Marie née Averoff. After studying at the Greek War academy, Brussels Military academy and the Cavalry school at Ypres, Belg., he was commissioned in 1906 in a Greek cavalry regiment. He served in the Balkan wars (1912-13) and in the Anatolian campaign (1919-22). For a few months Papagos was minister of war in the Kondylis cabinet (1935) and took a leading part in the restoration of the monarchy. After the return of King George II he was appointed inspector general of the army and in 1936 chief of the general staff. When Italy attacked Greece, Oct. 28, 1940, he was commander-in-chief of the Greek forces. He checked the invasion, took the offensive and conquered the southern part of Albania; but when German forces, coming from Bulgaria, also attacked Greece (April 6, 1941) his skillful strategy could not hold out against superior force. Remaining in Greece after the occupation of the country, he was taken as a hostage by the Germans in 1943 and imprisoned in various concentration camps, including Dachau. Liberated in May 1945 by the U.S. 5th army from a camp in the Tirol, Papagos returned to Greece, was recalled to active service, promoted to full general in July 1947 and appointed commander in chief Jan. 20, 1949. In the Grammos-Vitsi area, familiar to him from 1940-41, with U.S. arms and the friendly advice of Gen. James Van Fleet, he destroyed the remaining Communist rebel strongholds in Greece. On Oct. 28, he was promoted to field marshal, the first Greek professional soldier to hold that rank. In May 1951 he relinquished the supreme command and entered politics as leader of the Greek rally (*Ellinikos Synagermos*). After the election of Nov. 16, 1952, which resulted in a landslide victory of his party, Papagos formed a government. In 1954 he paid official visits to Paris, Bonn, Madrid and Lisbon. He had been seriously ill with tuberculosis since Jan. 1955.

Pappenheimer, Alwin Max, U.S. pathologist and educator (b. New York, N.Y., Dec. 4, 1878—d. Cambridge, Mass., Feb. 21, 1955).

Parker, Arthur Caswell, U.S. anthropologist, archaeologist and author (b. Iroquois, N.Y., April 5, 1881—d. Naples, N.Y., Jan. 1, 1955).

Parker, George Howard, U.S. zoologist and author (b. Philadelphia, Pa., Dec. 23, 1864—d. Cambridge, Mass., March 26, 1955).

Pasquel, Jorge, Mexican sportsman and businessman (b. Vera Cruz, Mex., 1907?—d. near Mexico City, Mex., March 7, 1955).

Patterson, William J., U.S. government official (b. Neenah, Wis., June 4, 1880—d. Washington, D.C., Nov. 24, 1955).

Payne, Roger, British lawyer (b. England—d. New York, N.Y., Feb. 23, 1955).

Peary, Josephine Diebitsch, U.S. explorer (b. Washington, D.C., May 22, 1863—d. Portland, Me., Dec. 19, 1955).

Pease, Edward Reynolds, British socialist (b. Durham, Eng., Dec. 20, 1857—d. Limsfield, Eng., Jan. 5, 1955).

Pechstein, Max Hermann, German artist (b. Zwickau, Ger., Dec. 31, 1881—d. Berlin, Ger., June 29, 1955).

Perrine, Van Dearing, U.S. artist (b. Garnett, Kans., Sept. 10, 1868—d. Stamford, Conn., Dec. 10, 1955).

Person, Harlow Stafford, U.S. economist (b. Republican City, Neb., Feb. 16, 1875—d. Dobbs Ferry, N.Y., Nov. 7, 1955).

Persons, William Frank, U.S. social worker (b. Brandon, Iowa, Aug. 31, 1876—d. Cranford, N.J., May 27, 1955).

Peters, John Punnett, U.S. educator and physician (b. Philadelphia, Pa., Dec. 4, 1887—d. New Haven, Conn., Dec. 29, 1955).

Peurifoy, John E(mil), U.S. diplomat (b. Walterboro, S.C., Aug. 9, 1907—d. near Hua Hin, Thailand, Aug. 12, 1955), studied at the U.S. military academy, West Point, N.Y., from 1926 to 1928 and later at American university and George Washington university in Washington, D.C. After several years in private business he joined the staff of the U.S. treasury department in 1935 and three years later went to the state department, where he shortly became a divisional assistant. Promoted rapidly through various divisions, he was deputy undersecretary of state by 1949 and the following year was named ambassador to Greece. In Athens he was credited with helping the Greek government successfully turn back a renewed Communist bid for power. Transferred to Guatemala in Nov. 1953 as ambassador, Peurifoy had a major role in effecting the overthrow of the Communist regime of Pres. Jacobo Arbenz Guzmán in June 1954 and preventing a subsequent civil war which threatened to break out. Peurifoy was named ambassador to Thailand Sept. 15, 1954. He and a son (Daniel) were killed in an automobile accident near the seaside resort of Hua Hin.

Piantadosi, Al, U.S. song writer and composer (b. New York, N.Y., July 18, 1884—d. Encino, Calif., April 8, 1955).

Pick, Albert Sr., U.S. hotel owner (b. Chicago, Ill., May 17, 1869—d. Miami Beach, Fla., July 9, 1955).

Pigott, Sir Stephen Joseph, British shipbuilder (b. Cornwall, N.Y., Jan. 30, 1880—d. Closeburn, Scot., Feb. 27, 1955).

Pine, William Hoy, U.S. motion picture producer (b. Los Angeles, Calif., Feb. 15, 1896—d. Hollywood, Calif., April 29, 1955).

Platt, Sir Frank, British cotton executive (b. Rochdale, Eng., June 9, 1890—d. Bramhall, Eng., July 8, 1955).

Plevier, Theodor, German author (b. Berlin, Ger., Feb. 12, 1892—d. Avegno, Switz., March 12, 1955).



- Pogany, Willy (William Andrew)**, Hungarian-U.S. artist (b. Szeged, Hung., Aug. 24, 1882—d. New York, N.Y., July 30, 1955), was one of the most versatile artists of his time, ranging in his work from caricature and book and slick-paper magazine illustration to costume and stage design, sculpture, portrait painting, etching, architecture, art teaching and production of animated cartoons for motion pictures. As a youth he studied at the University of Budapest, Hung., at Munich and at Paris. Emigrating to the U.S. in 1914, he designed costumes and sets for the Metropolitan opera company and later for numerous Broadway and Hollywood productions. Among the 150 or more books illustrated by Pogany were *Pogany's Mother Goose* and many children's and adult classics. His murals decorated a number of theatres, hotels, commercial and public buildings and private estates in New York city and vicinity and elsewhere. He was the author of several books on art instruction.
- Polyak, Stephen L.**, U.S. eye anatomist (b. Gjurgjevac, Yugo., Dec. 13, 1889—d. Chicago, Ill., March 9, 1955).
- Poole, Sidman Parmelee**, U.S. geographer (b. Syracuse, N.Y., Oct. 19, 1893—d. Charlottesville, Va., Oct. 28, 1955).
- Potear, Edwin McNeill**, U.S. Baptist clergyman, educator and author (b. New Haven, Conn., Nov. 20, 1892—d. Raleigh, N.C., Dec. 17, 1955).
- Powell, Thomas Reed**, U.S. professor of law (b. Richford, Vt., April 29, 1880—d. Boston, Mass., Aug. 16, 1955).
- Powers, Tom**, U.S. actor (b. Owensboro, Ky., July 7, 1890—d. Manhattan Beach, Calif., Nov. 9, 1955).
- Prittwitz and Gaffron, von, Friedrich Wilhelm**, German diplomat (b. Stuttgart, Ger., Sept. 1, 1884—d. Munich, Ger., Sept. 1, 1955).
- Pugh, Sir Arthur**, British labor union official (b. Ross, Eng., 1870—d. Bedford, Eng., Aug. 1, 1955).
- Pulitzer, Joseph**, U.S. publisher (b. New York, N.Y., March 21, 1885—d. St. Louis, Mo., March 30, 1955), was the son of Joseph Pulitzer, publisher of the *St. Louis Post-Dispatch* and of the old *New York World*. The younger Pulitzer attended Harvard university and in 1906 began his newspaper career with the *Post-Dispatch*, becoming president of the Pulitzer Publishing company in 1912. Under his supervision the *Post-Dispatch* won a number of national journalistic awards for public achievement, including five Pulitzer prizes. Notable editorial investigations conducted by his paper included those into the Teapot Dome oil lease scandal of the 1920s, bribery of U.S. internal revenue officials, and operations of national crime syndicates.
- Puma, Fernando**, U.S. artist and author (b. New York, N.Y., Feb. 14, 1919—d. New York, Dec. 4, 1955).
- Putnam, Herbert**, U.S. librarian (b. New York, N.Y., Sept. 20, 1861—d. Woods Hole, Mass., Aug. 15, 1955), graduated from Harvard in 1883 and later studied law at Columbia university, being admitted to the Minnesota state bar in 1886. After library work in Minneapolis, Minn. (1884-91), he practiced law in Boston, Mass. (1892-95). He became librarian of the Boston public library in 1895. Four years later he was appointed by Pres. William McKinley librarian of congress, serving until his retirement as librarian emeritus Aug. 1, 1939. During his tenure of office the library's number of volumes grew from fewer than 1,000,000 to more than 5,500,000. The Herbert Putnam award for outstanding librarianship was established in his honour. He was twice president (in 1898 and in 1904) of the American Library association.
- Radaceanu, Lotar**, Rumanian educator and politician (d. Helsinki, Fin., Aug. 25, 1955).
- Raemisch, Waldemar**, U.S. sculptor (b. Berlin, Ger., Aug. 19, 1888—d. Rome, It., April 14, 1955).
- Ramsden, Sir Eugene Joseph Squire Hargreaves**, 1ST BARON OF, British industrialist and politician (b. Feb. 2, 1883—d. Gomersal, Eng., Aug. 9, 1955).
- Ray, E. Lansing**, U.S. publisher and editor (b. St. Louis, Mo., Aug. 30, 1884—d. Rye Beach, N.H., Aug. 30, 1955).
- Raycroft, Joseph Edward**, U.S. educator and professor of hygiene (b. Williamstown, Vt., Nov. 15, 1867—d. Trenton, N.J., Sept. 30, 1955).
- Reichard, Gladys Amanda**, U.S. anthropologist and author (b. Bangor, Pa., July 17, 1893—d. Flagstaff, Ariz., July 25, 1955).
- Reid, Albert Turner**, U.S. artist and publisher (b. Concordia, Kans., Aug. 12, 1873—d. New York, N.Y., Nov. 26, 1955).
- Remón, José Antonio**, Panamanian president (b. Panamá city, Panamá, June 1, 1908—d. Panamá city, Jan. 2, 1955), was educated at the Mexican Military academy in Mexico City and joined the Panamanian national police force in 1931, advancing subsequently to the rank of colonel. By 1949 he was the national chief of police and "strong man" of Panamá. In that year he brought about the resignation of Pres. Daniel Chánis, Jr., despite a decision by the nation's supreme court affirming Chánis' legal right to the office. Again on May 10, 1951, Remón overthrew the administration of Arnulfo Arias and installed Alcibiades Arosemena in the presidency. In 1951 Remón himself campaigned for the presidency as the candidate of a national five-party coalition. In elections held May 11, 1952, he was elected by a large majority, receiving the largest number of votes in the nation's history. He took office as 28th president of Panamá on Oct. 1, 1952, for a four-year term. During his presidency he reduced Panamá's national debt and increased substantially the country's agricultural output. His assassination at a race track in Panamá city gave rise to new unrest in the Central American republic. (See PANAMÁ.)
- Renner, George Thomas Jr.**, U.S. geographer (b. Winfield, Kans., July 11, 1900—d. Leonia, N.J., Oct. 14, 1955).
- Reynolds, Richard Samuel Sr.**, U.S. financier (b. Bristol, Tenn., Aug. 15, 1881—d. Richmond, Va., July 29, 1955).
- Richards, Rev. George Warren**, U.S. clergyman and educator (b. Farmington, Pa., April 26, 1869—d. Lancaster, Pa., June 11, 1955).
- Riskin, Robert**, U.S. screen writer (b. New York, N.Y., 1897—d. Woodland Hills, Calif., Sept. 20, 1955).
- Rist, Charles**, French economist (b. Switzerland, Jan. 1, 1874—d. Paris, Fr., Jan. 11, 1955).
- Robbins, Reginald Chauncey**, U.S. author and poet (b. Boston, Mass., Nov. 10, 1871—d. Santa Barbara, Calif., Nov. 19, 1955).
- Roberts, Owen Josephus**, U.S. jurist and supreme court justice from 1930 to 1945 (b. Philadelphia, Pa., May 2, 1875—d. West Vincent township, Pa., May 17, 1955), was educated at the University of Pennsylvania, Philadelphia, where he received his bachelor's degree in 1895 and his law degree in 1898. After years of private practice in Philadelphia, he first attracted national attention as one of the special federal prosecutors in the oil reserve scandals of the 1920s which had originated during the administration of Pres. Warren G. Harding. In 1930 Pres. Herbert C. Hoover named Roberts associate justice of the U.S. supreme court. During his 15-year tenure, Roberts sided at times with the liberal wing of the court and at other times with the conservatives, upholding or opposing various New Deal legislative acts; he opposed Pres. Franklin D. Roosevelt's plan to "pack" the supreme court in 1937. Shortly after the Japanese attack on Pearl Harbor in Dec. 1941, while he was still on the bench, Roberts was named chairman of a special commission to investigate the attack. In the commission's report made public early in 1942, the U.S. navy and army commanders in Hawaii were held responsible for errors of judgment. Roberts resigned from the court in 1945, and from 1948 to 1951 he was dean of the University of Pennsylvania's school of law.
- Roberts, William Alva**, U.S. industrialist (b. Osceola, Mo., Aug. 25, 1897—d. Milwaukee, Wis., April 12, 1955).
- Röchling, Hermann**, German industrialist (b. Saarbrücken, Nov. 12, 1872—d. Mannheim, Aug. 25, 1955).
- Rodeheaver, Homer Alvan**, U.S. composer and author (b. Union Furnace, C. Oct. 4, 1880—d. Winona Lake, Ind., Dec. 18, 1955).
- Ross, Anthony (ANTHONY ROSENTHAL)**, U.S. actor (b. New York, N.Y., 1906—d. New York, Oct. 25, 1955).
- Ross, Jerry (JEROLD ROSENBERG)**, U.S. song writer (b. New York, N.Y., March 9, 1926—d. New York, N.Y., Nov. 11, 1955).
- Rothschild, Baron Louis**, Austrian banker (b. Vienna, Aus., March 5, 1882—d. Jamaica, B.W.I., Jan. 15, 1955).
- Roush, Gar A.**, U.S. editor and mineral economist (b. Harrisburg [now Gettysburg], Ind., Oct. 21, 1883—d. Arlington, Va., Aug. 17, 1955).
- Rubinstein, Serge**, Russian-born financier (b. St. Petersburg [now Leningrad], U.S.S.R., 1909—d. New York, N.Y., Jan. 27, 1955).
- Rupprecht, Maria Luipoldt Ferdinand**, CROWN PRINCE OF BAVARIA, count Palatine of the Rhine, duke of Bavaria, Franconia and Swabia, and head of the house of Wittelsbach (b. Munich, Ger., May 18, 1869—d. Leutsteden castle, southern Bavaria, Aug. 2, 1955).
- Sakall, S. Z.**, Hungarian-born motion picture actor (b. Budapest, Hung., Feb. 2, 1893—d. Hollywood, Calif., Feb. 12, 1955).
- Salmon, Edward**, British editor (b. 1865—d. London, Eng., Sept. 23, 1955).
- Salter, Robert Mundhenk**, U.S. scientist (b. Huntington, Ind., March 31, 1894—d. Washington, D.C., Sept. 13, 1955).
- Schenck, Eunice Morgan**, U.S. educator (b. Brooklyn, N.Y., Dec. 8, 1884—d. Port Jefferson, N.Y., May 7, 1955).
- Schlueter, Robert Ernst**, U.S. surgeon (b. St. Louis, Mo., June 9, 1872—d. St. Louis, Mo., Feb. 12, 1955).
- Schneider, Hannes**, Austrian-born ski instructor (b. Stuben, Aus., 1890?—d. North Conway, N.H., April 26, 1955).
- Schulman, Samuel**, U.S. rabbi (b. Russia, Feb. 14, 1864—d. New York, N.Y., Nov. 2, 1955).
- Schuyler, Montgomery**, U.S. diplomat and author (b. Stamford, Conn., Sept. 2, 1877—d. Middletown, N.Y., Nov. 1, 1955).
- Schwartz, Henry ("Harry") Herman**, U.S. senator (b. near Fort Recovery, O., May 18, 1869—d. Casper, Wyo., April 24, 1955).
- Scott, Walter Dill**, U.S. educator and psychologist (b. Cookville, Ill., May 1869—d. Evanston, Ill., Sept. 23, 1955), was one of the first to apply psychological principles to personnel, sales, advertising and other problems in industry and commerce. After graduation from Northwestern university, Evanston, Ill., in 1895, he took his Ph.D. in psychology at Leipzig university, Ger. (1900), then returned to Northwestern as associate professor of psychology and education and director of the university's psychological laboratory. He became full professor in 1908 and was president of the university from 1920 until his retirement in 1939. During World War I Scott developed the U.S. army's system of personnel classification of enlisted men for military assignment—a system that was continued with modifications during World War II. He was the author of numerous books and articles dealing with applied psychology.
- Scranton, Worthington**, U.S. industrialist and philanthropist (b. Scranton, Pa., Aug. 29, 1876—d. West Palm Beach, Fla., Feb. 13, 1955).
- Seiberling, Frank A.**, U.S. industrialist (b. Western Star, O., Oct. 6, 1859—d. Akron, O., Aug. 11, 1955), was a pioneer of the U.S. rubber industry, a founder of the Goodyear Tire and Rubber company (1898) and of the Seiberling Rubber company (1921), after he had lost financial control of the Goodyear corporation. Seiberling developed many basic patents in the tire and agricultural implement industries. From 1938 to 1950 he was board chairman of the Seiberling Rubber company.
- Seif-ul-Islam Abdullah**, PRINCE OF YEMEN, government official and diplomat (b. Kefeh, Yemen, 1912—d. Taez, April 14, 1955).
- Sharp, Dorothea**, British painter (b. Dartford, Eng., 1873?—d. London, Eng., Dec. 17, 1955).
- Sharp, Evelyn**, British suffragist and novelist (b. London, Eng., Aug. 4, 1865—d. London, June 21, 1955).
- Sherwood, Robert Emmet**, U.S. author (b. New Rochelle, N.Y., April 4, 1911—d. New York, N.Y., Nov. 14, 1955), first won acclaim with a series of dramatic successes on Broadway in the 1930s and later became one of the most trusted confidants of Pres. Franklin D. Roosevelt and a principal contemporary biographer with his *Roosevelt and Hopkins* (1948). In Sherwood won four Pulitzer prizes, three for plays—*Idiot's Delight* in 1939, *Abe Lincoln in Illinois* in 1939 and *There Shall Be No Night* in 1941—and a 1949 history prize for *Roosevelt and Hopkins*. Sherwood also received Col-

bia university's Bancroft prize for distinguished historical writing in 1949. Sherwood attended Harvard university from 1914 to 1917, and served with the Canadian expeditionary forces during World War I, when he was wounded in France. From 1919 to 1920 he was drama critic of the magazine *Vanity Fair* and from 1920 to 1928 associate editor and then editor of the old *Life* magazine. His first signal success as a playwright was *The Road to Rome* (1927), which was followed by several mediocre plays, then the hit *Reunion in Vienna* (1931) and the above-mentioned Pulitzer prize-winning plays. In 1938 Sherwood helped organize the Playwrights company of producers in New York city. An ardent New Dealer, Sherwood was an early advocate of U.S. intervention in World War II. He was thought to have helped write many of President Roosevelt's major addresses. During World War II Sherwood was overseas director of the office of war information. He was the author of the motion picture play *The Best Years of Our Lives*, accorded the 1946 Academy award as best picture of that year. At the time of his death Sherwood was planning production of his last play, *Small War in Manhattan*.

hetelig, Haakon, Norwegian author and archaeologist (b. 1877—d. Oslo, Nor., July 23, 1955).

hields, Rev. Dr. Thomas Todhunter, Canadian Baptist clergyman (b. Bristol, Eng., Nov. 1, 1873—d. Toronto, Can., April 4, 1955).

hine, The Most Rev. Thomas, British Roman Catholic prelate (b. New Inn, Tipperary, Ire., 1872—d. London, Eng., Nov. 22, 1955).

herras, George Findlay, Scottish economist (b. Aberdeen, Scot., July 16, 1885—d. Rio de Janeiro, Braz., June 23, 1955).

hulman, Harry, U.S. legal educator (b. Krugloye, Russia, March 14, 1903—d. Hamden, Conn., March 20, 1955), emigrated with his parents to the U.S. in 1912 and became a naturalized U.S. citizen in 1921. He took a bachelor's degree at Brown university, Providence, R.I., in 1923 and law degrees at Harvard university in 1926 and 1927. In 1929-30 he was secretary to Supreme Court Justice L. D. Brandeis and in the latter year joined the law faculty of Yale university as an instructor, becoming in 1940 Sterling professor of law and in 1954, dean of the law school. Shulman was an expert in labour law and arbitration and from 1943 until his death was umpire between the Ford Motor company and the Congress of Industrial Organizations' United Automobile Workers.

hultz, Birl E., U.S. economist (b. Union City, Ind., June 8, 1883—d. Northampton, Mass., Nov. 9, 1955).

immons, George Finlay, U.S. educator (b. Sherman, Tex., Oct. 25, 1895—d. Glen Ellyn, Ill., July 19, 1955).

imon, Viscountess (Kathleen Harvey Simon), British slavery crusader (b. County Wexford, Ire.—d. London, Eng., March 27, 1955).

impson, Alfred Dexter, U.S. educator (b. Sheffield, Vt., March 24, 1891—d. Cambridge, Mass., Aug. 25, 1955).

impson, Rev. David Capell, British clergyman and educator (b. May 22, 1883—d. Oxford, Eng., May 6, 1955).

inger, Edgar Arthur Jr., U.S. educator and author (b. Philadelphia, Pa., Nov. 13, 1873—d. Philadelphia, April 3, 1955).

laton, John Marshall, U.S. politician (b. Meriwether County, Ga., Dec. 25, 1866—d. Atlanta, Ga., Jan. 11, 1955).

oan, George A., U.S. business executive and civic leader (b. Nashville, Tenn., May 30, 1893—d. New York, N.Y., May 20, 1955), graduated from Vanderbilt university, Nashville, in 1915 and during World War I was an infantry officer with the American expeditionary forces in Europe. He was a director of several large U.S. corporations, including United States Steel Corp., Goodyear Tire and Rubber Co. and Middle South Utilities, Inc. He was active in many civic enterprises and in national, charitable and trade organizations. From 1941 to 1945 he was president of the Metropolitan Opera association and from Feb. 1946 to March 1955 chairman of the "Met" board of directors. A few days before his death he was elected president of the International Chamber of Commerce, of which he had been a prominent member for years.

nathers, William H(owell), U.S. senator and jurist (b. near Waynesville, N.C., Jan. 7, 1891—d. Asheville, N.C., Sept. 24, 1955).

nith, Bruce, U.S. criminologist (b. Brooklyn, N.Y., May 23, 1892—d. Southampton, N.Y., Sept. 18, 1955).

nith, Sir Keith Macpherson, Australian aviator (b. Adelaide, Austr., Dec. 20, 1890—d. Sydney, Austr., Dec. 19, 1955).

nider, Joseph Lyons, U.S. economist and educator (b. Uniontown, Pa., Aug. 25, 1894—d. Lincoln, Mass., March 4, 1955).

omervell, Brehon Burke, U.S. general (b. Little Rock, Ark., May 9, 1892—d. Ocala, Fla., Feb. 13, 1955), was graduated from the U.S. military academy at West Point, N.Y., in 1914 and was commissioned an officer of engineers. During World War I he served with the 89th division in France and after the war was a supply officer for the U.S. occupation army in Germany. In 1936 he was appointed state administrator of the Works Progress administration in New York. Recalled to active duty with the army in 1940, he was appointed commanding general of the U.S. army service forces during World War II. Under his direction the army spent \$172,000,000,000 to supply more than 8,000,000 men scattered throughout the world and in all theatres of war. Advanced to the rank of full general in the last year of the war, Somervell retired from the army in 1946 and later was elected chairman of the board of Koppers Company, Inc., in Pittsburgh, Pa.

soucek, Apollo, U.S. naval air officer (b. Lamont, Okla., Feb. 24, 1897—d. Washington, D.C., July 22, 1955), graduated from the U.S. naval academy at Annapolis, Md., in 1921, meanwhile having served with the U.S. Pacific fleet in World War I. He became a navy pilot in 1924 and in 1929 established a new world's altitude record for aircraft, 39,140 ft. The next year he boosted the record to 43,166 ft. In World War II Soucek was an air officer during various Pacific naval operations and in the Korean war he commanded a naval task force. Soucek, who was promoted to the rank of rear admiral in 1946, was chief of the U.S. navy bureau of aeronautics from June 1953 to June 1955, shortly before his death.

Sprague, Clifton Albert F., U.S. naval officer (b. Dorchester, Mass., Jan. 8, 1896—d. San Diego, Calif., April 11, 1955).

Sterling, Andrew B., U.S. song writer (b. New York, N.Y., Aug. 26, 1874—d. Stamford, Conn., Aug. 11, 1955).

Sternova, Miroslava, Czech movie actress (b. Czechoslovakia—d. Mexico City, Mex., March 10, 1955).

Stetson, Henry Crosby, U.S. oceanographer (b. Cambridge, Mass., Oct. 10, 1900—d. near Antofagasta, Chile, Dec. 3, 1955).

Stevens, Wallace, U.S. poet and business executive (b. Reading, Pa., Oct. 2, 1879—d. Hartford, Conn., Aug. 2, 1955), studied at Harvard university and at New York law school and was admitted to the New York state bar in 1904. After 12 years of private practice he joined the staff of the Hartford Accident and Indemnity company, Hartford, Conn., becoming a vice-president of that company in 1934. As early as 1914 Stevens had published his first poems (in Harriet Monroe's famed *Poetry* magazine), but his first volume of poetry, *Harmonium*, did not appear until about ten years later. It was followed by *Ideas of Order* (1936), *Owl's Clover* (1936), *Man with the Blue Guitar* (1937), *Parts of a World* (1942), *Notes Toward a Supreme Fiction* (1942), *The Auroras of Autumn* (1950) and *The Necessary Angel* (1951). Stevens was primarily an abstractionist, paying minute attention to metric and tonal qualities of his verse. Honours came rapidly to him in the last decade of his life. In 1949 he received the Bollingen poetry prize of Yale university library; in 1951 the Poetry Society of America's gold medal; in the latter year an honorary degree from Harvard university and the next year from Columbia; and in 1955 the Pulitzer prize for poetry.

Stokes, Frank Wilbert, U.S. artist (b. Nashville, Tenn., 1859?—d. New York, N.Y., Feb. 13, 1955).

Stone, Herbert Lawrence, U.S. editor (b. Charleston, S.C., Jan. 18, 1873—d. New York, N.Y., Sept. 27, 1955).

Storrs, Sir Ronald Henry Amherst, British diplomatist and administrator (b. Bury St. Edmunds, Eng., Nov. 19, 1881—d. London, Nov. 1, 1955).

Stryker, Lloyd Paul, U.S. attorney (b. Chicago, Ill., June 5, 1885—d. New York, N.Y., June 21, 1955), was one of the best-known criminal lawyers of his time. Two of his most celebrated defense cases were those of James J. Hines, Tammany hall leader accused of conspiracy in a New York city "policy game" racket, and of Alger Hiss in his first trial for perjury in connection with treason. The first trial of Hiss in 1949 ended in a split verdict, and Stryker did not represent Hiss in his second trial—which resulted in conviction the next year and a five-year prison sentence. Stryker was an assistant district attorney of New York county from 1910 to 1912. He was the author of four books, including *Andrew Johnson—A Study in Courage* (1929).

Subasic, Ivan, Yugoslav politician of Croatian nationality (b. Vukova Gorica, Croatia, 1892—d. Zagreb, March 23, 1955), was elected to the *skupstina* (lower chamber) in 1935 and re-elected in 1938. After the Serbian-Croatian agreement of Aug. 1939, by which Croatia obtained self-government, Subasic was appointed by Prince Paul, regent of Yugoslavia, to be *ban*, or governor, of Croatia. After the German invasion of 1941 he went to the United States, remaining loyal to King Peter II. In June 1944, at the instigation of Winston Churchill, King Peter appointed him prime minister of the Yugoslav government in exile. His mission was to reach agreement with Marshal Tito, with the vain hope of saving the monarchy. In March 1945, in Belgrade, Subasic joined as foreign minister a cabinet headed by Marshal Tito. He resigned six months later.

Sullivan, Henry F., U.S. swimmer (b. 1891—d. Beverly, Mass., Dec. 23, 1955).

Summerall, Charles Pelot, U.S. general (b. Lake City, Fla., March 4, 1867—d. Washington, D.C., May 14, 1955), graduated from the U.S. military academy at West Point, N.Y., in 1892. He took part in the Philippine campaigns of 1899-1900 and served in China during the Boxer rebellion in 1900. After acting as U.S. military observer to British and French armies on the western front in 1917 during World War I, Summerall was placed in successive command of three U.S. army corps after U.S. entry into the war, earning a reputation as a foremost expert on artillery and winning the distinguished service cross for gallantry at the battle of Soissons. From 1926 to 1930 Summerall was U.S. army chief of staff, being advanced to the rank of full general in 1929. After his retirement in 1931 he became president of the Citadel, military college at Charleston, S.C., and served in this position for 22 years, until 1953.

Sumner, James Batcheller, U.S. biochemist (b. Canton, Mass., Nov. 19, 1887—d. Buffalo, N.Y., Aug. 12, 1955).

Sutherland, Lady Millicent Fanny St. Clair-Erskine, DUCHESS OF, British author (b. Oct. 20, 1867—d. Biarritz, Fr., Aug. 20, 1955).

Suydam, Henry, U.S. journalist and government official (b. Brooklyn, N.Y., May 19, 1891—d. Washington, D.C., Dec. 11, 1955).

Swinderen, Rene de Marees van, Jonkheer, Dutch diplomat (b. Groningen, Neth., Oct. 6, 1860—d. London, Eng., Jan. 17, 1955).

Szekfely, Gyula, Hungarian historian (b. Szekesfehervar, May 23, 1883—d. Budapest, June 28, 1955).

Tambarini, José P., Argentine politician (b. Buenos Aires, Arg., Feb. 22, 1886—d. Buenos Aires, Sept. 25, 1955).

Tanguy, Yves, French-U.S. Surrealist painter (b. Paris, Fr., Jan. 5, 1900—d. Waterbury, Conn., Jan. 15, 1955), studied in Paris and became a leading member of the Surrealist school there in the 1920s. He emigrated to the United States in 1939 and became a naturalized citizen of the U.S. nine years later. His paintings were hung in leading museums of Paris and the United States and elsewhere.

Tarlé, Eugene V., Soviet historian (b. 1875?—d. Moscow, U.S.S.R., Jan. 6, 1955).

Taylor, William Osgood, U.S. editor and publisher (b. Nashua, N.H., Jan. 8, 1871—d. Marion, Mass., July 15, 1955).

Teilhard de Chardin, Rev. Pierre, French Jesuit, scientist and explorer (b. Orcine [Puy-de-Dôme], Fr., May 1, 1881—d. New York, N.Y., April 10, 1955).

Templeton, Charles Augustus, U.S. politician (b. Sharon, Conn., March 3, 1871—d. Waterbury, Conn., Aug. 15, 1955).

Themeles, Timotheos, Greek Orthodox patriarch (b. Samos, 1878—d. Jerusalem, Dec. 31, 1955), was ordained in 1905 and, after a short period of further training at Oxford, was made archimandrite in 1914. In 1921 he was elected archbishop of Jordan and four years later went to London with Patriarch Damianos for the Nicaean celebrations. The question of succession to Damianos, who died in 1931, was hotly debated between the rival factions of the Fraternity of the Holy Sepulchre and the laity of the patriarchate and it was not until 1935 that Timotheos was elected patriarch of Jerusalem by only nine votes over Patriarch Meletios of Alexandria. In his later years Archbishop Timotheos suffered from Parkinson's disease and was unable to take part in public ceremonies; he continued, however, to formulate policy and attend synod meetings.

Thorpe, Merle, U.S. editor (b. Brimfield, Ill., Nov. 1, 1879—d. Washington, D.C., Oct. 31, 1955), took bachelor's degrees from Stanford university, Stanford, Calif., and the University of Washington, Seattle. He taught journalism at the latter university (1907-11) and the University of Kansas, Lawrence (1911-16), meanwhile working on various newspapers. From 1916 until 1944 he was editor of *The Nation's Business*, national magazine of the U.S. chamber of commerce. In 1944 he was appointed director of business development for the Cities Service oil company. Thorpe was one of the first economic analysts to popularize news of U.S. business trends.

Thurstone, Louis Leon, U.S. psychologist (b. Chicago, Ill., May 29, 1887—d. Chapel Hill, N.C., Sept. 29, 1955).

Tillmanns, Robert, German politician (b. Wuppertal-Barmen, Ger., April 5, 1896—d. Berlin, Ger., Nov. 12, 1955).

Tobin, Daniel J., U.S. labour executive (b. Ireland, 1875—d. Indianapolis, Ind., Nov. 14, 1955), was one of the most influential U.S. labour leaders of the first half of the 20th century. The union of which he was president from 1907 until his retirement in 1952—the International Brotherhood of Teamsters, Chauffeurs, Warehousemen and Helpers—became the most powerful component of the American Federation of Labour (of which Tobin was also an executive council member). Emigrating from Ireland to the United States in 1889, Tobin became a teamster in Boston, Mass., and soon was active in union affairs. During his 45 years as head of the teamsters union he vehemently defended the union against periodic charges of alleged racketeering. A close friend of Pres. Franklin D. Roosevelt, Tobin helped raise money for the four Roosevelt presidential campaigns and was mentioned on several occasions as a potential secretary of labour in both the New Deal and Fair Deal administrations. When Tobin refused to accept re-election as head of the teamsters union in 1952 he was succeeded by the executive vice-president, Dave Beck, and made president emeritus.

Tokuda, Kyuichi, Japanese communist leader (b. Okinawa, Sept. 12, 1894—d. Peiping, China, Oct. 24, 1953, announced July 29, 1955).

Towers, John Henry, U.S. naval officer and aviation pioneer (b. Rome, Ga., Jan. 30, 1885—d. New York, N.Y., April 30, 1955), graduated from the U.S. naval academy at Annapolis, Md., in 1906, was commissioned ensign two years later, subsequently advanced to the rank of vice-admiral (1942) and retired as admiral in 1947. A pioneer U.S. navy flier, he was assistant director of naval aviation in World War I, and in 1919 piloted one of three navy planes that attempted the first transatlantic flight, from Newfoundland to England. Towers and his crew were forced to land west of the Azores Islands, to which they water-taxied, but another plane in the flight went on to complete the first Atlantic crossing by air. This success was an early step in the long fight which Towers spearheaded to gain acceptance of the aeroplane by the navy. In 1939 Towers was named chief of the bureau of aeronautics, and from 1942 to 1944 he was commander of the U.S. Pacific fleet's air force. In the latter year he became deputy commander in chief, and in 1945 commander in chief, of the Pacific fleet. After his retirement from the navy he was a vice-president of Pan American World Airways.

Townsend, Rev. Henry, British Baptist clergyman (b. Nottinghamshire, Eng.—d. Carshalton Beeches, Eng., July 2, 1955).

Tribhuvan Bir Bikram, king of Nepal (b. Kathmandu, June 30, 1906—d. Zürich, March 13, 1955), came to the throne on Dec. 11, 1911. In theory a divine ruler he was in fact powerless against the prime ministers of the oligarchic Rana family. In Nov. 1950 he sought refuge in India and his grandson of three was placed on the throne, but the country was invaded by Nepali Congress party supporters, gaining the sympathy of India. Jawaharlal Nehru, the Indian prime minister, advocated constitutional reforms and on Feb. 15, 1951, the king returned as a constitutional monarch to rule with a mixed cabinet of both the Rana family and the Congress party. Since the power of the Ranas was not easily broken the cabinet proved unworkable

and following a state of emergency in July 1952 the king reluctantly resumed direct rule with five advisers. In September he agreed with Nehru on further democratic reforms. On June 15, 1953, he re-established a coalition cabinet headed by M. P. Koirala, leader of the new National Democratic party. The cabinet was denounced by the Congress party as unrepresentative and was reorganized after negotiations. Meanwhile the king asserted by proclamation his supreme authority in defiance of the supreme court's ruling. Heart disease brought him to Europe for treatment and in Feb. 1955 he provisionally invested his son, the crown prince, with royal authority. The latter resumed direct rule on March 2.

Troyanovsky, Alexander Antonovich, Russian diplomat (b. Tula, Russia, Jan. 1, 1882—d. Moscow, U.S.S.R., June 23, 1955).

Turkin, Hy, U.S. sports writer (b. New York, N.Y., May 9, 1915—d. New York, June 24, 1955).

Turner, Kenneth Burden, U.S. cardiologist (b. Lynchburg, Va., Jan. 29, 1901—d. New York, N.Y., Oct. 9, 1955).

Utrillo, Maurice, French painter (b. Paris, Fr., Dec. 26, 1883—d. Dax, Basses Pyrénées, Nov. 5, 1955), took the name of a Spanish journalist who legally adopted him; however, he often signed pictures with his mother's name Suzanne Valadon, or later, "Utrillo-Valadon" or "Utrillo-V." His life as a drunkard and drug addict began before he was in his teens, his career as a painter not until 1903, when, after he had been dismissed from a bank and had received treatment for dipsomania, a doctor suggested that learning to paint might benefit him. His mother gave him a palette and some lessons in technique, and in his first period (1903-08) he was influenced by the Impressionists, particularly in his handling of pigment. Typical of this period is "Le Pont Saint Michel." Gradually, however, he developed a strong, sure style of his own, which showed no sign of his mental and physical deterioration. He worked mostly out of doors and excelled in transmitting the serene yet melancholy atmosphere peculiar to Montmartre. In such pictures as "Notre-Dame pavoisée," "La Place Jean-Baptiste Clément" and "Le Square Saint Pierre sous la neige" his "tragic" skies and the depth of his shadow give his whites a disturbing, luminescent brightness. His output in his most productive years was immense; he painted at the rate of one and a half pictures a day, working in the evenings from picture postcards, particularly of churches. His first one-man show was given in 1913, and in 1919 an exhibition of his work during 1910-15 confirmed his reputation. Meanwhile, his feverish creative activity was increasingly interrupted by periods of depression and alcoholism. His mother's spasmodic attempts to cure him led to visits to Corsica and Brittany (1912-13) from which he returned with a number of pictures lighter and less intense in tone. After moving to a chateau near Lyons in 1923, his style became drier and more austere, his colour gayer, clearer and simpler. In 1929 he received the Cross of the Legion of Honour. He married in 1935 and subsequently lived in retirement.

Vachell, Horace Annesley, British novelist and playwright (b. Essex, Eng., Oct. 30, 1861—d. Bath, Eng., Jan. 10, 1955).

Vail, Richard Bernard, U.S. manufacturer and congressman (b. Chicago, Ill., Aug. 31, 1895—d. Chicago, July 29, 1955).

Van Ingen, William Brantley, U.S. artist (b. Philadelphia, Pa., 1858—d. Utica, N.Y., Feb. 6, 1955).

Villanueva, José Gavino, Bolivian physician and politician (b. 1877—d. La Paz, Bol., March 25, 1955).

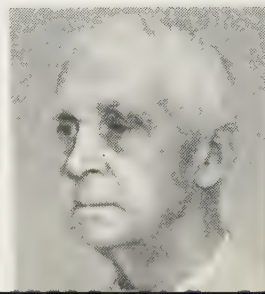
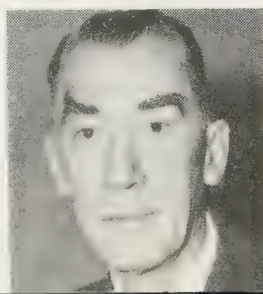
Vollmer, August, U.S. criminologist (b. New Orleans, La., March 7, 1876—d. Berkeley, Calif., Nov. 4, 1955).

Vukovich, Bill, U.S. automobile racer (b. Alameda, Calif., 1918?—d. Indianapolis, Ind., May 30, 1955), was one of only three men in history to win the Indianapolis 500-mi. speedway race twice in succession—1953 and 1954. He had begun midget-car racing in 1938 and twice won the Pacific Coast midget championship (1946 and 1947). His first appearance at the 500-mi. race was in 1951, when he was forced to drop out after 29 laps because of mechanical difficulties. In 1952 he was again forced to withdraw from the race, while he was in the lead. The next two years he finished first. Vukovich was killed in the 1955 Indianapolis race, while again in the lead, his car hitting a retaining wall of the track after 140 mi.

Wade, Herbert Treadwell, U.S. editor and author (b. New York, N.Y., Sept. 2, 1872—d. New Canaan, Conn., March 18, 1955).

Wagner, John P. (Honus), U.S. baseball player (b. Carnegie, Pa., Feb. 24, 1874—d. Carnegie, Pa., Dec. 6, 1955), was generally considered the greatest shortstop in U.S. baseball history and was one of the first five stars elected to the baseball hall of fame at Cooperstown, N.Y. in 1936—the others being Ty Cobb, Babe Ruth, Walter Johnson and Christy Mathewson. The "Flaming Dutchman," as Wagner was called, entered minor league baseball at Steubenville, O., in 1895 and two years later was in major league ball with the old Louisville (Ky.) Colonels, then a member team of the National league. After reorganization of the league in 1900 Wagner went to Pittsburgh and remained with the Pirates the rest of his major league playing career, which ended with his retirement in 1917. In 1933 he was appointed a Pirate coach. Wagner's lifetime batting average was .328 and he led the National league in batting for eight years—more than any other league player; his top year was 1900 (.380). Other National league records still held by Wagner at the time of his death were: hitting above .300 the most years (17); playing the greatest number of games (2,785), making the most hits (3,430) and scoring the most runs (1,740).

1955 OBITUARIES: Alexandros Papagos, Greek statesman; Robert E. Sherwood, U.S. author; Charles P. Summerall, U.S. general; Maurice Utrillo, French painter; John P. (Honus) Wagner, U.S. baseball player



- Walker, Rollin Hough**, U.S. educator and author (b. Columbus, O., Dec. 19, 1865—d. Delaware, O., Aug. 4, 1955).
- Walsh, J. Brandon**, U.S. song writer and cartoonist (b. Chicago, Ill., May 10, 1882—d. New York, N.Y., Jan. 13, 1955).
- Walton, Sir Albert James**, British surgeon (b. London, Eng., Nov. 1, 1881—d. Sussex, Eng., Aug. 27, 1955).
- Wambaugh, Sarah**, U.S. plebiscite authority (b. Cincinnati, O., March 6, 1882—d. Cambridge, Mass., Nov. 12, 1955).
- Ward, Arch**, U.S. sports writer and editor (b. Irwin, Ill., Dec. 27, 1896—d. Chicago, Ill., July 8, 1955), graduated from Notre Dame university, Ind., and was sports editor of newspapers in Dubuque, Ia., and Rockford, Ill., before joining the staff of the *Chicago Tribune* in 1925. He became sports editor of that paper in 1930. Ward originated the annual all-star baseball game in 1933, at the time of A Century of Progress exposition in Chicago, and the annual all-star football game the next year. He was also promoter of the international Golden Gloves boxing tournament. Ward was the author of several books and appeared frequently on television sports programs.
- Warner, Longdon**, U.S. art curator (b. Cambridge, Mass., Aug. 1, 1881—d. Cambridge, June 9, 1955).
- Weaver, Harrison J. ("Doc")**, U.S. athletic trainer (b. Miamisburg, O., March 30, 1886—d. St. Louis, Mo., May 21, 1955).
- Wedgwood, Camilla Hildegard**, Australian anthropologist (b. Newcastle-on-Tyne, Eng., March 25, 1901—d. Sydney, Austr., May 17, 1955).
- Wertenbaker, Charles Christian**, U.S. author and journalist (b. Lexington, Va., Feb. 11, 1901—d. Cibour, Fr., Jan. 8, 1955).
- West, Charles**, U.S. congressman (b. Mt. Vernon, O., Jan. 12, 1895—d. Bradenton, Fla., Dec. 27, 1955).
- Weyl, Hermann**, German-U.S. mathematician (b. Elmshorn, Ger., Nov. 9, 1885—d. Zurich, Switz., Dec. 8, 1955).
- White, Paul W.**, U.S. editor and director (b. Pittsburg, Kans., June 9, 1902—d. San Diego, Calif., July 9, 1955).

White, Walter (Francis), U.S. Negro leader (b. Atlanta, Ga., July 1, 1893—d. New York, N.Y., March 21, 1955), had only a small proportion of Negro blood, but elected as a youth to identify himself with advancing the cause of civil, political and economic rights for U.S. Negroes. He graduated from Atlanta university, Atlanta, Ga., in 1916 and two years later was named assistant secretary of the National Association for the Advancement of Colored People. In 1929 he became acting secretary and in March 1931 secretary of the organization. In this office he spearheaded such important drives as that which led to establishment of the fair employment practices committee of Pres. Franklin D. Roosevelt in June 1941. He was also instrumental in securing the Democratic party's adoption of a strong civil rights platform for minority groups during the presidential campaign of 1948 in the face of unyielding Dixiecrat opposition in the southern states. White was a determined publicist for national antilynching legislation and other civil rights measures. He held a number of appointive posts, including those of consultant to the United Nations organizing conference at San Francisco, Calif., in 1945 and adviser to the Virgin Islands government in 1934-35. Among his published works were two novels and an autobiography, *A Man Called White* (1948). He was Spingarn medalist in 1937.

- White, William Chapman**, U.S. foreign correspondent and author (b. Reading, Pa., Feb. 20, 1903—d. Washington, D.C., Nov. 28, 1955).
- Whiteley, William**, British politician (b. Elland, Eng., Oct. 3, 1882—d. Durham, Eng., Nov. 3, 1955).
- Wieczorek, Max**, U.S. artist (b. Breslau, Ger., Nov. 22, 1863—d. Pasadena, Calif., Sept. 25, 1955).
- Wilcox, Herbert B.**, U.S. pediatrician (b. Brooklyn, N.Y., July 1, 1874—d. Lake Charles, La., Feb. 1, 1955).
- Wilcox, Robert**, U.S. actor (b. Rochester, N.Y., May 19, 1910—d. Rochester, June 11, 1955).
- Wildman, Clyde Everett**, U.S. educator (b. Greensburg, Ind., March 8, 1889—d. Carlisle, Pa., Nov. 1, 1955).
- Willard, Gerald Warner**, U.S. physicist (b. Mankato, Minn., June 19, 1901—d. Fanwood, N.J., Nov. 18, 1955).
- Williams, Horatio Burt**, U.S. physiologist (b. Utica, N.Y., Sept. 17, 1877—d. New York, N.Y., Nov. 1, 1955).
- Wilson, Bert (Bert Mison Puckett)**, U.S. radio announcer (b. Columbus, O., Feb. 5, 1911—d. Mesa, Ariz., Nov. 5, 1955).

Wolgast, Adolf (Ad), U.S. boxer (b. Cadillac, Mich., Feb. 8, 1888—d. Camarillo, Calif., April 14, 1955), won the lightweight championship of the world from Battling Nelson in Feb. 1910 and kept the title until Nov. 1912, when he was defeated by Willie Ritchie. Wolgast won 85 of 145 bouts during his career.

- Wolgast, Midget (Joseph Robert Loscalzo)**, U.S. boxer (b. Philadelphia, Pa., 1909—d. Philadelphia, Oct. 19, 1955).
- Wood, Paul Spencer**, U.S. educator (b. Chicago, Ill., July 12, 1882—d. Madison, N.J., Jan. 11, 1955).

Wood, Robert Williams, U.S. physicist (b. Concord, Mass., May 2, 1868—d. Amityville, N.Y., Aug. 11, 1955), was a leading authority on spectroscopy, optics and supersonics. Graduating from Harvard university in 1891, he studied further at Johns Hopkins university, Baltimore, Md., at The University of Chicago, and at the University of Berlin, Ger. From 1901 until his retirement in 1938 he taught at Johns Hopkins and subsequently was research professor there. During World Wars I and II he was engaged in research for the U.S. armed forces—notably the Manhattan project that developed the atomic bomb.

- Woodward, William Jr.**, U.S. financier and sportsman (b. New York, N.Y., June 12, 1920—d. Oyster Bay, N.Y., Oct. 30, 1955).
- Wormser, Isaac Maurice**, U.S. educator and lawyer (b. New York, N.Y., May 26, 1887—d. New York, Oct. 22, 1955).
- Wyman, Phillips**, U.S. publisher (b. Evanston, Ill., May 24, 1895—d. Redding, Conn., May 27, 1955).

Ylla (Camilla Koffler), U.S. photographer (b. Vienna, Aus., 1911?—d. Bharatpur, India, March 30, 1955).

Young, Denton True (Cy), U.S. baseball player (b. Gilmore, O., March 29, 1867—d. Newcomerstown, O., Nov. 4, 1955), was one of the greatest pitchers of U.S. baseball history. Among all-time records set by him were the most games pitched, 906 between 1890 and 1911 in the major leagues; most games won, 511, and most consecutive innings pitched in four games without allowing a hit, 23. For 14 straight years (1891-1904) Young won 20 or more games annually, and in five seasons he won 30; his best record was in 1892 with 36 wins and 10 losses, for the Cleveland Nationals, his third season in the majors. Young also pitched for four other major league teams—St. Louis (National league), 1899-1900; Boston (American), 1901-08; Cleveland (American) 1909-11; and Boston (National), the rest of 1911. His career record of strikeouts (2,836) was second only to that of Walter Johnson (3,479). In 1937 Young became the third pitcher to be elected to the baseball hall of fame at Cooperstown, N.Y.

Young-Hunter, John, U.S. artist (b. Glasgow, Scot., Oct. 29, 1874—d. Taos, N.M., Aug. 9, 1955).

Occupational Diseases: see INDUSTRIAL HEALTH.

Oceanography. Plans for oceanographic participation in the International Geophysical year, 1957-58, were discussed during a meeting held in Brussels, Belg. It was reported that about 40 vessels of many nations would participate in the program. The program would aim primarily at a better understanding of the relationships between the movements of the ocean's deep water masses and long- or short-range climatic trends. Reports of extensive Russian explorations in the Central Arctic basin and the promise of a considerable number of ships during the International Geophysical Year made it evident that there was considerable oceanographic activity in the U.S.S.R.

Based on an analysis of available data, an extensive report showed that annual and semiannual fluctuations in world-wide sea level vary from an inch or so in the tropics to about half a foot in high latitudes. It was suggested that the extensive tidal observations to be made in 1957-58 would aid in the understanding of the relationship between sea level fluctuations and departures from the mean water circulation in the oceans, and that such observations may be a guide to the solution of many unsolved problems in dynamic oceanography.

Studies of the Gulf stream system showed the existence of a large-scale semipermanent anticyclonic eddy in the Gulf of Mexico, while an analysis of the oxygen-density relationships confirmed the hypothesis of the multiple current theory (F. C. Fuglister, 1951) and the existence of significant fluctuations in the Florida current, south of Cape Hatteras. The method also allows tracing the source of some water in the Gulf stream system, when this cannot be done on the basis of temperature and salinity observations. It was also shown that the multiple current hypothesis is applicable to the Japan current and that the "river in the sea" idea can often be misleading. A plea was made for a nomenclature of multiple currents in the major circulation systems, and it was suggested that the name "Gulf stream" should not be used in reference to a particular current observed at a particular time.

The rate at which the ocean water masses "turn over" had been studied during recent years by measurement of the decay of radiocarbon (C^{14}) and of the consumption of oxygen in deep water. Radically different orders of magnitude were obtained by the two methods. A knowledge of the rate of overturn becomes more and more desirable not only for the study of climatic trends but also to determine if the ocean, or parts of the ocean, can be used safely for the disposal of atomic wastes. Additional deep oxygen and temperature observations made during 1954 and 1955 and compared with those made 30 years before in the northwestern Atlantic confirmed the conclusion that little or no deep water was formed in high latitudes during recent years and that the bulk of Atlantic deep water was formed about 140 years ago. A re-evaluation of observations of

the German "Meteor" expedition also showed that Atlantic bottom currents are not insignificant.

While the entire ocean, therefore, may turn over in a comparatively short period of time, there are some local areas which have not been "stirred" for a long period and where the subsurface water is devoid of oxygen. The Black sea and some threshold fiords are notable examples of such regions. A new basin of stagnant water was discovered in the Caribbean sea; the Cariaco trench, just north of Venezuela, was found to be anaerobic from about 1,600 ft. below the sea surface to the bottom at about 4,500 ft.

Observations of tidal currents in the deep sea became possible by electropotential measurements through submarine cables to Bermuda, the Azores and Turks Island. The lack of correlation between some observations and the magnitude to be expected from tidal theory was thought to be due to the impossibility of including the complex geometry of the ocean basins in a theoretical treatise. Although this is true also for the theory on transient ocean currents, the latter was significantly advanced by workers in Japan, Germany and the United States.

Four great bands of extremely irregular topography, named fracture zones, were discovered in the northeast Pacific basin. Covering about 5% of the earth's surface, the fracture zones are roughly parallel at right angles to the west coast of North America and range in length from 1,400 to 3,300 mi. while averaging 60 mi. in width. The zones were named, respectively, the Mendocino, Murray, Clarion and Clipperton escarpments.

Seismic explorations made at sea during recent years showed an absence of continental-type rock structure beneath the North Atlantic ocean. A new method showed that the properties of the suboceanic crust can be deduced from an examination of earthquake surface waves. No evidence was found of a submerged land mass of continental type, character and dimensions, under the Pacific ocean and under the Arctic basin and adjacent seas. Other seismic studies revealed that New Zealand and other islands in the southwest Pacific are not continental in character but have built up with succeeding geologic time on an oceanic crust.

Important problems to be attacked were discussed at several conferences in the U.S. The possibility of the disposal of atomic wastes at sea, the influence of sea-salt nuclei on rainfall and the problem of east coast hurricanes demand early solutions. A prediction of sea levels associated with the path of hurricanes on the eastern coast of the U.S. was developed during the year. The most dangerous point for high-water levels is roughly 50 to 100 mi. to the right (as viewed from the ocean) of the hurricane centre when it crosses the coast line. (See also COAST AND GEODETIC SURVEY, U.S.; ELECTRONICS; INTERNATIONAL GEOPHYSICAL YEAR, 1957-58; MARINE BIOLOGY.)

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Office of Education, U.S.: see EDUCATION.

Ohio. A north central state of the United States, popularly known as the "Buckeye state," Ohio became a state of the union in 1803, but because there was some question about the formality of the action, the U.S. congress in 1953 jestingly went through the motions of formally admitting the state to the union. Area: 41,222 sq.mi., including 222 sq.mi. of water. Pop. (1950 census): 7,946,627, including 5,578,274 urban and 2,368,353 rural; 6,566,531 white and 1,380,096 nonwhite. As of July 1, 1955, the U.S. bureau of the census estimated the population to be 8,946,000. The principal cities and their 1950 population figures are: Cleveland, 914,808; Cincinnati, 503,998; Columbus, 375,901; Toledo, 303,616; Akron, 274,605; Dayton, 243,872; Youngstown, 163,330; and Canton, 116,912.

History.—Just after midnight on Oct. 1, 1955, Gov. Frank J. Lausche of Ohio formally opened the Ohio turnpike with ceremonies at its western terminus near the Indiana border. This \$326,000,000 twin highway stretches 241 mi. across the northern section of the state and links up with the Pennsylvania turnpike. A 22-mi. section of the Ohio turnpike, extending from the Pennsylvania turnpike to the Youngstown area, had been opened earlier. With completion of the Indiana turnpike, the chain of toll roads would extend from the vicinity of New York city to the vicinity of Chicago, Ill.

An impressive list of legislation was enacted by the 101st Ohio general assembly which was in session from January to July. At the top of the list of accomplishments was the passage of bills to lay the foundation for a mental health program which was expected to modernize the state's antiquated mental health procedures. One part of this set up a \$10,000,000-a-year training program for psychiatrists and institutional personnel at new centres affiliated with medical colleges in Cleveland, Columbus and Cincinnati. Another milestone was the establishment of a 23-member elected state school board and a new formula for distribution of school subsidy funds.

Other important enactments of the general assembly included: authorized formation of port authorities, looking forward to increased Great Lakes shipping trade with the opening of the St. Lawrence seaway; released \$250,000,000 for repair and construction of main highways; put sharp teeth in laws regulating sale of narcotics; created a new state board of nursing; tightened laws on sickness and accident insurance; approved sale of "multiple line" insurance; dropped the names of presidential electors from the Ohio ballot; raised salaries of various state officials, the governor's salary going to \$25,000 a year; ordered submitted to voters at the Nov. 1956 election a \$90,000,000 bond issue to provide bonus payments for Ohio veterans of the Korean war; permitted sale of bulk milk from refrigerated dispensers and the use of nonnutritive sweeteners in soft drinks; created six additional municipal courts; established new common pleas judgeships in nine counties; retained but modified the controversial axle-mile tax on commercial trucks.

In November Ohio voters went to the polls in record numbers for an "off-year" election. What excited their interest was a bill initiated by petition which would have increased Ohio unemployment compensation payments from \$33 a week for 26 weeks to a maximum of \$50 a week for 39 weeks. It also would have made other changes in the law so it would conform to the supplemental layoff pay plans negotiated by the C.I.O. United Automobile Workers' union with the Ford Motor Co. and General Motors Corp. This initiated proposal was defeated, receiving

only 37% of the votes cast.

A constitutional amendment to authorize a \$150,000,000 bond issue for mental health institutions, schools and state buildings to be financed by an additional penny-a-pack tax on cigarettes was approved by a margin of about 250,000 votes. Two other proposed constitutional amendments were defeated. They would have authorized higher salaries for judges and certain state and county officials. Voters also elected the 23 members of the new state board of education.

State officials in 1955, in addition to Governor Lausche, a Democrat who was serving his fifth term, included: John W. Brown (Rep.), lieutenant governor; Ted W. Brown (Rep.), secretary of state; Roger W. Tracy (Rep.), treasurer; C. William O'Neill (Rep.), attorney general; James A. Rhodes (Rep.), auditor.

Education.—In 1955 the state had 2,945 elementary public schools with total enrolment (excluding kindergarten) of 1,015,619 and a teaching staff of 32,043; 130 junior high schools with an enrolment of 88,725 and a teaching staff of 3,521; 1,004 senior high schools with an enrolment of 61,097 and a teaching staff of 18,325. There were 1,137 kindergarten classes in public schools with an enrolment of 103,563 and a teaching staff of 1,708. The number of private and parochial elementary schools in Ohio in 1955 was 635 with an estimated total enrolment of 226,333 and a teaching staff of 4,950; 153 senior high schools with an enrolment of 47,884 and a teaching staff of 2,389; 195 kindergarten classes with an estimated enrolment of 5,480 and an estimated teaching staff of 200. Expenditures in Ohio for education in 1955 approximated \$350,000,000. The Ohio superintendent of public instruction was Reina Merle Eymann.

Social Insurance and Assistance, Public Welfare and Related Programs.—The average number of recipients of general relief per month in the fiscal year ended June 30, 1955, was 37,661 and the total assistance extended was \$32,618,729. The average number per month receiving aid for the aged was 103,093, and they received \$71,166,196; aid to dependent children, 14,735 cases received a total of \$16,375,915; aid to the blind, 7,700 cases received a total of \$2,498,805; aid for the disabled, 7,760 cases received a total of \$4,584,913. Benefits paid by the Ohio bureau of unemployment compensation in the fiscal year ended June 30, 1955, totalled \$100,633,421 in compensation for 3,627,550 weeks of unemployment.

Ohio's correctional institutions had an average daily population of 6,109 for the fiscal year ended June 30, 1955. The industrial training schools had an average daily population of 1,332. Hospitals for the mentally ill had an average daily population of 28,367 and state schools for the retarded 7,521. Total cost of operating the correctional institutions for the fiscal year was \$7,861,197; industrial training schools, \$2,334,922; hospitals for the mentally ill, \$29,323,387; schools for the retarded, 6,691,018.

Communications.—Ohio had 82,162 mi. of highways in 1955 outside municipalities. Of this total, 16,002 mi. were classified as state, 28,753 mi. as county and 37,407 mi. as township. Total state expenditures on highways in the fiscal year ended June 30, 1955, were \$149,727,329 which included \$8,556,452 expended for the operation of the state highway patrol and the licence bureau.

In 1955 Ohio had 174 airports and landing fields certified for commercial operation and 238 uncertified fields. The state had 8,419 mi. of railroads and 2,793,751 telephones.

Banking and Finance.—There were 400 state and private banks in Ohio with deposits (June 30, 1955) of \$5,107,395,827 and resources of \$5,608,107,372. There were 233 active national banks in the state with deposits (June 30, 1955) of \$4,537,223,000 and resources of \$4,917,472,000.

State-chartered savings and loan institutions numbered 460 with total resources (June 30, 1955) of \$2,286,784,182. There were 135 federal savings and loan associations with total assets (Dec. 31, 1954) of \$1,335,290,043.

Manufacturing.—The total value added by manufacture in Ohio in 1953 was estimated at \$11,192,103,000 in the annual survey of manufactures made by the bureau of census of the U.S. department of commerce, as compared with \$10,033,105,000 in 1952. Average weekly earnings of production workers in Ohio manufacturing reached a high of \$86.70 in July, 1955. Ohio had more than 12,000 industrial establishments which employed more than 1,400,000 workers. (P. By.)

Table I.—Leading Agricultural Products of Ohio

Crop	Indicated 1955	1954	Average, 1944-53
corn, bu..	226,800,000	232,066,000	177,847,000
wheat, bu..	45,008,000	48,510,000	52,018,000
oats, bu..	70,980,000	56,684,000	44,466,000
barley, bu..	2,535,000	1,998,000	564,000
rye, bu..	735,000	936,000	390,000
hay, tons	4,078,000	3,961,000	3,670,000
soybeans, bu..	31,125,000	29,708,000	20,250,000
tobacco, lb.	16,000,000	28,840,000	25,315,000
sugar beets, tons	264,000	247,000	183,000
apple syrup, gal.	113,000	123,000	152,000
apples, bu..	3,112,000	3,000,000	3,114,000
peaches, bu..	920,000	1,000,000	929,000
pears, bu..	155,000	150,000	196,000
grapes, tons	17,300	17,500	13,270
potatoes, bu..	5,980,000	5,750,000	6,355,000

Agriculture.—In common with the general declining trend, cash receipts from farm marketing in Ohio in the first half of 1955 were \$476,020,000 as compared with \$495,645,000 for the same period of 1954. Livestock

Table II.—Principal Industries of Ohio

	All employees 1953	Salaries and wages 1953 (in 000s)	Value added by manufacture 1953 (in 000s)	Value added by manufacture 1952 (in 000s)
Food and kindred products..	71,603	\$ 264,066	\$ 556,369	\$564,632
Textile mill products..	14,087	51,168	82,363	*
Apparel and related products..	32,311	96,111	148,118	139,925
Lumber and products (except furniture)	10,533	32,245	50,181	60,428
Furniture and fixtures..	23,195	93,058	154,730	171,522
Paper and allied products..	34,402	150,761	268,809	247,146
Printing and publishing industries..	58,673	257,065	457,429	407,122
Chemicals and allied products..	42,234	192,041	522,043	500,515
Petroleum and coal products..	12,990	65,299	186,589	178,283
Rubber products..	79,900	354,037	570,117	511,437
Leather and leather products..	14,308	44,236	68,698	54,821
Stone, clay and glass products..	64,730	257,399	460,204	434,011
Primary metal industries..	203,235	972,766	1,804,111	1,439,996
Fabricated metal products..	133,622	586,527	1,026,995	866,014
Machinery (except electrical)..	238,788	1,163,465	2,020,137	1,960,118
Electrical machinery..	99,913	418,436	775,144	695,542
Transportation equipment..	174,378	857,864	1,534,771	1,271,128
Miscellaneous manufactures..	65,018	271,925	445,571	434,279
Administrative and auxiliary..	36,124	186,704	...	...

*Withheld because the estimate did not meet publication standards, either on the basis of the associated standard error of estimate or on the basis of a consistency review.

Source: U.S. Department of Commerce, Annual Survey of Manufactures, 1953.

and products contributed \$326,444,000 and crops \$149,756,000, as compared with \$359,248,000 and \$136,397,000, respectively, January through June 1954. Numbers of livestock on Ohio farms at the beginning of 1955, as compared with 1954, and the rank from top among the states, were as follows: all cattle, 2,438,000 (13th) (2,488,000); milk cows, 1,018,000 (8th) (1,050,000); sheep 1,359,000 (7th) (1,325,000); hogs 2,812,000 (2,511,000); pigs saved in 1954, 5,421,000 (6th); horses 78,000 (82,000); chickens, 19,262,000 (18,748,000); turkeys, 192,000 (148,000).

Mineral Production.—Table III shows the tonnage and value of those mineral commodities produced in Ohio in 1952 and 1953 (preliminary)

Table III.—Mineral Production of Ohio

Mineral	(Short tons, except as noted)		1953	
	Quantity	Value	Quantity	Value
Cement (bbl.)..	11,378,000	\$28,489,000	12,532,000	\$32,957,000
Clays..	5,494,000	13,644,000	5,635,000	9,328,000
Coal..	36,208,000	138,091,000	34,737,000	131,475,000
Coke..	9,639,000	131,405,000	11,718,000	163,191,000
Ferrous alloys..	441,000	65,864,000	425,000	82,179,000
Iron, pig..	12,266,000	584,460,000	15,025,000	742,882,000
Lime..	2,205,000	28,393,000	2,946,000	35,310,000
Natural gas (thousand cu.ft.)..	30,993,000	6,725,000	37,542,000	8,334,000
Natural gasoline (gal.)..	2,000,000	114,000	?	?
Peat..	25,000	291,000	28,000	260,000
Petroleum (bbl.)..	3,350,000	10,020,000	3,610,000	9,710,000
Salt..	2,827,000	5,992,000	3,040,000	7,485,000
Sand and gravel..	20,751,000	23,069,000	24,032,000	27,076,000
Stone..	24,693,000	36,197,000	25,785,000	39,643,000
Other minerals..	...	1,664,000	—	1,265,000
Total..	...	\$292,689,000	...	\$302,843,000

*Values for processed materials are not included in the totals.

†Value included with other minerals.

whose value exceeded \$100,000. In 1953 Ohio was first among the states in the production of clay and lime, second in stone, third in sand and gravel, fourth in salt and fifth in coal. The state ranked 12th in the value of its mineral output, with 2.11% of the U.S. total.

Oil: see PETROLEUM.

Oils and Fats, Vegetable and Animal: see VEGETABLE OILS AND ANIMAL FATS.

Oklahoma. A west south central state of the United States, Oklahoma was admitted as the 46th state on Nov. 16, 1907. The name "Oklahoma" is from the Choctaw Indian words meaning "red people" and was first applied to the Indian territory in 1866. The popular name "Sooner state" was from the term "sooner" used in reference to a person who entered and staked a claim sooner than the law stipulated when the first public lands in the Indian territory were opened to white settlement, April 22, 1889. Area: 69,919 sq.mi., including 900 sq.mi. of water surface (artificial lakes and rivers). Pop.: (1950 census) 2,233,351; (July 1, 1955, est.) 2,136,000. The two largest cities (1950 census) are Oklahoma City, the capital, 243,504, (1954 est.) 353,000; and Tulsa, 182,740 (1954 est.) 212,753. Other cities are (1950 pop.) Muskogee, 37,289; Enid, 36,017; Lawton, 34,757; Norman, 27,006; Shawnee, 22,948; Stillwater, 20,238; Ponca City, 20,180; Bartlesville, 19,228; Okmulgee, 18,317; Ardmore, 17,890; McAlester, 17,878; Ada, 15,995; Chickasha, 15,842.

History.—The 25th state legislature meeting in 1955 estab-

lished a new state department of commerce and industry to expand the program of balancing Oklahoma's agricultural economy with a variety of industries which had been steadily developing and now included recently established plants for the manufacture of jet bombers, petrochemical products, plate glass and textiles. The 25th state legislature also passed two important acts for eventually solving the water problem in the state: one act allows cities and towns to pool their resources and enter into long-range contracts to build and operate water facilities; the other established a state water study commission to survey water supplies and needs.

The state regents of higher education voted to abolish the segregation of Negroes in the University of Oklahoma, Norman; Oklahoma Agricultural and Mechanical college, Stillwater; and 15 other state educational institutions, effective June 5, 1955. The state department of education reported in September that 258 public schools were integrated with mixed classes of Negro and white students.

The chief state officers during 1955, all Democrats, elected on Nov. 2, 1954, were Raymond Gary, governor; Cowboy Pink Williams, lieutenant governor; Andy Anderson, secretary of state; A. S. J. Shaw, state auditor; Mac Q. Williamson, attorney general; John D. Conner, state treasurer; Oliver Hodge, superintendent of public instruction.

Education.—The total enrolment in Oklahoma public schools (est. Oct. 1955 by department of education) for the term 1954-55 was 529,880 (elementary and high schools) with 20,075 teaching personnel. The total cost of maintaining the elementary and high schools in the state was tentatively given as \$100,327,543 for current expenses. State institutions of higher learning included the University of Oklahoma and the Oklahoma Agricultural and Mechanical college, both graduate schools, and Oklahoma College for Women (Chickasha), Panhandle Agricultural and Mechanical college (Goodwell), Langston university (Negro, at Langston) and six colleges for teacher training (Ada, Alva, Durant, Edmond, Tahlequah, Weatherford), all state-owned senior colleges. There were 16 two-year junior colleges, of which 7 were state-owned (including the Oklahoma Military academy, Claremore), 3 were independent with church affiliations and 6 were municipal. There were also six independent senior colleges with church affiliations.

Social Insurance and Assistance, Public Welfare and Related Programs.—On Jan. 1, 1955, the Oklahoma department of public welfare reported 95,455 old-age assistance cases receiving an average of \$61.57 per case (a total of \$5,877,414); 15,798 dependent children cases (representing 54,882 persons), each case receiving an average of \$77.15 (a total of \$1,218,768); 2,037 blind cases receiving an average of \$73.65 (a total of \$150,350); 5,934 disabled cases, each case receiving an average of \$58.54 (a total of \$347,402). On Oct. 1, 1955, the state department of public health reported 48 counties of the 77 counties in Oklahoma with full-time health departments and 41 counties under full-time medical service, these programs rendering service to 85% of the state's population. These services now included the Indian population in Oklahoma, because of the change of this health program from the U.S. bureau of Indian affairs to the state department of health in 1955. State-supported institutions included two tuberculosis sanatoria, one general hospital, four mental hospitals, two schools for mental defectives, two schools for deaf and blind, two training schools, one reformatory and one penitentiary.

Communications.—The summary of disbursements by the state highway commission for construction and maintenance was \$24,980,153.77 in the period Jan. 1, 1955, to Sept. 1, 1955. The highway department was responsible for a highway system of 10,433 mi. in the state as of Jan. 1, 1955. The total public open road mileage in Oklahoma was approximately 93,147. Railroad and electric mileage approximated 6,000, not including sidings, representing a network of 16 railway systems extending to 76 counties in the state. There were 15 cities served by five major air lines in Oklahoma.

Banking and Finance.—The state budget office reported expenditures for the state at \$310,004,985.74 (federal and state expenditures) for the period July 1, 1954, to June 30, 1955. The state debt was \$29,454,000, bonded. For the fiscal year 1954-55 state receipts were \$278,796,033.02. The 25th state legislature appropriated \$230,902,174.98 for the biennium July 1, 1955, to June 30, 1957.

The Oklahoma bank commissioner reported 197 national banks in the

Table I.—Principal Crops of Oklahoma

Crop	Indicated 1955	1954	Average, 1944-53
Wheat, bu.	27,928,000	70,770,000	79,304,000
Corn, bu.	7,480,000	4,012,000	20,287,000
Oats, bu.	16,415,000	19,550,000	15,781,000
Grain sorghums, bu.	11,713,000	4,797,000	9,736,000
Soybeans for beans, bu.	345,000	99,000	330,000
All hay, tons	1,890,000	1,560,000	1,761,000
Peanuts, lb.	97,875,000	38,540,000	110,572,000
Pecans, lb.	29,000,000	14,500,000	19,160,000
Broomcorn, tons	16,900	10,400	12,830
Cotton, bales	400,000	293,000	390,000
Potatoes, bu.	276,000	264,000	860,000
Sweet potatoes, bu.	315,000	189,000	396,000

Source: U.S. Department of Agriculture.

Table II.—Principal Industries of Oklahoma

	All employees 1953	Salaries and wages 1953 (in 000s)	Value added by manufacture 1953 (in 000s)	Value added by manufacture 1952 (in 000s)
Food and kindred products	12,233	\$38,861	\$91,285	\$74,07
Printing and publishing industries.	*	*	*	40,43
Petroleum and coal products	*	*	*	82,22
Stone, clay and glass products	6,900	23,663	48,873	43,33
Primary metal industries	*	*	*	31,59
Fabricated metal products	6,011	23,800	41,744	*
Machinery (except electrical)	8,480	36,192	66,071	65,90
Transportation equipment	12,607	53,771	73,180	55,85
Administrative and auxiliary	8,801	46,072	...	...

*Withheld because the estimate did not meet publication standards, either on the basis of the associated standard error of estimate or on the basis of a consistency review.

Source: U.S. Department of Commerce, Annual Survey of Manufactures, 1953.

state with a total deposit of \$1,738,318,000 on June 30, 1955, and 18 state banks with a total deposit of \$376,565,709. The 29 state savings and loan associations in Oklahoma reported total resources of \$103,554,511 as of June 30, 1955.

Agriculture.—The 1955 wheat crop in Oklahoma was the smallest since 1916. Estimated production of corn in 1955 was only a little more than one-third average production during the ten-year period 1944-53. Rains in the eastern, central and northwestern sections late in August improved ranges and the water supply for livestock, and planting of fall crops progressed. Very heavy rains over the state the first part of October broke the drought that had continued for several seasons and improved the outlook for the next year's crops.

Manufacturing.—The Oklahoma Employment Security commission reported that the monthly average of nonfarm employment in the state for the first six months of 1955 amounted to 538,233, and in the same period manufacturing employment averaged 87,083. These figures including both government and small firm employment. Average covered employment in the state for the calendar year 1954 was 314,792. Wages paid to all covered workers during the same year came to \$1,173,113,554. Manufacturing employees covered by the Oklahoma Employment Security act averaged 78,129 and drew total wages of \$314,291,441 in 1954. (M. H. W.)

Mineral Production.—Table III shows the tonnage and value of those mineral commodities produced in Oklahoma in 1952 and 1953 (preliminary) whose value exceeded \$100,000. In 1953 Oklahoma was third among the states in output of natural gas and fourth in petroleum, and ranked sixth in the value of its mineral output, with 4.72% of the U.S. total.

Table III.—Mineral Production of Oklahoma

(In short tons except as noted)

Mineral	Quantity 1952	Value 1952	Quantity 1953	Value 1953
Clays	520,000	\$ 577,000	578,000	\$ 637,000
Coal	2,193,000	12,688,000	2,168,000	13,227,000
Lead	15,000	4,874,000	9,000	2,438,000
Natural gas (000 cu. ft.)	554,033,000	29,918,000	599,955,000	41,397,000
Natural gasoline (000 gal.)	405,720	29,459,000	433,650	28,066,000
Petroleum (bbl.)	190,435,000	487,510,000	202,570,000	546,940,000
Petroleum gases (000 gal.)	376,026	14,090,000	414,036	14,886,000
Sand and gravel	3,770,000	2,912,000	4,701,000	3,970,000
Stone	9,636,000	8,974,000	8,404,000	7,467,000
Zinc	55,000	18,232,000	33,000	7,685,000
Other minerals . . . . .	...	12,117,000	...	11,447,000
Total . . . . .	...	\$621,351,000	...	\$678,160,000

Old-Age Insurance: see SOCIAL SECURITY.

Old-Age Pensions: see SOCIAL SECURITY. See also under various states.

Olives: see FRUIT.

Olympic Games. Australia, host to the XVI Olympiad, will be held at Melbourne, Nov. 22-Dec. 8, 1956, added extra manpower to the task of accelerating its vast building program for the summer games. All the main construction projects, the over-all cost of which would run into millions, were well under way as 1955 neared a close. The Olympic village, to house 6,000 athletes, a modern triple-deck grandstand for the main stadium on the Melbourne Cricket Ground, and a new boxing stadium were among the many big jobs.

Communist China accepted an invitation to compete in Australia, while East and West Germany agreed for the first time to send one team to each of the summer and winter competitions. Cortina d'Ampezzo, It., had completed plans to play host to the winter games.

The International Olympic committee, meeting in Paris, France, in June 1955 selected Rome, It., as the site for the 1960 summer games while the winter Olympics were awarded to Squaw Valley, Calif. (T. V. H.)

Oman and Muscat (Masqat): see ARABIA.

Ontario. Canada's second largest province, Ontario, was an original member of the confederation in 1867. Area, 412,582 sq.mi. Pop.: (1951 census) 4,597,542, (official est., 1955) 5,183,000. Capital, Toronto (*q.v.*) (1951) 675,754. (official est., 1955) 682,415. Metropolitan Toronto, a complex of 13 adjoining municipalities for civic administration purposes, had an estimated pop. of 1,254,001. Other large cities (1951): London 95,343, Windsor 120,049, Ottawa (*q.v.*) 202,045, Hamilton 208,321.

History.—No major political or legislative changes occurred in the province in 1955. The Conservative government led by Premier Leslie Frost was re-elected in a general election on June 9. The previous session was devoted to strengthening and extending existing legislation directed toward the further expansion of primary and secondary industry. A prime development was the formal association of the Ontario Hydro-Electric Power commission with the dominion's Atomic Energy commission in a project to develop nuclear energy for domestic and industrial use. In transportation the government undertook the construction of new access roads to lumbering and mining areas; gave to municipalities fresh assistance in the construction and maintenance of feeder roads connecting farm and decentralized industry with trunk highways. Recovery from the 1954 business recession was more rapid in Ontario than elsewhere, and capital expansion under private and government auspices was expected to reach a new peak. Manufacturing, employing one-third of the province's labour force, equalled the other nine provinces combined in investment, employment, payrolls and production. Entering the last quarter of 1955, Ontario had a labour shortage and a shortage of steel and cement for construction under way and contemplated. Work began during the year under the Hydro-Electric commission on construction of Ontario's share in the St. Lawrence river seaway and power project.

Education.—An increase of 66,000 in public- and secondary-school enrolment over 1954, to a total just short of 1,000,000, required legislation enabling the Ontario Municipal Improvement corporation to lend money to municipalities to provide accommodation and meet maintenance costs where debentures could not be sold at a reasonable cost. Direct grants from the treasury also were increased. A new normal school was opened in Toronto at the beginning of the academic year for training primary-school teachers. It was immediately overcrowded. There was a continuing teacher shortage. In fiscal 1955-56 ordinary expenditure for education was set at \$91,000,000, with \$71,000,000 to be added as capital grants to local school boards.

Public Health and Welfare.—In 1955 total health department costs were \$57,700,000, of which \$21,800,000 was capital grants to public hospitals. Welfare services cost \$27,800,000, up from 1954 by \$1,800,000. The province added \$250,000 to a dominion grant of \$125,000 to vaccinate grades 1 and 2 in elementary schools against polio.

Transportation and Communication.—Total 1955 expenditure on provincial highways for the year was \$175,600,000, plus \$45,000,000 in capital grants to municipalities. The outlay in 1954 was \$133,300,000. There were 1,500,000 motor vehicles licensed, using 6,200 mi. of provincial highways and 78,000 mi. of municipal roads. No current statistics of telephone, radio and TV installations were available in 1955 because of rapid expansion. The current backlog for new telephone connections would not be worked off until 1956.

Banking and Finance.—On March 10, 1955, the government reported a surplus on ordinary account of \$704,000, after appropriating from revenue \$17,500,000 for advance sinking funds and an additional \$38,500,000 for the highway reserve fund, standing at \$388,200,000. For fiscal 1955-56 a surplus of \$865,000 was estimated (after special sinking fund appropriations) from revenues totalling \$368,532,000. Net capital payments were estimated at \$176,254,000. Net capital debt (1955) \$1,053,055,041; (1954) \$1,035,488,084. The Bank of Toronto and the Dominion bank merged during the year. Chartered bank branches approximated 1,500. Credit unions in Ontario in 1955 had 350,000 members, up from 197,284 in 1952. Latest deposit total (1952) \$12,243,063. Province of Ontario Savings office, formed 1922, in latest year of record, 1953, had 100,000 depositors in 21 branches, with deposits totalling \$62,689,000.

Agriculture.—The trend of farm cash income in Ontario moved up, against that of the nation in 1954, totalling at Jan. 1, 1955, \$741,000,000, a gain of \$49,000,000 over 1953. There were 390,617 rural customers for hydroelectric power. In 1955 the government set up the Ontario Development corporation, with a revolving fund of \$250,000 to finance local telephone systems in rural areas—all linked to service with the Bell Telephone Company of Canada.

Manufacturing.—During 1954 Ontario factories had the second-best output on record, down from the 1953 peak by 6%, at \$8,326,000,000. Investment in new plant and equipment declined about 19% from 1953 to an estimated \$403,000,000. Employment fell by 4.5% from the 1953 peak of 634,000. There were 91 new industries established in 1954; (1953) 136. Fifty-seven of the new industries were of U.S. origin, 6 were

British. Electrical and electronic products, miscellaneous metal products, tools and instruments, mechanical equipment, chemicals and allied products, automotive and aeronautical industries were favoured in the above order for new capital investment.

Mining.—Total mineral production for 1954 in Ontario topped \$500,000,000 for the first time in history. Final compilation of returns released by the department of mines showed a total of \$503,757,221 for the year. Of this total, \$395,185,129 was made up of production by metal mines. Nonmetallic minerals accounted for \$13,077,053. Natural gas and petroleum were produced to a value of \$13,148,609 and structural materials were worth \$82,346,430. Total production in 1953, the previous high record, was \$465,877,093. (C. A. Sn.)

Opera: see MUSIC.

Ophthalmology: see EYE, DISEASES OF THE.

Oranges: see FRUIT.

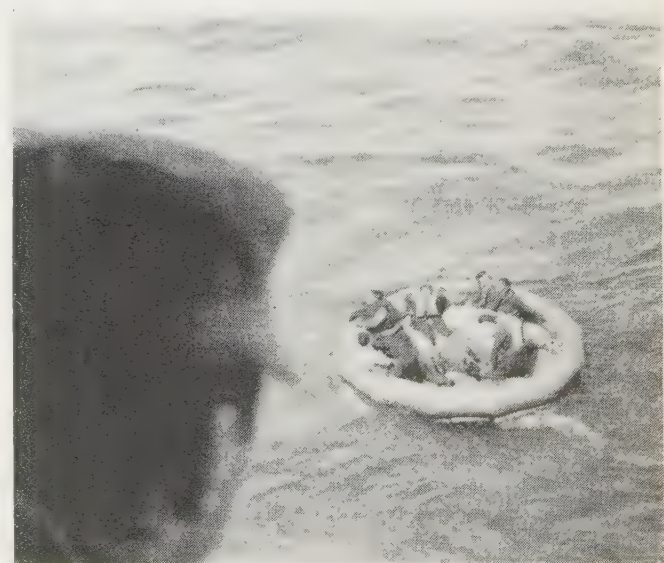
Orchestras: see MUSIC.

Oregon. A state of the United States, located in the Pacific northwest. Oregon was admitted Feb. 14, 1859, as the 33rd state. Area: 96,981 sq.mi. including 666 sq.mi. of water. Pop. (1950 census) 1,521,341; (July 1, 1955, est.) 1,664,000. Capital: Salem (43,140 in 1950); chief city: Portland (373,628).

History.—Oregon is normally a Republican state, but Oregon voters in 1954 elected United States senator Richard L. Neuberger, the first Democrat elected to this office since 1914. In Nov. 1954 voters repealed the milk marketing price control act; approved a constitutional amendment raising from 8% to 10% the requirement of signatures on initiative petitions for constitutional amendments; approved measures to establish a new state mental hospital and to permit subdivision of counties for election of members of the legislative assembly.

Important measures passed by the 1955 legislative assembly included: equal pay for women; increase in unemployment compensation to \$35 per week; compulsory inspection of slaughtering plants; establishment of Portland State college as a unit in the state system of higher education. A substantial increase in the personal income tax was voted. A cigarette tax was approved by the legislature, but its collection was suspended because of a referendum on the measure.

Elective state officials (administrative) in 1955 were: governor, Paul L. Patterson; secretary of state, Earl T. Newbry; treasurer, Sig Unander; attorney general, Robert Y. Thornton; labour commissioner, Norman O. Nilsen; superintendent of public instruction, Rex Putnam.



SURVIVORS of a commercial air liner crash off the coast of Oregon, March 26, 1955, about to be picked up on a U.S. navy transport. Nineteen of 23 persons were saved from the three life rafts which were launched after the plane crashed following the loss of an engine shortly after leaving Portland

Education.—Enrolment in public schools for the school year 1953-54 was 312,564, including 75,819 high school students. The number of teachers employed was 13,475, and the average professional salary was \$4,134. Total operating expenses of public schools for the 1953-54 year were \$90,291,372. Average per capita cost was \$334.13. Total capital outlays for the year were \$33,883,883. Total value of school plant was \$272,928,225.

Total enrolment in the eight campus units of the state system of higher education for the year 1954-55 was 17,130. Enrolment in extension courses was 14,333. Total operating expenses of the state system for the year were \$20,772,310. Capital outlay for buildings for the biennium ending June 30, 1955, was \$3,840,000 from state building appropriations.

Social Insurance and Assistance, Public Welfare and Related Programs.—Expenditures for the year 1954-55 under the public welfare program, including administration, were \$32,769,311. The program embraces general assistance, old-age assistance and aid to the blind, to dependent children and to permanently and totally disabled persons.

Payments for unemployment compensation for the fiscal year 1954-55 were \$20,406,000. This amount was the third highest since the first benefits were paid in 1938. The highest number of weekly payments during the 1954-55 fiscal year was 30,567. The number of unemployed on June 30, 1955, was 27,700, according to the report of the state unemployment compensation commission. This was 11,200 fewer than on the corresponding date in the previous year.

The number of inmates in 11 state health, correctional and eleemosynary institutions on June 30, 1955, was 9,191. Expenditures for operating these institutions for the fiscal year 1954-55 was \$12,187,097. Expenditures of the state commission for the blind were \$280,968 for the year 1954-55.

Communications.—Steam railway mileage in Oregon as of Dec. 31, 1954, was 3,542 mi. of main line, operated by 23 common carriers. One electric railway company operated 37 mi. of main line.

Total mileage of the state highway system on June 30, 1955, was 7,405, of which 7,015 mi. was surfaced. Total mileage of county roads was 30,660, of which 19,560 mi. was surfaced. The total number of miles of roads in national and state forests, parks and reservations and in non-highway city streets was 21,235, of which 9,475 mi. was surfaced. Total expenditures of the state highway department for the fiscal year 1954-55 were \$65,216,890.

The total number of passenger automobiles registered in the state during 1954 was 688,911; trucks 84,729; buses 1,524.

Number of telephones in service as of Dec. 31, 1954, was 533,404.

Banking and Finance.—The state bonded debt as of July 1, 1955, was: gross \$177,657,100, net \$118,557,028. The gross debt of municipal subdivisions as of July 1, 1954, was \$223,241,336, the net debt \$209,532,026.

State treasury receipts from all sources in the fiscal year ending June 30, 1955, were \$389,996,177. Total assessed valuation of property as of Jan. 1, 1955, was \$2,019,583,180. Bank deposits on June 30, 1955, totalled \$1,856,570,777. On that date there were 12 national banks and 32 state banks in operation in the state. Branch banking is permitted.

The number of registered corporations in Oregon as of June 30, 1955, was 15,398, of which 7,913 were business corporations.

Agriculture.—Cash receipts from farming in Oregon for 1954 were: all commodities \$383,901,000, divided into crops, \$217,277,000, and livestock and livestock products, \$166,624,000. Government payments to farmers amounted to \$5,108,000. Livestock on farms as of Jan. 1, 1955: all cattle 1,458,000 head; sheep and lambs 746,000; hogs 138,000; horses 48,000; chickens 3,626,000; turkeys 278,000.

Manufacturing and Industry.—Oregon is the principal lumber manufacturing state in the nation. The cut of logs in 1954 was 8,860,753,000 bd.ft. Total lumber manufacture in 1954 was 7,750,000,000 bd.ft. Plywood manufacture: 2,080,614,000 sq.ft., $\frac{3}{8}$ -in. basis.

Table I.—Principal Crops of Oregon

Crop	Indicated 1955	1954	Average 1944-53
All wheat, bu.	21,751,000	25,023,000	26,559,000
Corn, bu.	1,750,000	1,400,000	1,111,000
Oats, bu.	11,180,000	12,515,000	9,147,000
Barley, bu.	18,104,000	19,836,000	9,909,000
Potatoes, bu.	13,570,000	13,200,000	11,724,000
Hay, tons	1,603,000	1,667,000	1,784,000
Apples, bu.	3,175,000	2,710,000	2,734,000
Bartlett pears, tons	67,500	37,500	53,700
Other pears, bu.	3,700,000	2,565,000	3,332,000
All prunes, tons	60,700	42,500	62,010
All cherries, tons	34,800	28,800	23,540
Peaches, tons	13,600	7,200	13,700
Hops, lb.	4,290,000	6,897,000	16,260,000
Filberts, tons	6,300	8,000	6,750
Walnuts, tons	7,000	8,400	7,320

Source: U.S. Department of Agriculture

Table II.—Principal Industries of Oregon

	All employees 1953	Salaries and wages 1953 (in 000s)	Value added by manu- facture 1953 (in 000s)	Value added by manu- facture 1952 (in 000s)
Food and kindred products	17,501	\$ 63,312	\$137,604	\$113,909
Textile and mill products	2,721	10,411	12,944	14,813
Lumber and products (except furniture).	70,772	307,919	532,730	627,819
Furniture and fixtures	2,665	9,390	13,733	14,381
Paper and allied products	6,089	26,554	67,160	*
Electrical machinery	1,366	4,570	11,173	5,371
Transportation equipment	*	*	*	12,082
Administrative and auxiliary	1,020	6,368	...	...

*Withheld because the estimate did not meet publication standards, either on the basis of the associated standard error of estimate or on the basis of a consistency review.

Source: U.S. Department of Commerce, *Annual Survey of Manufactures*, 1953.

Tourist travel is rated the state's third most important industry. Tourist expenditures in Oregon in 1955 were estimated at \$127,000,000. (C. A. Sp.)

Mineral Production.—Table III shows the tonnage and value of those mineral commodities produced in Oregon in 1952 and 1953 (preliminary) whose value exceeded \$100,000. In 1953 Oregon was third among the states in chromite and diatomite and fourth in mercury and pumice; and ranked 39th in the value of its mineral output, with 0.17% of the U.S. total.

Table III.—Mineral Production of Oregon

(Short tons, except as noted)

Mineral	Quantity 1952	Value 1952	Quantity 1953	Value 1953
Clays	277,000	\$ 570,000	292,000	\$ 296,000
Gold (oz.)	6,000	193,000	8,000	297,000
Pumice	60,000	202,000	73,000	174,000
Sand and gravel	12,219,000	8,556,000	8,763,000	8,630,000
Stone	6,251,000	8,893,000	4,939,000	6,302,000
Other minerals . . . . .	...	8,260,000	...	8,750,000
Total		\$26,674,000		\$24,449,000

Organization for European Economic Cooperation. see FOREIGN AID, U.S.; INTERNATIONAL TRADE.

Organization of American States.

The Organization of American States in 1955 continued to function pursuant to the terms of the charter signed at Bogotá, Colom., in 1948. It is a continuation of the system of inter-American relations which had its inception in 1890 when the first Pan American conference met in Washington, D.C., and established the Pan American Union. Through the organization the 21 American republics seek to achieve an order of peace and justice, promote their solidarity, strengthen their collaboration and defend their sovereignty, territorial integrity and independence. The organization functions through six organs, namely, the Inter-American conference, the meetings of consultation of ministers of foreign affairs, the council of the organization, the Pan American Union, the specialized conferences and the specialized organizations.

The outstanding event of the year was the situation that developed between Costa Rica and Nicaragua. On Jan. 8, 1955, the government of Costa Rica, in a note addressed to the council of the organization, invoked the Inter-American Treaty of Reciprocal Assistance signed at Rio de Janeiro, Braz., in 1947, alleging that its territory, sovereignty and independence were threatened by acts that had their origin in Nicaragua. On Jan. 11, the council convoked the meeting of consultation of ministers of foreign affairs and constituted itself the provisional organ of consultation in accordance with the terms of the Rio treaty. A committee of investigation, composed of the representatives of Mexico, the United States, Brazil, Ecuador and Paraguay was appointed to proceed to Costa Rica and Nicaragua to determine the facts and to submit a report.

On Jan. 16, the council took a further step when it requested the member governments to expedite arrangements for the purchase by Costa Rica of aircraft which it may have ordered from them. This action was taken in the light of reports from the investigating committee that the government of Costa Rica did not possess planes or arms necessary to defend itself against the attacks of foreign planes of the type that were then in the hands of the revolutionary forces, and following a statement by the U.S. representative on the council that, if the council should request it, the government of the U.S. would accede to the request of Costa Rica for the purchase of planes. The same day the government of the United States announced that it had sold four P-51s to the government of Costa Rica. This action was decisive in enabling the Costa Rican government to meet the threat directed against it. The decisions adopted by the council of the organization were taken on behalf of the government of Costa Rica; they were not directed against another government. The government of Nicaragua repeatedly declared it was respecting its international obligations in what

contended was an internal disturbance in Costa Rica. It urged the investigating committee to come to Nicaragua and manifested its willingness to co-operate with the committee in the establishment of a frontier control system.

The investigating committee presented its report to the council of the organization on Feb. 18. On Feb. 24 the council adopted a series of resolutions intended to give practical effect to the recommendations of the committee and designed to bring about a complete solution between the two countries. It also appointed a special committee to co-operate with the governments of Costa Rica and Nicaragua in the preparation of a bilateral agreement and the establishment of a commission of investigation and conciliation to deal with problems that might arise between the two countries. On Sept. 8, 1955, the negotiation between the two governments had reached a stage at which it was possible for the council to cancel the meeting of consultation of ministers of foreign affairs and to terminate its status as provisional organ of consultation.

At that same meeting of Sept. 8, the representative of Ecuador called the attention of the council to a situation that was developing on the frontier of his country with Peru, and on the same date the government of Ecuador requested a meeting of consultation of ministers of foreign affairs under the Rio de Janeiro treaty of reciprocal assistance. Before taking action on this request, the council decided to communicate with the four guarantor states of Brazil, Argentina, Chile and the United States, established in 1942 to assist Ecuador and Peru to implement the agreement fixing the boundary line between the two countries. As a result of the action of these four states, the representative of Ecuador on Sept. 26 informed the council that a meeting of the organ of consultation was no longer necessary.

The Inter-American Economic and Social council continued during 1955 to carry out a broad program of inter-American economic and social co-operation. From Nov. 22 to Dec. 2, 1954, a conference of ministers of finance or economy in the 14th extraordinary meeting of the Inter-American Economic and Social council was held in Rio de Janeiro. All the member states of the organization were represented and a series of resolutions were adopted dealing with matters of transportation; agricultural prices, markets and surpluses; economic co-operation; commercial policy; and the financing of economic development.

The Inter-American Economic and Social council also continued to sponsor a program of technical assistance with the co-operation of inter-American specialized organizations and the Pan American Union. The 1955 program consisted of a training centre in economic and financial statistics in Santiago, Chile, sponsored by the Pan American Union and the Inter-American Statistical institute; an inter-American housing centre located in Bogotá, and a centre for training rural normal school teachers in Venezuela, both sponsored by the Pan American Union; a centre in Brazil for the evaluation of natural resources organized by the Pan American Institute of Geography and History; workshops on the administration of children's services conducted by the American International Institute for the Protection of Childhood; and a comprehensive program of education in agricultural and rural life organized by the Inter-American Institute of Agricultural Sciences.

The Pan American Union, with headquarters in Washington, D.C., continued to function as the general secretariat and permanent central organ of the organization. Through its several technical and administrative divisions it served the other organs of the organization and during 1955 undertook studies and issued reports on economic, social, cultural and legal matters.

Three inter-American specialized conferences were held in 1955: the 10th Pan American Child congress at Panamá, Feb.

6-15; the 3rd Inter-American Statistical conference at Rio de Janeiro, June 9-22; and the 6th general assembly of the Pan American Institute of Geography and History at Mexico City, Mex., July 25-August 6. (See also ORGANIZATION OF CENTRAL AMERICAN STATES.) (W. MR.)

Organization of Central American States.

Known in Spanish as O.D.E.C.A. from the initials of its name, Organización de Estados Centroamericanos, this regional organization of Guatemala, Honduras, El Salvador, Nicaragua and Costa Rica represents one more attempt to restore the unity of the Central American countries. When these countries broke away from Spain in 1823, a confederated republic entitled Provincias Unidas de Centro América was proclaimed, but it ceased to be effective long before it was officially terminated in 1839. Since then there have been numerous attempts to revive the union, but they all failed to meet the hard test of reality.

O.D.E.C.A. was created by the charter of El Salvador in Oct. 1951, but political tensions, including the civil war in Guatemala, prevented it from progressing beyond the paper stage. After much delay, the first formal conference met from Aug. 18 to 24, 1955, in the 17th-century University of San Carlos Borromeo in the Guatemalan city of Antigua, which was once the capital of the colonial captaincy general of what is now called Central America. The meeting was opened by Pres. Carlos Castillo Armas of Guatemala, and the five republics were represented by their foreign ministers. Panamá had declined to join the group but was represented by observers. Since it was not clear whether the new organization was a regional organization within the UN or a regional organization within a regional organization (the Organization of American States), both the UN and O.A.S. were represented by observers only.

Internal rivalries within Central America had in the past presented an insuperable obstacle to Central American unity, and they almost wrecked the Antigua meeting. A "gentlemen's agreement" had been reached at a preliminary meeting in Tegucigalpa, the capital of Honduras, according to which a Costa Rican would be elected as secretary-general of the organization. However, Nicaragua blocked the candidacies of three Costa Rican candidates, and the Costa Rican foreign minister Mario Esquivel declined to be nominated. The meeting was saved when José Guillermo Trabanino, foreign minister of El Salvador, was elected by acclamation, this being interpreted as a victory for Nicaragua over Costa Rica. The election of Trabanino was only a temporary solution, since a final selection was to be made at a meeting to be held within six months.

The immediate proposals of O.D.E.C.A. were to co-ordinate higher education in order to avoid undesirable duplication on the university level; to organize a Council of Culture and Education as a specialized organization within the organization; to bring about a customs union, although it should be pointed out that the coffee-producing Central American countries have in general competitive economies, making trade between them somewhat illusory; and finally, to codify Central American law, with a view to unifying the legal systems. The Antigua assembly approved a budget of \$125,000 annually, of which \$85,000 would cover salaries. The salary of the secretary-general was to be \$12,000 a year, with \$6,000 for expenses. (R. HN.)

Osteopathy. Osteopathy is the practice of medicine and operative surgery in all their branches by osteopathic physicians. As an emergent from American medical practice of the latter 19th century, its doctors employ all medical, surgical, immunological, pharmacological, psychological and hygienic procedures that are of proven value. Disturbances of

the musculoskeletal system are considered fundamentally important in an approach to the problems of health and disease. Their treatment by osteopathic manipulative therapy is a distinctive characteristic of osteopathic care of the patient. To become an osteopathic physician, the student must have successfully completed four years of high school, three years of professional training in an accredited college and four years of professional education in an approved osteopathic college. A 12th educational year consists of an internship in an osteopathic approved teaching hospital.

There were in 1955 six approved colleges of osteopathy and surgery in the U.S. More than 12,000 osteopathic physicians were in practice, the majority of whom were members of the American Osteopathic association with headquarters at 212 East Ohio street, Chicago 11, Ill. Its president for 1955-56 was Hobert C. Moore, Bay City, Mich. The 60th annual convention was to be held in New York city in July 1956. (R. P. K.)

O. T. C. (Organization for Trade Cooperation): *see* **TARIFFS.**

Ottawa. The capital of Canada, located at the confluence of the Gatineau, Rideau and Ottawa rivers, in the province of Ontario, Ottawa covers 30,481.6 ac., more than one-tenth of which is waterways; pop. (1951) 202,045; (1955 est.) 211,419.

Mayor Charlotte Whitton continued in office during 1955, taking the oath of office on Jan. 4 in the first council meeting of the second century of the municipality. Her inaugural speech was entitled "Our Second Century." She emphasized that the population of the town of Bytown in 1854, when a petition was made to change it to the city of Ottawa, was about 7,760 but today was more than 200,000, with the latest assessment for taxes (1954) reaching \$329,270,858 taxable, \$180,945,735 being exempt property, the latter reported to be the highest of any city in Canada and one of the highest in North America. Dominion of Canada exempt property alone was assessed at \$109,000,000. "Our financial health is sound, our credit good," Mayor Whitton said. "The gross operating requirements of the city itself, the civic hospital, libraries and schools called for \$24,449,252 this year, of which provincial grants provided 13.2%, the Dominion grant 6%-7%, patients' fees in the civic hospital 5%-6%, all other miscellaneous revenue 13%-14%, the city surplus 7.3% and the tax levy of \$12,903,718 provided 52.8%, or better than \$1 out of every \$2 spent."

On June 23 during a discussion in the senate on legislation for increasing federal grants paid to municipalities in lieu of taxes on crown-owned property, Senators Norman Lambert, Ottawa, and Thomas Reid, New Westminster, suggested that Ottawa and neighbouring municipalities should be made into a federal district like Washington, D.C. This resulted in sharp debate and opposition from others. However, Prime Minister Stephen St. Laurent settled the issue for the time being by stating in the house of commons that there were no plans to make the Ottawa area into a federal district. Long an opponent of liquor license extensions, Mayor Whitton charged the Ontario Liquor Control board in June with throttling the city's protest against the licensing of further liquor outlets in Ottawa.

The Ottawa Transportation commission's operations in 1955 appeared likely to end in a deficit. With more than 49,000 motor vehicles owned in Ottawa in 1955, traffic problems were considered serious so, on the city's initiative, the Smith Traffic Study was undertaken, with merchants, the Ottawa Transportation commission and federal authorities co-operating. The report of this study suggested substantial action both in transport and parking. The 19-mile throughway, the Queensway,

was started in 1955 and scheduled for completion in 1959-60. This would combine the federal district commission's cross-town parkway with the trans-Canada route through Ottawa and Ottawa's own crosstown thoroughfare, with the cost of the whole project estimated at \$14,500,000 to \$15,000,000.

(M. L. S.)

Outer Mongolia: *see* **MONGOLIAN PEOPLE'S REPUBLIC.**

Pacific Islands, British. Under this heading are grouped the territories administered by the high commissioner for the western Pacific.

Area	Area (sq.mi.)	Population
British Solomon Islands protectorate*	11,500	100,297†
Gilbert and Ellice Islands colony†	369	35,824‡
Central and Southern Line islands	11,869	137,000‡
Totals		

*With the Santa Cruz, Lord Howe (Ontong Java), Reef and Duff groups and Cherry and Mitre islands. †With Phoenix and Northern Line islands and Ocean Island; Phoenix islands include Canton, an Anglo-U.S. condominium with international airport. ‡1954 est. §1947 census.

New Hebrides (*q.v.*), an Anglo-French condominium, is also administered by the western Pacific high commissioner.

Populations: Melanesians predominate in Solomons, Micronesians in Gilbert and Ellice Islands. Headquarters: Honiara, Guadalcanal, Solomon Islands (pop. about 2,000). High commissioners in 1955, Sir Robert Stanley and (from September) John Gutch; resident commissioner, Gilbert and Ellice Islands, M. L. Bernacchi.

History.—The high commissioner for the western Pacific, Sir Robert Stanley, retired in July 1955. Experts from the United Kingdom made recommendations, which were approved, for improvements in harbour facilities at Honiara. The Solomons government placed an order for a 108-ft. vessel to run a scheduled cargo and passenger service among the islands. The high commissioner laid the foundation stone of a new teacher-training and vocational centre at Honiara.

On Guadalcanal a promising strike of gold was found by the government geological department. Work began on a new central hospital at Tarawa, Gilberts. (J. J. Ty.)

Education.—*Solomon Islands* (schools, 1954): government primary 6, native council primary 3, higher primary 1 (92 pupils); Chinese 1, European 1; several mission schools. *Gilbert and Ellice Islands* (schools 1953): primary 255, pupils 8,084, secondary 1, pupils (1954) 60. *Fiji* (schools, 1954): primary 456, pupils 58,835, teachers 1,387; secondary 29, pupils 1,932, teachers 105; 1 teachers' training school, students 175; Central Medical school, students (1952) 192; Educational Research institute (established 1952). *Tonga* (schools, 1953): primary 133, pupils 11,311, teachers (1952) 384; secondary 10, pupils 2,314. Tonga high school (primary and secondary), pupils (1954) 102. Teachers' training college 1, students 55, teachers 9. *Pitcairn Island* (1953): 1 primary school, 1 teacher.

Finance and Trade.—Monetary unit: Australian pound (£A1.25=£1.00 sterling=U.S. \$2.80), used in *Solomon Islands* and *Gilbert and Ellice Islands*; *Fiji* and *Pitcairn Island*, Fijian pound (£F1.11=£1.00 sterling); New Zealand and U.K. currencies also circulate in Pitcairn; *Tonga*, Tongan pound (£T1=16s. sterling=U.S. \$2.24).

Territory	Revenue	Budgets		Foreign trade (1954)	
		Expenditure		Imports	Exports
Solomon Islands (1953 actual)	£576,840	£612,433	£1,203,368	£1,919,941	
Gilbert and Ellice Islands (1953 revised est.)	£378,481*	£357,347*	£311,532†	...	...
Fiji (1954 actual)	£F5,030,943	£F4,615,678	£10,480,000	£9,960,000	
Tonga (1952-53 actual)	£490,475	£442,975	£782,000	£1,080,000	
Pitcairn (1953 est.)	£F10,699	£F7,284	—	—	—

*Excluding grants-in-aid and Colonial Development and Welfare expenditure. †1952. ‡Value not available.

Main exports: *Solomon Islands*, copra, trochus shell; *Fiji*, sugar, copra; *Tonga*, copra, bananas.

Pacific Islands, French. Under this heading are grouped two overseas territories of the French union, and the Anglo-French condominium of the New Hebrides (*q.v.*). Areas and populations are:

Territory	Area (sq.mi.)	Population (1953 est.)
New Caledonia and dependencies	7,654	63,000
French Settlements in Oceania	1,545	63,000

Population. *New Caledonia* proper (6,533 sq.mi.) and the dependencies: Melanesian with Polynesian admixtures; Europeans 21,029, mainly French; 6,885 Javanese; 4,075 Tonkinese. Seat of commissioner-general: Nouméa, pop. (1951 est.) 20,000. Commissioner-general for the Pacific ocean in 1955, René Hoffherr.

The French Settlements in Oceania consist of the Society Islands (the largest of which is Tahiti), the Marquesas, Tuamotu and other smaller islands. Pop.: Polynesian, majority Christian; Europeans (1951) 2,271 (1,424 French); Chinese 6,593. Seat of governor: Papeete, on Tahiti, pop. (1946 est.) 12,428 (European population only). Governor in 1955, Jean Toby.

History.—The governor of New Caledonia visited the Loyalty and Wallis Islands during 1955. On May 9 a cemetery containing the graves of 300 New Zealand soldiers was opened at Bourail. The French government approved a 10,000,000-franc project for a dam on the Yaté river and for modernizing the Doniambo nickel works.

The French Settlements in Oceania passed through an economic crisis resulting from the fall in copra prices; a grant of aid from France was expected. Walter Grand, elected president of the territorial assembly, made peace between the local political parties. (See also FRENCH UNION.) (Hu. De.)

Foreign Trade.—(1954) Monetary unit: franc C.F.P. (Colonies Françaises du Pacifique) which equals 5.50 metropolitan francs. U.S. \$1=350 metropolitan francs. *New Caledonia*: imports 1,435,000,000 fr. C.F.P., including 537,000,000 fr. C.F.P. from France and 456,000,000 fr. C.F.P. from Australia; exports 1,576,000,000 fr. C.F.P., including 1,294,000,000 fr. C.F.P. to France. *Oceania*: imports 709,000,000 fr. C.F.P., including 232,000,000 fr. C.F.P. from France, 207,000,000 fr. C.F.P. from the United States; exports 664,000,000 fr. C.F.P., including 389,000,000 fr. C.F.P. to France. Production (metric tons, 1953): *New Caledonia*, chrome ore (metal content) 60,000, nickel (metal content) 25,000, manganese (metal content) 2,600; *Oceania* (exports), phosphate rock 245,000, copra (1954) 22,500.

Pacific Islands, U.S.: see GUAM; HAWAII; SAMOA, AMERICAN.

Pacific Islands under Trusteeship: see MARSHALL, CAROLINE AND MARIANA ISLANDS; TRUST TERRITORIES.

Paints and Varnishes. The value of paint production in the United States in 1955 was estimated at \$1,500,000,000 as compared with the corrected 1954 total of \$1,361,135,000. Sales of paint for the home advanced 6% while paint for industrial use advanced 17% over 1954.

With the unabated increase in general industrial activity, temporary shortages arose in titanium pigments, phthalic anhydride, chlorinated rubber and vinyl resins. The worst freezing weather in the history of the Gulf states destroyed at least 90% of the 1955 tung oil crop. Broadening uses of selenium in atomic energy and other fields created shortages of selenium for its small but important use in cadmium red pigments. To meet this shortage, there was offered "mercadmium red" pigment which combines the sulphides of cadmium and mercury, with claims of better qualities at a lower price.

Alkyds continued to increase as the large-volume quality vehicle for paints. Their versatility was increased through a wider choice of constituent acids and alcohols. New commercial or semicommercial production of isophthalic, isosebacic, itaconic and azelaic acids formed useful supplements to the long-established use of polyfunctional phthalic, fumaric, maleic, adipic and sebacic acids or anhydrides.

A zirconium soap was offered commercially as a supplement to the long-established paint drier metals. In combination with other drier metals it produced faster drying with less yellowing of white and pale tints of enamels.

Competition continued to rise between water-thinned and solvent type paints for exterior use. Painting difficulties arising from the alkalinity of concrete blocks, stucco and other masonry

surfaces, especially in Florida and California, were met with some success by vinyl type water-thinned paints based on polyacrylate esters in some formulations and a polyvinyl acetate in others. These two paint vehicles competed with drying oils and either alkyd, chlorinated rubber or hydrocarbon resins in exterior paints and with these vehicles plus the important butadiene-styrene latex vehicles in interior paints. One authority estimated that these two vinyl types constituted 15% of the total 178,000,000 gal. of exterior and interior trade sales paints sold in 1955. Acrylic modified oils and alkyds were offered as durable alternates to the very fast drying styrene copolymer oils and alkyds which had become established in industrial enamels in the years following World War II.

Several makers offered styrene-polyester paints, to be dried or cured by peroxides at the time of use for such diverse uses as pleasure boat repair, industrial maintenance painting and magnet wire enamelling.

A review of nuclear energy applications in paint listed studies of sedimentation rate, stripping rate of paint removers and wear resistance, among others. It recognized the utilization of nuclear energy in both the building up and degradation of polymers useful in paints. (Jo. C. W.)

Pakistan. A member of the Commonwealth of Nations in the Indian subcontinent. Pakistan consists of a federation of two provinces. East Pakistan, with 55% of the population, is in the northeastern part of the subcontinent, 850 mi. by air from West Pakistan in the northwest. Karachi (pop., 1951, 1,126,417) the federal capital, is geographically in West Pakistan.

Province	Capital (pop. 1951 census)	Area (sq.mi.)	Population (1951 census)
West Pakistan	Lahore (849,476)	310,236*	33,779,165*
East Pakistan	Dacca (276,033)	54,501	42,063,000
Total		364,737	75,842,165

*Including small areas in Karachi not part of West Pakistan province but reserved to the federal government. Excluding Kashmir, under dispute between India and Pakistan.

Language: Urdu (official, and widely understood), Punjabi, Sindhi, Pushtu, Baluchi and Gujarati in West Pakistan; Bengali (official) in East Pakistan; English used for many official purposes and higher education. Religion: Moslem 85.7%; Hindu 12.8%; Christian 0.7%, i.e., about 539,000; Sikh, Parsee and other minorities. Chief towns other than federal and provincial capitals (pop., 1951, including cantonments): Hyderabad 241,801; Rawalpindi 237,219; Multan 190,122; Lyallpur 179,144; Sialkot 167,543; Peshawar 151,776; Chittagong 145,777; Gujranwala 120,860; Barisal 89,694; Quetta 84,343. Governors general in 1955: Ghulam Mohammad and (from Oct. 6 [acting from Aug. 5]) Maj. Gen. Iskander Mirza. Prime ministers in 1955: Mohammad Ali and (from Aug. 11) Chaudry Mohammed Ali.

History.—The cabinet appointed in Oct. 1954 was strengthened by the addition of two non-Moslem league political leaders. Khan Sahib from the North-West Frontier Province and H. S. Suhrawardy from East Bengal. The country welcomed the governor general's proclamation dissolving the constituent assembly, but its legality was challenged in the Sind chief court. In May the federal court ruled that the old assembly was legally dissolved, that a new one should be elected to frame a constitution and exercise legislative powers, and that the question of validating some important laws irregularly enacted by the old assembly should be decided by the new one, pending which they were properly enforceable by the governor general. In the new assembly, elected by the provincial legislatures with parity of representation between East and West Pakistan, the Moslem league, though the largest party, had no absolute majority. In August the prime minister, Mohammad Ali, resigned, and

Chaudry Mohammed Ali, previously finance minister, succeeded him and formed a coalition government, which included Fazlul Huq of the East Pakistan united front. Meanwhile in East Pakistan parliamentary government was restored in June and a united front ministry took office there. In September Ghulam Mohammad for reasons of ill-health resigned the office of governor general and was succeeded by Iskander Mirza. Since Nov. 1954 detailed preparations had been made for integrating the provinces, states and frontier regions of West Pakistan into a single province parallel with East Pakistan. This plan, besides simplifying administration and economic development, offered the advantages of eliminating old provincial rivalries and of facilitating further work on the constitution. The plan was published in March. On Sept. 30 the new constituent assembly passed the necessary bill and on Oct. 14 the province of West Pakistan came into being with its capital at Lahore and Khan Sahib as its chief minister; provision was made for an interim provincial legislature representing all its parts, including the tribal areas (frontier regions) with 22 members elected by their councils of elders.

External Relations.—In January Ghulam Mohammad at the invitation of the Indian president paid a good-will visit to New Delhi. In May Mohammad Ali and Iskander Mirza had friendly talks in India with Jawaharlal Nehru and other ministers on outstanding problems; no conclusion was reached on the Kashmir issue; some agreements resulted on other matters, such as prevention of border incidents and improvement of travel and transit facilities. Discussions between Indian and Pakistani technicians and experts of the International Bank for Reconstruction and Development regarding the use of the Punjab rivers for irrigation were resumed in Washington, D.C., and the date for bringing them to a conclusion was changed to March 1956; meanwhile the amounts of additional withdrawals of water for Indian canals in the summer of 1955 were settled by agreement.

State visits to Pakistan were made by the president of Turkey, the king of Jordan and the Egyptian president. Other visitors included the prime ministers of the Sudan and of Saudi Arabia. Mohammad Ali attended the Bangkok conference of the southeast Asia defense treaty powers in February, and the Bandung Asian-African conference in April. In September Pakistan acceded to the Baghdad pact between Iraq, Turkey and the United Kingdom for mutual co-operation in the middle east. Relations with Afghanistan were troubled. For some time the Afghan government had endeavoured to promote the idea of a separate Pathan state of "Pakhtoonistan" among the northwest frontier tribes, who however paid little heed in view of the economic and social benefits that they enjoyed in Pakistan. At the end of March, after publication of the plan for integrating the various units of West Pakistan and a speech by the Afghan prime minister criticizing it, a riotous mob attacked the Pakistan embassy at Kabul and insulted its flag. The Pakistan government demanded full satisfaction, but a dispute arose over its terms. Efforts by other middle eastern powers to mediate were unsuccessful, and official relations were severed till September, when honourable amends were made and the two governments agreed to eschew dangerous propaganda. But in October the Afghan government, having proposed a discussion of mutual relations, made it a condition that meanwhile the act integrating West Pakistan should not be implemented. The Pakistan government, while declaring its readiness to discuss matters of common concern, rejected the suggested condition as an unwarranted intrusion into Pakistan's internal affairs. The Afghan government thereupon recalled its diplomatic representative, and relations were again suspended.

Economic Position.—As no legislature was sitting, the budget

statement was broadcast on March 31 and issued as a white paper. The revised estimates for 1954-55 showed a deficit of Rs. 25,000,000, mainly because of flood relief. For 1955-56 expenditure on revenue account was estimated at Rs. 1,203,000,000, and revenue on the existing basis at Rs. 1,190,000,000, which it was proposed to supplement by new taxation estimated to have an over-all surplus of Rs. 500,000. A capital expenditure of Rs. 1,148,000,000 was contemplated for development in 1955-56, to be found from internal and external loans, foreign aid and a moderate degree of deficit financing. The United States government, in addition to previous assistance, offered aid of \$110,000,000 for the fiscal year 1954-55, including surplus agricultural commodities. In March Ghulam Mohammad inaugurated a new Indus barrage, called by his name, in Lower Sind, part of a project designed to irrigate 2,750,000 ac. The first project for utilizing the natural gas discovered at Sui in Baluchistan matured in October with the completion of a pipeline making it available at Karachi. The report of the state bank for the year ended June 30, 1955, showed that the balance of payments moved into a surplus.

In July the government decided to devalue the Pakistan rupee to 1s. 6d. sterling (the same as the Indian rate) in order to meet the changing needs of the country's economy. In 1949, when it was decided not to devalue, Pakistan exported only primary products and depended on imported manufactures and capital goods for industrial development; since then industrial production had increased so greatly as to make the country nearly self-sufficient in a considerable range of goods and capable of exporting some of them, while world prices of jute and cotton after a period of boom had fallen. The objects of devaluation were to facilitate exports and to increase the purchasing power of the agricultural population.

In the autumn Pakistan was afflicted by disastrous floods. East Pakistan again suffered severely, but the greatest destruction occurred in West Pakistan, where large areas of Sind were inundated in September, and in October abnormal floods in the Punjab caused grave damage to the canal system and to the cotton, rice and sugar crops. (See also INDIA.) (J. WN.)

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Education.—Schools (1955): primary 42,474, pupils 3,200,000, teachers (1951) 88,697; secondary 5,118, pupils 1,150,000, teachers (1952) 43,823; vocational 242. Teachers' training colleges 134, students (1952) 6,930. Universities 6, students 57,509; other institutions of higher education 169. Adult education centres 881.

Finance and Banking.—Monetary unit: Pakistan rupee, with a new selling rate on July 31, 1955, of Rs. 4.76 to the U.S. dollar. Budget (1954-55 revised est.) revenue Rs. 1,154,400,000, expenditure Rs. 1,179,500,000; (1955-56 est.) revenue Rs. 1,190,200,000, expenditure Rs. 1,203,900,000. Currency circulation (Dec. 1954): Rs. 2,575,000,000, (April 1955) Rs. 2,622,000,000. Bank deposits (Dec. 1954): Rs. 1,269,000,000, (April 1955) Rs. 1,283,000,000. Gold and foreign exchange (April 1955): U.S. \$327,000,000.

Foreign Trade.—(1954) Imports Rs. 1,074,000,000; exports Rs. 1,187,000,000. Main sources of imports (1954): U.K. 29%; continental European Payments Union countries 20%; Japan 11%; U.S. and Canada 8.9%; India 5%. Main destinations of exports: U.K. 19%; continental E.P.U. 28%; Japan 9%; India 9%; U.S. and Canada 7%. Main exports: cotton 29%, jute 46%.

Transport and Communications.—Roads (1953): 114,600 km. Motor vehicles in use (1952): cars 34,021, commercial vehicles 17,137. Railways (1954): 11,397 km.; passenger-km. (April 1952-53) 8,983,000,000; freight, ton-km. (1953) 5,640,010,000. Shipping (July 1954): merchant vessels of 100 gross tons and over, 56; total tonnage 169,782. Air transport (1954): passenger-km. 58,572,000; freight, ton-km. 1,734,000. Telephones (Jan. 1954): 27,886. Licensed radio receivers (1953) 98,000.

Agriculture.—Main crops (metric tons, 1954): rice 13,400,000; tobacco 92,500; wheat 3,742,000; barley 159,000; maize 448,000; sugar, raw value 91,000 (excluding 115,000 palm sugar); chick-peas 655,000; jute 491,000; cotton, lint 266,000; cottonseed 502,000; tea 24,500; (1953). linseed 12,000; rapeseed and mustard seed 276,000; sesame 37,000. Live-stock (Sept. 1952): cattle 24,069,000; sheep 6,570,000; horses 494,000; mules 41,000; asses 959,000; buffaloes 4,980,000. Wool production (1954) 7,000 metric tons. Meat production (1951) 287,000 metric tons.

Industry.—Applicants for work (1954) 88,500, (March 1955) 100,400. Index of production (1950=100) 285 in 1954. Fuel and power (metric tons, 1954): coal and lignite 563,400; electricity 488,400,000 kw.hr.; natural gas (1953) 43,600,000 cu.m. Raw materials (metric tons, 1954): chrome ore 19,200; crude oil 259,900. Manufactured goods (1954): cement 685,800 metric tons; cotton cloth 318,080,000 m.

Palaeontology. **Vertebrate.**—The international co-operation which characterizes research on vertebrate fossils was illustrated during 1955 by the reports of scientists from many nations at the colloquium on "Problèmes actuels de paléontologie" held in Paris, Fr. Advances in palaeoneurology, made especially through comparisons of the endocranial casts of extinct and living animals, were summarized by T. Edinger (Harvard). J. Millot (Paris) demonstrated the anatomy of the anachronistic living coelacanth fish *Latimeria*; J.-P. Lehman (Paris) examined with disfavour the supposed origin of urodeles from lungfish ancestors. D. M. S. Watson (London) outlined the descent of diapsid reptiles from millerettids, while J. A. Orlov (Moscow) described important finds of mammallike deirocephalian reptiles. The dating of Tertiary mammalian faunas in Spain was revised by M. Crusafont Pairó (Sabadell). Problems of human origins drew the attention of A. C. Blanc (Rome) and J. Hürzeler (Basel); the latter interpreted *Oreopithecus* as a possible human ancestor. A. S. Romer (Harvard), who discussed the interdependence of palaeontology and comparative anatomy, stressed in conclusion the interdependence of the world family of palaeontologists.

Among the year's significant books of general interest was *The Origin of Vertebrates* by N. J. Berrill, a stimulating discussion of chordate biology and relationships. The colourful history of backboned animals was summarized for students and laymen by E. H. Colbert in *Evolution of the Vertebrates*. The contribution of vertebrate fossils to a reconstruction of past environments was exemplified by A. Papp and E. Thenius in an integrated palaeobiological study of the Vienna basin in early Tertiary time.

Anatomical studies on the most primitive fishes, the ostracoderms, by D. M. S. Watson revealed that the fossil cephalaspids and anaspids (like the living lampreys) were probably derived from ancestors of the ammocoete type; the allied heterostracans apparently branched off before the ammocoete stage. Cephalaspid pectoral fins proved to be an independent development, not homologous with those of higher vertebrates; and the structures formerly interpreted as "electric fields" were pressure-sensory organs instead.

In Stockholm, a centre for intensive studies on archaic fishes, Stensio's comprehensive restudy of the placoderms demonstrated that arthrodires and acanthodians matched other fishes in the evolutionary stage of their visceral skeletons. Comparative histologic studies by T. Orvig on the exoskeleton of ancient vertebrates cast light on the growth, fusion and disintegration of bony armour plates.

Contemporary knowledge of fossil amphibians, reptiles and birds was epitomized in volume 5 of the *Traité de paléontologie* edited by J. Piveteau. Particularly noteworthy contributions on amphibians were chapters by E. Jarvik (Stockholm) on the oldest known land vertebrates, the ichthyostegals from uppermost Devonian beds of Greenland; and Piveteau's treatment of fossil frogs. Among the chapters on reptiles were reviews of the lacodonts and amphibious Triassic "squamates" by B. Peyer and E. Kuhn-Schwyder (Zürich); and of the rhynchocephalians, lizards and snakes by R. Hoffstetter (Paris). Mammallike reptiles (excluded from this volume of the *Traité*) were the subject of numerous recent studies, including a monograph on Middle Permian tetrapods of the western Urals by I. A. Efremov (Moscow) and a cogent paper in which F. R. Parrington (Cambridge), after reconstructing the jaw musculature in certain

gorgonopsids, deduced that an eardrum and external auditory meatus were present in synapsids generally as derivatives of the captorhinomorph ear.

Another study of jaw musculature led G. Haas (Jerusalem) to conclude that the great skull "frill" in ceratopsian dinosaurs developed less as protective armour than as a frame for attachment of the adductor externus muscles. Two types of fossil eggs from Shantung were interpreted by C. C. Young and M. M. Chow (Peking) as pertaining to hadrosaurian and other dinosaurs. Birds, the rarest of fossils, were the subject of descriptive papers and a popular summary by H. Howard (Los Angeles).

Problems involved in applying statistical methods of faunal analysis—methods appropriate in population studies on living mammals—to the contents of fossil quarries were examined by J. A. Shotwell (Eugene, Ore.) as an approach to the palaeoecology of mammals. C. L. Gazin (Washington) monographically reviewed the Upper Eocene artiodactyls of North America and offered a pioneer interpretation of their relationships. The osteology and stratigraphic distribution of fossil elephants from the Malay archipelago and the Punjab were treated by D. A. Hooijer (Leyden). A mutation affecting the molar teeth of brown bears and cave bears was traced through its 1,000,000-year history by B. Kurten (Helsinki).

A divergent, short-lived family of ancient American primates, the phenacolemurids, was defined by G. G. Simpson (New York) and its evolutionary implications analyzed. The comparative anatomy and classification of fossil as well as living tarsoids were considered in a definitive volume by W. C. Osman Hill (London).

Although the preceding paragraphs cannot constitute a thorough or even representative summary of the year's progress, they may serve to suggest the international nature of research and the scope and great variety of problems examined by palaeontologists and by others using palaeontological data. (D. BD.)

Palaeobotany.—Palaeobotanical discoveries of considerable general interest were made during the latter part of 1954 and the first half of 1955 from some of the oldest as well as the most recent rock formations. Petrified remains of several different algae and fungi were found (A. A. Tyler and E. S. Barghoorn, 1954) in a Pre-Cambrian chert from southern Ontario. These represent the oldest known structurally preserved organic remains yet reported, their age being estimated at 1,300,000,000 years although it may be as great as 2,000,000,000 years. It is evident from this and previously reported fossils that the algae and fungi are of extreme antiquity, having existed in the waters of the earth for 1,000,000,000 or 1,500,000,000 years before plants began their tenuous invasion of the land. Two Canadian palaeobotanists (N. W. Radforth and D. C. McGregor, 1954) described an abundant assemblage of fossil spores from Devonian rocks of Alberta and the Gaspé. Existing knowledge of the earliest land plants comes from this period and the preceding Silurian Age. The spores described by these workers indicate a much greater diversity of land plant life than was formerly known for this early horizon. Although it is not possible at present to correlate the spores, many of which are beautifully preserved, with the plants that bore them, they suggest several groups of ferns as well as certain conifers and a moss in addition to aquatic plants and the more primitive early invaders of the land.

In contrast with these records of very ancient plant life it is interesting to note an equally significant one from the modern end of the geologic time scale. Botanists have devoted a great deal of effort in recent years to gain a better understanding of the origin of certain crop plants, particularly corn (*Zea mays*). It is, therefore, of special interest to note the discovery of pollens identified as those of corn from a deep drill core



DINOSAUR BONES being chiselled out of the rock in which they were buried about 100,000,000 years ago at Dinosaur National monument near Jensen, Utah, in 1955. About four years would be required before the bones were completely uncovered

taken in Mexico City. The pollens were found at a horizon more than 200 ft. below the surface of the ground and may be as much as 50,000 years old. This discovery indicates that corn existed at an appreciably earlier date than was formerly suspected and apparently before the appearance of man on the North American continent.

A good summary of our knowledge of the past history of the liverworts was given by B. Lundblad (1954), who also added several new discoveries. The liverworts are inconspicuous yet common and widely distributed plants related to the mosses. Several modern forms (such as *Marchantia* and *Riccia*) are known from the Mesozoic, and a few records have been reported from the Upper Carboniferous. It is evident that the modern groups of liverworts were differentiated as far back as the Carboniferous, and, although they remain a significant element of the modern vegetation, little evolution has occurred in the group for nearly 200,000,000 years.

Several publications appeared dealing with Carboniferous plants which not only add to understanding of the flora of that period but also assist in understanding of the origin of modern groups whose ancestors can be traced back to that distant time. M. L. Abbott (1954) presented a critical study of American Carboniferous ferns belonging to the genus *Oligocarpia*. The modern representatives of this family (*Gleicheniaceae*) are found in the American and Asian tropics, although it is now apparent that they occupied a significant place in the landscapes of temperate regions in the Coal Age. Another interesting fern was described from the coal fields of Alabama (S. H. Mamay, 1955) which is characterized by having spore sacs of a primitive nature arranged along the margin of the leaflets instead of on the underside as in most living ferns. This fossil, assigned the new name *Acrangiophyllum*, cannot be positively identified with any known group of ferns, living or fossils, and is possibly transitional between the earlier land plants and some of the more clear-cut fern families of the Carboniferous. A beautifully preserved calamitean cone was described by R. W. Baxter (1955) from Iowa which adds to the rather rapidly growing list of plants belonging to this group. The calamites

constituted a very dominant and diverse element in the Coal Age forests and are represented today by the single genus *Equisetum*, commonly known as the horsetail rushes.

A Dutch worker (W. J. Jongmans, 1954) added a significant contribution to knowledge of the Carboniferous seed ferns in reporting leaves, seeds and pollen-bearing organs of a member of this group in organic connection. The seed ferns are important as probable forerunners of the modern flowering plants. Much of the knowledge of the group is based on scattered fragments of the various plant organs. Thus when these are found not merely associated but in actual connection it adds a significant note of confidence to understanding of this extinct group.

A contribution of particular interest to mineral collectors of the western states was a study of fossil woods from the Eden valley of Wyoming. H. O. Kruse (1954) described, from this well-known collecting area, 12 new species of petrified woods representing for the most part tropical trees whose modern equivalents are found far south of this Eocene Age locality. (See also BOTANY.)

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Palestine: see ISRAEL; JORDAN; UNITED NATIONS.

Panamá. A republic on the isthmus joining the continents of North and South America, Panamá is bounded on the north by Costa Rica and on the south by Colombia, and is bisected by the Panama Canal Zone, which is leased to the United States. Area: 28,753 sq.mi.; pop.: (1950 census) 805,285, (1954 official est.) 886,000, both exclusive of the Canal Zone. The capital is Panamá city (pop. in 1950) 127,874; other principal cities are Colón 52,204; David 14,847; La Chorrera 8,652; Puerto Armuelles 5,734; and Santiago 5,886. Language Spanish; religion: predominantly Roman Catholic. President in 1955: Ricardo Arias Espinosa.

History.—Pres. José Antonio Remón's assassination on Jan. 2, 1955, ended a rare two-year period of political stability. Vice-Pres. José Ramón Guizado succeeded Remón, but within a few days the Panamanian national assembly had installed a third man as president, namely, Ricardo Arias Espinosa, who had been Remón's second vice-president.

The simple narration of these events cloaked a complicated and intriguing story. Investigations and arrests brought confessions. The confession of Rubén Miró, although later repudiated, was enough to convict Guizado in the impeachment proceedings and trial which were conducted by the national assembly. Miró, a disappointed minor governmental official, declared that he had done the actual killing of Remón with the promise from Guizado that he would be made minister of the interior and justice.

Speculation centred on several unexplained elements in the case. Rubén Miró, although bound over to the civil courts as a common criminal, had not yet been tried by late November. His confession had convicted Guizado as an accomplice, despite Panamanian judicial procedure which forbids the trial of an accomplice before that of a principal. Although Guizado had been

tried by the national assembly, his partisans were attempting to force court action which would set him free.

After extended negotiations, ratification formalities of the new treaty of mutual understanding and co-operation with the United States were completed on Aug. 23, 1955. The treaty brought Panamá several important economic advantages: (1) the annuity paid for the use of the Panama canal was raised from \$430,000 to \$1,930,000; (2) Panaman residents who work in the Canal Zone would no longer be permitted to trade in Canal Zone commissaries, a ruling which was expected to transfer an estimated \$12,000,000 to \$15,000,000 annually in retail trade to Panaman merchants; (3) valuable real-estate holdings were turned over to Panamá, particularly the railroad yards in Panamá city, which were to be cleared away to provide space for new office buildings; (4) uniform wages for all employees were to become effective when approved by the U.S. congress; and (5) Canal Zone authorities would purchase a larger percentage of local supplies from Panamá.

An extensive program was under way to improve the country's highways. Following the good-will visit of U.S. Vice-Pres. Richard M. Nixon in February, appropriations were approved in the U.S. congress which were expected to make it possible to complete the Inter-American highway as far as Panamá city within three years. A \$9,650,000 project to repair and extend 635 mi. of local roads was being financed by the International Bank for Reconstruction and Development and two commercial banks. (R. HN.)

Education.—In the school year 1953-54 there were 1,050 public and private primary schools with 125,428 pupils enrolled, and 76 public and private secondary schools with 24,222 students. The national university had 1,735 students. The 1950 census showed that 28.3% of the population over ten years of age, excluding tribal Indians, was illiterate. About 22.4% of the 1955 budget was earmarked for education.

Finance.—The monetary unit is the balboa, at par with the U.S. dollar. The national budget for 1955 balanced ordinary revenue and expenditure at \$43,947,774 and extraordinary revenue and expenditure at \$2,211,275. Total revenue in 1954 was \$44,782,979; expenditure, \$48,817,759. The national debt on Dec. 31, 1954, totalled \$41,947,320, of which \$11,124,601 was external. Demand deposits totalled \$33,400,000 on March 31,

1955. The cost-of-living index (Panamá city) stood at 94 in March 1955 (1948=100).

Trade and Communications.—Domestic exports in 1954 totalled \$17,431,298; re-exports \$1,975,665; imports \$72,620,601. The leading customers were the U.S. (93%), Venezuela (2%) and Colombia (2%); leading suppliers, the U.S. (62%), the Canal Zone (9%), Colón free trade zone (5%), U.K. (4%) and Germany (3%). Chief exports were bananas (56%), cacao (17%), fresh shrimp (12%), abacá (4%) and lumber (3%). The traditionally adverse balance of trade is generally offset by invisible exports to the Canal Zone in the form of tourist expenditures, sales to ships and wages of Panamanians employed there.

Railway mileage is 220. Highways in 1955 totalled 1,350 mi., of which 440 mi. were paved. Motor vehicles totalled 18,012 on Jan. 1, 1955, including 12,677 automobiles and 5,335 trucks and buses. According to *Lloyd's Register of Shipping*, 598 vessels (100 tons and more) aggregating 4,099,186 gross tons were registered under the Panaman flag on June 30, 1954.

Agriculture.—Exports of bananas in 1954 were 5,699,809 stems, almost all of which went to the U.S. Exports of other export crops included cacao 2,627 metric tons; abacá 1,643 tons; coconuts 6,043,200 nuts. Production of rice in the 1954-55 season was about 220,000,000 lb.; sugar 38,000,000 lb. The 1950 livestock census showed 576,488 cattle and 198,111 hogs. In 1954, 1,850 metric tons of fresh shrimp and 4,031,408 sq.ft. of lumber were exported.

Manufactures.—In 1954, 105,600,000 kw.hr. of electric energy and 19,440,000 cu.m. of manufactured gas were produced in Panamá city and Colón. Production of rum was 672,123 l.; beer 15,419,230 l.

See J. and M. Biesanz, *The People of Panama* (New York, 1955). (J. W. Mw.)

Panama Canal Zone. A United States military reservation embracing a 10-mi. strip across the Isthmus of Panamá, leased for the protection and administration of the Panama canal, the Panama Canal Zone has an area of 553 sq.mi., including 191 sq.mi. of fresh water. Population: (1950 census, inclusive of uniformed military personnel) 52,822; (1954 est.) 58,000. The largest city is Silver City, which in 1950 had 5,726 inhabitants. La Boca (4,235), Balboa (4,162) and North Gamboa (3,074) were next largest. Administrative centre: Balboa Heights (pop., 1950, 363). Governor in 1955: Brig. Gen. John S. Seybold.

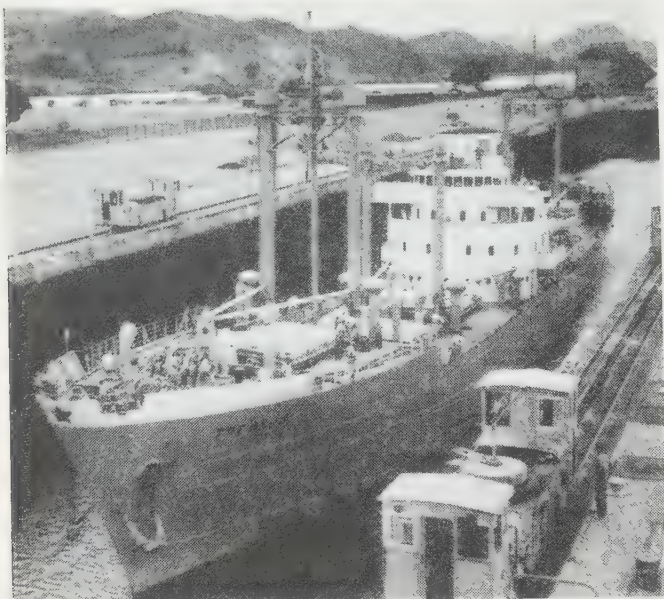
History.—The new treaty governing relations between the United States and Panamá concerning the Canal Zone (see PANAMÁ) went into effect on Aug. 23, 1955. Panamá gained economic concessions which would substantially increase its income from Canal Zone operations. The lives of about 17,000 Canal Zone workers who live in Panamá were also affected. Whereas they were to receive equal pay for equal work (when approved by the U.S. congress), they would no longer be permitted to trade in Canal Zone commissaries and they would be subject to Panaman income tax laws.

In line with a continuing campaign to keep toll charges at a minimum, U.S. shipping interests opposed the treaty provision which increased the annuity payment to Panamá for use of the Canal Zone because the additional \$1,500,000 would be reflected in higher tolls. In addition, the formula used by the Panama Canal company for computing tolls was being attacked by action on both the judicial and legislative fronts. The Panama Canal company, a semiautonomous government corporation under which all commercial Canal Zone activities were consolidated in 1951, was sued on Sept. 13 by a group of 12 steamship companies in an attempt to recover \$27,000,000 in tolls which they alleged the Canal company had collected illegally. Figures of the U.S. general accounting office which completed an audit in May 1955 revealed that the Canal company had consistently set toll charges high enough to compensate for losses sustained in the operation of such nontransit activities as a railroad, a steamship line, two hotels and ship repair facilities. The steamship companies maintained that nontransit losses could not be included legally in the toll charges.

In congress, shipping interests were pushing legislation which would explicitly direct the Canal company to refrain from including nontransit losses in toll computation. On the other hand, while the general accounting office had indicated that tolls may have been computed contrary to the present law, it had recommended that the law be modified so that the Canal com-



FORMER PRESIDENT OF PANAMÁ, José Ramón Guizado (sitting, foreground), as he was indicted for the murder of his predecessor, J. A. Remón, Feb. 16, 1955, before the national assembly of Panamá. Remón's picture appears on the poster above the assembly president and deputy



FIRST SOVIET SHIP to pass through the Panama canal since 1949 shown in the locks May 14, 1955

pany could continue its present practice.

After new records for canal traffic had been made during the Korean war, it was thought there would be a marked decline. During 1955, new records were set in March, when 709 vessels used the canal, and again in July, when the total rose to 731.

Work continued on the project to remove about 2,000,000 cu.yd. of rock from Contractor's hill above Gaillard cut to prevent landslides. Modernization of Gatun lock was completed in April. Its capacity was increased from 23 to 29 ships per day.

(R. HN.)

Education.—In the fiscal year ending June 30, 1954, there were for U.S. children 15 schools with average daily attendance of 5,485 and a junior college, and for Latin-American children 12 schools with average daily attendance of 3,824 and a junior college.

Canal Traffic.—During the fiscal year ending June 30, 1954, 7,784 commercial vessels (300 net tons and over), aggregating 38,027,812 canal net tons, and 800 U.S. government vessels passed through the canal. The commercial vessels carried cargo aggregating 39,095,067 long tons and paid tolls totalling \$33,247,864. Of the cargo carried, 20,717,343 tons were from Pacific to Atlantic and 18,377,724 from Atlantic to Pacific. Major commodities in the Pacific-Atlantic traffic were ores 5,053,296 tons, lumber 3,716,307 tons and wheat 2,168,247 tons; in the Atlantic-Pacific traffic, mineral oils 4,486,041 tons, coal and coke 3,374,243 tons and iron and steel manufactures 1,843,022 tons. Of the 7,784 commercial ships passing through the canal, 2,056 were U.S., 1,265 British, 831 Norwegian, 611 Panaman, 387 Japanese, 347 Honduran, 323 German, 275 Danish, 230 Swedish and 224 Liberian; the remaining 1,235 were of 23 other nationalities.

Pan American Union: see ORGANIZATION OF AMERICAN STATES.

Paper and Pulp Industry. The estimated production of paper and paperboard in the United States for 1955 was about 28,000,000 tons, based on the total production by midyear. Production at the end of the fifth month was 10% above 1954. Nearly all mills had made some increase in producing ability. The per capita consumption for the U.S. population at the end of 1954 was 383.7 pounds. In 1954,

Table II.—U.S. Paper Production

Grade	(In short tons)			
	1940	1945	1950	1954
Newsprint	1,056,304	725,475	1,013,346	1,191,760
Book and groundwood	2,205,876	2,137,041	3,302,861	3,582,800
Fine	735,753	1,000,794	1,198,547	1,323,944
Wrapping (coarse)	2,500,818	2,403,182	3,285,635	3,428,608
Tissue and sanitary	733,894	980,788	1,373,550	1,561,334
Building papers	682,460	883,259	1,424,633	1,355,941
Other paper	189,530	326,690	467,593	526,209
Container board	3,434,834	4,131,107	5,646,433	6,432,250
Folding boxboard	1,416,452	2,092,344	2,368,010	2,484,725
Setup boxboard	898,549	721,087	641,345	710,302
Building boards	179,443	894,830	1,258,620	1,506,998
Other boards	449,796	1,074,368	2,396,649	2,551,760
Total	14,483,709	17,370,965	24,377,222	26,656,631

Table III.—U.S. Wood Pulp Production

Year	(In short tons)					
	Unbleached Sulphite	Bleached Sulphite	Total Sulphite	Groundwood	All Others	Total
1935	634,947	944,620	1,467,749	1,355,819	485,162	3,308,730
1940	995,700	1,612,089	3,747,992	1,632,727	532,387	5,912,106
1945	815,909	1,543,762	4,471,875	2,386,859	429,757	7,288,495
1948	901,814	1,909,402	6,013,696	2,175,107	509,864	8,699,067
1950	744,493	2,111,332	7,508,376	2,220,795	522,990	10,252,586
1953	593,958	1,728,648	9,444,816	2,342,929	427,546	13,073,897
1954	582,156	1,800,734	9,807,982	2,428,550	431,603	13,641,975

Table IV.—Canadian Paper and Paperboard Production

Kind	(In short tons)			
	1950	1951	1952	1954
Newsprint	5,318,988	5,516,279	5,687,051	5,984,207
Book and fine paper	214,097	274,330	253,000	294,197
Wrapping	222,840	252,836	224,000	246,197
Paperboard	876,894	757,079	684,000	738,248
Other papers	179,216	308,229	272,000	378,798
Total	6,812,035	7,108,753	7,120,051	7,641,647

Table V.—Canadian Wood Pulp Production

Year	(In short tons)					
	Bleached Sulphite	Unbleached Sulphite	Sulphate	All Others	Groundwood	Total
1935	374,157	644,820	236,536	20,887	2,563,711	3,840,111
1940	543,987	936,558	371,569	133,164	3,305,484	5,290,762
1945	603,929	1,035,755	478,740	140,470	3,341,920	5,600,814
1950	760,769	1,450,104	1,053,588	297,750	4,910,803	8,473,014
1954	984,650	1,605,568	1,361,746	165,377	5,279,126	9,396,467

439,000 tons of wood pulp and 686,000 tons of paper were exported. In the first five months of 1955 wood pulp exports were 172% greater than for the same period in 1954. Wood pulp production established a new record in 1954, totalling 18,341,000 tons. In the first five months of 1955 wood pulp production was 8,523,000 tons or 1,100,000 tons more than in the same period in 1954. About 30 new machines were on order in 1955.

Canada.—The total output of Canadian paper mills during 1954 was 7,642,000 tons of which 5,661,000 tons were exported. The output was 5% greater than in 1953. The total wood pulp production in 1954 was 9,500,000 tons. Production of pulp from rags, wastepaper and straw amounted to 400,000 tons. Canada led all other countries in total volume of pulp and paper exports. A new record production of 5,984,207 tons of newsprint was reached in 1954. Pulpwood consumption of 12,000,000 cords exceeded the 1953 cut of 11,600,000 cords. Exports of pulpwood declined in 1954 to 1,700,000 cords, the lowest figure since 1949.

United Kingdom.—Chemical pulp consumption in Great Britain in 1954 exceeded for the first time the production of prewar 1940. The paper and board industry operated at the highest level in history. Total pulp imports in 1954 amounted to 2,149,000 tons and showed signs of continuing at the same or higher rate in 1955. The 209 paper and board mills, excluding

building boards, totalled 3,391,000 tons. Of this amount 26% was book and writing grades, more than 20% was newsprint, about 27% paperboard, more than 7% kraft papers and less than 2% was sulphite papers tissue and cigarette paper.

(R. G. M.)

Table I.—U.S. Production and Consumption of Paper, Wood Pulp and Pulpwood

Year	Paper and Paperboard (short tons)		Wood Pulp (short tons)		Receipts of Pulpwood (cords)		
	Production	Consumption	Production	Consumption	Domestic	Imported	Total
1925	9,182,204	10,590,090	3,962,217	5,590,304	5,005,445	1,088,376	6,093,821
1931	9,381,840	11,403,850	4,409,344	6,005,713	5,896,446	826,320	6,722,766
1935	10,506,195	12,490,886	5,032,299	6,877,869	6,590,942	1,037,332	7,628,274
1940	14,483,709	16,620,632	8,959,559	9,781,739	12,307,138	1,435,820	13,742,958
1945	17,370,965	19,665,487	10,167,140	10,825,412	15,245,000	1,729,000	16,974,000
1950	24,377,222	29,013,060	14,827,152	16,483,201	20,702,000	1,834,000	22,536,000
1954	26,656,631	31,159,209	18,341,175	19,900,794	26,973,000	1,624,000	28,597,000

Papua-New Guinea. The territory of Papua and trust territory of New Guinea, occupying the southeast and northeast quarters respectively of the island of New Guinea, are administered with dependent islands as one area by Australia. Areas and populations are as shown in the table.

Territory	Area (sq.mi.)	Population (mid-1953 est.)	
		Native	Non-native*
Papua†	90,540	392,709	4,691
New Guinea‡	70,000	1,100,000§	10,758
Islands included in trust territory||	23,000	185,430	
Total.	183,540	1,700,000§	15,449

*About 80% Australian, 15% Chinese. †Including d'Entrecasteaux, Louisiade, and Trobriand (with Woodlark) Islands (total area 2,754 sq.mi.). ‡Including adjacent minor islands. §1954 est. ||Bismarck archipelago (including New Britain 14,100 sq.mi., New Ireland 3,800 sq.mi., Lavongai 460 sq.mi., Admiralty Islands 800 sq.mi.) and some of Solomon Islands (including Bougainville 4,100 sq.mi.).

Native pop., Papuan and (especially in Bismarcks, Solomons and coastal New Guinea) Melanesian; Negrito and Micronesian minorities. Religion: pagan with Christian minorities. Capital of joint administration, Port Moresby (pop. about 13,800). Administrator in 1955, Brig. D. M. Cleland.

History.—Capital works planned in Papua and New Guinea in 1955–56 included power and water supplies, schools and roads. In 1955 progress was continued in bringing remote tribes within the orbit of administration and in the further planting of relatively new cash crops, including tea, rice, and coffee. Possibly of the greatest importance, a major Australian candy manufacturer bought 1,050 ac. near Lae for an experimental cocoa plantation. An unprecedented atmosphere of prosperity stemmed from continued high prices for copra and ever-growing spending by oil exploration expeditions.

The administration persevered with village councils. But the United Nations Trusteeship council chided Australia for not interesting the better-educated natives more effectively in the councils. The trusteeship council also suggested that the natives should have direct taxation levied on them as a contribution toward costs of administration. (R. J. GE.)

Education.—(1953) *Papua.*—Administration schools 29, pupils 1,617; mission schools 846, pupils 43,708. *New Guinea.*—Administration schools 76, pupils 3,949; mission schools 2,643, pupils 83,506.

Economy.—*Papua.*—Agriculture.—Production: rubber (exports, 1954) 1,520 metric tons, copra (1952–53) 10,279 tons; coconuts (desiccated, exports 1952–53) 1,335.69 tons. Finance and Trade.—(1952–53) Revenue £A2,777,271, expenditure £A2,808,095. Imports £A4,918,269, exports £A2,322,905. Chief imports: foodstuffs, metal manufactures. Chief exports (1952–53): copra £A848,177, rubber £A736,073, desiccated coconut £A320,073.

New Guinea.—Agriculture, Forestry and Mining.—Production (1952–53): coconut oil (export) 3,568 tons, copra 61,782 tons, cocoa beans 0,096 cwt., coffee beans 664 cwt. Finance and Trade.—Internal revenue (1952–53) £A1,544,542 (Australian government grant £A2,769,543); expenditure £A4,314,085. Total imports (1952–53) £A7,175,612, exports including exports not of local origin) £A8,491,396. Principal exports: copra £A4,425,057, gold £A2,147,766, coconut products £A523,032, cocoa beans £A171,876, shell £A87,894, timber £A751,833. Principal imports: foodstuffs £A2,043,006, metals and metal manufactures £A1,942,728, clothing and textiles £A811,195.

Currency.—Australian pound used throughout Papua-New Guinea (£A1.25=£1 sterling).

Paraguay. A landlocked republic in central South America, bounded north and east by Brazil, north and west by Bolivia and south by Argentina. Area: 157,047 sq.mi., of which 95,338 sq.mi. constitutes the sparsely populated Chaco, while the 61,709 sq.mi. lying east of the Paraguay river contains 5% of the population and activity. Pop.: (1950 census) 1,408,000; (1955 est.) 1,577,000. The people are a homogeneous amalgam of Spanish and Guaraní stock, with some Portuguese and Italian, which has developed into a racial type. Official language: Spanish. The Guaraní tongue has survived more than the blood, but is secondary and recessive. Capital and chief centre: Asunción, pop. (1950) 201,340. Other large cities (1950 census): Villarrica 14,680, Concepción 14,640, Encarnación 13,321. Official religion: Roman Catholic. President in 1955: Gen. Alfredo Stroessner, also commander of the armed forces.

History.—General Stroessner's half-military cabinet remained unchanged despite an abortive conspiracy by dissident Colorados early in 1955. In July 1955 400 army officers joined the Colorado party, and Liberals who opposed this as against statute were exiled. Poor crops and poor river transport forced a continuation of many of the directed-economy controls which the regime had taken power to abolish; but it administered them to favour the consumer class and avoided labour difficulties. Reduced production of cotton, cattle, quebracho and yerba maté stimulated diversification of activities by the large entrepreneurs; and extensive Brazilian and U.S. coffee plantations in the northeast approached the bearing stage. A foreign investment code in 1955 offered many fiscal and financial advantages to outside capital to organize new industries.

Externally Paraguay's economic union treaty with Argentina was operated effectively to augment trade with that country, and arrangements for its implementation were expanded. Gen. Juan Perón secured temporary asylum at Asunción in Oct. 1955. Brazil's offer of a trade agreement and hydroelectric installations was not accepted, but Brazil continued aid for two highways to give Paraguay access to Brazilian roads, railways and Atlantic ports. Uruguay extended warehouse facilities for Paraguayan exports. Cultural and economic pacts were made with Uruguay and Bolivia, and Paraguay joined UNESCO. Balance of payments agreements with France and Germany led to misunderstandings. The Export-Import Bank of Washington granted a credit of \$7,200,000 for sewer construction at Asunción and a \$700,000 credit for airfield improvement, and the technical co-operation agreement with the U.S. functioned extensively and actively. A number of Paraguayans in Argentina were induced to return by land grants, and 40 Japanese families were added to the Japanese farm colonies.

Education.—In 1953 there were 1,794 elementary schools, with 252,393 pupils; 87 secondary schools, with 13,420 pupils, plus a number of secondary schools under varied religious auspices. The national university at Asunción, comprising eight faculties, had more than 2,100 pupils. The budget for public education was increased in 1955 by 17% over the 1954 budget of 93,588,264 guaraníes (nine months).

Finance.—The monetary unit is the guaraní, whose gold value since Aug. 1954 had been 21 guaraníes per U.S. dollar. The official free rate in May 1955 was 64.50 guaraníes per dollar and the exchange-house rate 70. An elaborate system of special exchange rates and controls by the Central bank regulates imports and exports. Exchange reserves were \$12,000,000 early in 1954 and \$4,000,000 in mid-1955. The national budget, March 1955, was 950,000,000 guaraníes, up 25% from the previous year. Government revenues rose strongly after 1952, because of efficient collection. The internal public debt in 1953 was 268,000,000 guaraníes, compared with 79,000,000 guaraníes five years earlier. The external debt was \$9,620,000 in 1953, compared with \$12,401,700 in 1949. Circulating mediums in 1953 consisted of 478,000,000 guaraníes currency and 539,000,000 guaraníes in demand deposits. The currency (notes) in 1954 was 660,000,000 guaraníes. Public credits by the Central bank in 1953 were 608,000,000 guaraníes, and by its affiliate the Bank of Paraguay 382,000,000 guaraníes. Asunción's branch banks of Argentine, British and Brazilian nationality had total loans outstanding early in 1954 of 75,000,000 guaraníes.

Trade.—Paraguay's exports in 1954 were valued at \$33,970,000 and its imports at \$32,884,000. Lumber exports were approximately \$10,000,000, cotton \$7,000,000, quebracho \$4,000,000, oleaginous products \$3,000,000 and meat products \$2,000,000. Other characteristic exports were tobacco, yerba maté, essential oils and cane-juice rum. The leading imports were petroleum products, textiles, machinery, breadstuffs, vehicles, drugs and a wide range of manufactured goods. The leading destinations of exports and sources of imports, by countries and percentages, were as

Countries	Per cent exports	Per cent imports	Countries	Per cent exports	Per cent imports
Argentina	43.4	28.0	Netherlands . . .	5.7	2.5
United States . . .	18.6	19.7	Germany	2.8	8.4
Uruguay	9.3	8.7	Belgium	2.3	1.3
United Kingdom . .	8.2	9.7	France . . . . .	.8	7.0

shown in the table. The excess of imports in 1955 produced an exchange shortage which brought drastic import curtailments through official exchange manipulation.

Communications.—Paraguay has 700 mi. of railways. The British-controlled Paraguay Central has 296 mi. traversing the most populated area from Asunción to Encarnación, and in 1954 it carried 2,000,000 passengers and 150,000 tons of freight. Private company railways, to connect with the river or Central, have more than 400 mi. and carry more freight than the Central. The all-weather highway mileage is 628, while seasonal roads and ox-cart roads have about 4,000 mi. In 1954 there were only 2,300 passenger automobiles, with an equal number of trucks

and about 500 buses. Paraguay has excellent international air-line connections, the Asunción airport having handled 3,000 flights in 1954, 1,000 of which were internal. The Paraguayan state merchant fleet had in 1955 a total tonnage of about 5,000. In 1950 the river freight movement was 35,000 tons, three-fourths exports. The number of telephones was 6,500, all government-operated, with both land-line and radio-telephone circuits to Argentina. There were 3,500 mi. of telegraphs, mainly state-owned, with radio-telegraph connections to nearby countries. There were ten small radio stations and 40,000 radio sets.

Agriculture.—Leading farm crops in 1953, in tons, were: mandioca 991,300, sugar cane 342,000, maize 107,000, sweet potatoes 76,000, cotton 38,000, cowpeas 18,000, rice 17,000, peanuts 10,000 and tobacco 9,000. Citrus production in 1952 was 1,080,000,000 fruit, mainly oranges. Cattle in 1953 numbered 4,200,000, horses 322,000, sheep 218,000 and donkeys 25,000; there were 2,600,000 domestic fowls.

Manufactures.—Typical leading manufactures in 1952 or 1953 were: wheat products 50,000 tons, cotton cloth 15,500,000 yd., quebracho 35,000 tons, sugar 23,000 tons, yerba maté 12,000 tons and liquors 19,080,000 l. Other manufactures of substantial importance were leather, glass and ceramics, soap, essential and vegetable oils, alcohol, tobacco products, shoes, pharmaceuticals, brushes, lace and printed matter.

Mines and Forests.—Paraguay has virtually no metals, petroleum or coal. Brick and tile production in 1953 were 48,000,000 units, cobblestones and crushed rock 50,000 cu.yd., lime 12,000 tons and cement 4,200 tons. Logs and beams exported in 1953 were 160,000 tons and lumber (export plus domestic) 19,000 tons, mostly tropical hardwoods and semihardwoods. In 1955 the forest industries were much reduced, and plywood was discontinued. (W. Fr.)

Parents and Teachers, National Congress of: see SOCIETIES AND ASSOCIATIONS, U.S.

Paris. Capital and largest city of France, Paris had by the 1954 census 2,850,139 inhabitants, compared with 2,725,374 in 1946.

The ordinary budget for Paris, voted on Jan. 1, 1955, amounted to 71,988,000,000 fr.; i.e., 5,000,000,000 fr. more than in 1954. The cost-of-living index throughout 1955 was much the same as in the year before. The municipal council was still concerned about the problem of housing and various aspects of urban development. According to the over-all plan promoted by the minister for reconstruction and housing, Roger Duchet, Paris and the Paris region were to have 21,000 new housing units. New housing blocks were erected by the Paris Building authority on the "green belt," notably at the Porte de Vincennes and at the Porte de Montreuil. In the Courbevoie-Nanterre-Puteaux sector much development was planned, namely, the reconstruction

of the Rond-Point de la Défense as a site for international exhibitions; and an exhibition hall was being built there for the national centre of industry and technical processes. As a step toward solving the traffic problem, the establishment of new government offices in the centre of Paris was prohibited.

The volume of motor traffic continued to increase, and it was difficult to see what could be done. There was talk of levying a parking tax on vehicles in the central quarters. Apart from this, a tunnel was being constructed under the Place de l'Alma, and the carriageway of the Avenue de l'Opéra was being widened. Another problem was to find accommodation for primary and secondary schools. Since 1954 the number of school children had increased by about 36,000, and although 300 new schools had been provided, classrooms were nevertheless overcrowded.

Paris had still a great attraction for foreign tourists: about 1,500,000 came in 1954 and 618,000 in the first six months of 1955. On July 3 the centenary of the Jardin d'Acclimatation was celebrated, and early in May the Square Opéra-Louis Jouvet was opened, commemorating the great actor.

The closing of the Café de Paris, the well-known restaurant in the Avenue de l'Opéra, must finally be recorded. (A. Pr.)

Parks and Monuments: see NATIONAL PARKS AND MONUMENTS.

Pashtunistan or Pakhtoonistan: see AFGHANISTAN; PAKISTAN.

Patents. During the fiscal year ending June 30, 1955, the United States patent office granted 32,308 patents, including 2,533 for designs, 116 for plants and 186 reissues. This was 9,018 less than the number issued in 1954.

Applications for patents filed in the patent office for the fiscal year totalled 84,233, exceeding the number filed in the previous year by 3,461; the number for so-called mechanical inventions (78,480) was the highest filed in any year since 1931. The total number of patent applications pending on June 30, 1955, was approximately 221,872, of which about 139,614 were awaiting action by the office, the remainder being under rejection awaiting response by applicants, or in interference or appeal proceedings.

Trade-marks registered (16,109) and renewed (4,588) during 1955 totalled 20,697 compared with 18,115 during the preceding year. On June 30, 1955, approximately 26,234 applications for registration, renewal and republication were pending in the office of which slightly less than half (12,527) were pending before the examiners.

Employment in the patent office on June 30, 1955, stood at 1,612, an increase of 33 over the 1,579 figure a year earlier.

By June 30, 1955, the patent office had granted more than 2,700,000 patents since the consecutive numbering system began in 1836. Complete classified and numerical sets of United States patents are available for the use of the public in the patent office search room. Information concerning the patents issued each week is contained in the *Official Gazette* of the United States patent office, which is available for reference in approximately 340 of the more than 550 government depository libraries in nearly every state of the United States. Copies of patents may be seen in 22 libraries in the country. Printed copies of patents are sold for 25 cents each, designs and trade-marks for 10 cents each. During the 1955 fiscal year the patent office distributed nearly 7,000,000 copies of United States patents and trade-marks, selling more than 4,500,000 copies to the public, depositing 650,000 in libraries throughout the United States and shipping more than 1,100,000 to foreign countries under exchange agreements.

On Oct. 22, 1954, the secretary of commerce announced the



"WELL, AND HOW ARE ALL THE FUTURE PREMIERS TODAY?" a 1955 cartoon by Fischetti of NEA Service, Inc.

appointment of an Advisory Committee, headed by Vannevar Bush, on the Application of Machines to Patent Office Operations. This committee studied the possible application of high-speed electronic devices to replace time consuming manual sorting and searching of reference material which is essential in the examination of patent applications. The committee's report was submitted to the secretary of commerce on Dec. 22, 1954, and copies were made available for purchase for \$1 each from the sales and distribution division, department of commerce.

A notice of proposed amendment of the trade-mark rules of the patent office was published in the *Federal Register* of Aug. 21, 1954. After consideration of comments received pursuant to said notice, revised Rules of Practice in Trade-mark Cases, becoming effective Aug. 15, 1955, were promulgated by publication in the *Federal Register* (July 7, 1955).

Net receipts for the fiscal year ended June 30, 1955, were \$5,860,833. Obligations incurred under all patent office appropriations amounted to \$11,631,060, compared with \$11,933,934.40 for the preceding year. (R. C. W.)

Peaches: see FRUIT.

Peanuts. The U.S. 1955 crop of picked and threshed peanuts was indicated at 1,738,725,000 lb., 70% larger than the drought-reduced 1,023,070,000 lb. of 1954, but less than the 1,921,095,000-lb. average of 1944-53. The 1,656,000 ac. for harvest, 19% more than 1954, but much below the 2,562,000 ac. average for 1944-53, reflected an increase of 7.5% in the 1,610,000 ac. initially allocated, plus picking and threshing of a greater percentage of the allocated acreage. The average yield of 1,057 lb. per acre was a new record high; the 1954 yield was 737 lb. per acre and the average for 1944-53 was 784 lb. per ac.

Production in the Virginia-North Carolina area of the large-type eating peanut was indicated at 470,950,000 lb. as com-

U.S. Peanut Production by Leading States

State	(In thousands of pounds)		Average 1944-53
	Indicated 1955	1954	
Georgia	599,850	276,750	657,004
North Carolina	259,350	251,980	297,142
Texas	237,250	108,185	272,522
Alabama	236,500	110,550	280,931
Virginia	209,050	174,900	207,413
Oklahoma	108,000	38,540	110,572
Florida	65,250	44,550	60,206

pared with 429,055,000 lb. in 1954 and an average of 508,502,000 lb. The yield of 1,580 lb. per acre was high as compared with 1,527 lb. in 1954 or 1,296 lb. per acre average for 1944-53. Production of 915,025,000 lb. in the southeast area was high as compared with 439,290,000 lb. in 1954, but below the 10-year average of 1,017,286,000 lb. The southwest area crop of 352,750,000 lb. was more than double the 154,725,000 lb. of 1954, but less than average.

The national average support price was 12.2 cents per pound, and the average price received by producers in October was 11.8 cents as compared with 11.6 cents per pound a year earlier. Instead of usual substantial exports, the import quota for the year was increased from 1,709,000 lb. to 51,000,000 lb. in March, followed by removal in May of all restrictions on the quantities of shelled peanuts which might be imported. But the inadequate 1955 crop was expected to result in consumption per capita returning to more than 6 lb. and 450,000,000 lb. becoming available for crushing, exports or additions to stocks.

Marketing quotas were continued on the 1956 crop and the acreage allotment set at 1,610,000 ac., the same as the initial acreage allocation on the 1955 crop.

The world peanut crop of 1955 was forecast at a record 12,132,500 tons, as compared with 11,517,500 tons in 1954 and an average 9,569,000 tons in 1935-39. Leading producers were:

India, 4,256,000 tons; China, 2,400,000 tons; French West Africa, 990,000 tons; Nigeria and Cameroons, 950,000 tons and the United States, 869,400 tons. (J. K. R.)

Pears: see FRUIT.

Pecans: see NUTS.

Penicillin: see MEDICINE.

Pennsylvania. A middle Atlantic state and one of the 13 original states of the union, the commonwealth of Pennsylvania is popularly known as the "Keystone state." Area: 45,333 sq.mi., including 288 sq.mi. of inland waters. Pop.: (U.S. census, 1950) 10,498,012; (July 1, 1955, est.) 11,132,000. Capital: Harrisburg, pop. (1950) 89,554. Other cities with population greater than 75,000 in 1950: Philadelphia, 2,071,605; Pittsburgh, 676,806; Erie, 130,803; Scranton, 125,536; Reading, 109,320; Allentown, 106,756; Altoona, 77,177; Wilkes-Barre, 76,826. The urban population in 1950 numbered 7,403,036 and the rural 3,094,976.

History.—In 1954, for the first time in 20 years, a Democratic candidate was elected governor of Pennsylvania. George M. Leader was elected over the Republican candidate, Lloyd H. Wood, by a vote of 1,996,268 to 1,717,070. Governor Leader assumed office on Jan. 18, 1955.

The essential elements in the governor's program before the Pennsylvania 1955 general assembly were: (1) To restore fiscal solvency to the commonwealth by overcoming deficits and debts amounting to \$510,604,474 through proposing the adoption of classified income-tax legislation. (2) To reorganize the duplicative and unco-ordinated administrative agencies and departments of the executive arm of the state government through the adoption of a reorganization act. This act was passed by the general assembly. (3) To resuscitate the economy in the nine major employment crisis areas in the state by the establishment of a state industrial development authority. (4) To expand and improve the social welfare, public assistance and educational services of the state administration. The governor sponsored a program for creating diagnostic clinics and treatment centres in general hospitals throughout the state. He also proposed to the general assembly a reorganization of the state's public educational system to provide for the training and guidance of physically and mentally handicapped children, who were estimated to be one out of five of the school population.

The state's chief elective officials in 1955 were: George M. Leader (Democrat), governor; Roy E. Furman (Democrat), lieutenant governor; Charles R. Barber (Republican), auditor general; Weldon B. Heyburn (Republican), state treasurer; and Genevieve Blatt (Democrat), secretary of internal affairs. Ralph C. Swan was acting superintendent of public instruction.

Education.—Statistics for 1953-54 showed a net enrolment of 1,707,342 pupils, including 86,189 in kindergarten, 1,012,984 in the elementary division apart from kindergarten, and 608,169 in secondary school. During 1953-54 there were 1,431 kindergarten teachers, 32,932 elementary teachers and 26,249 secondary or high school teachers; 1,267 elementary principals, 944 secondary school principals and 651 supervising principals; 985 supervisors; and 2,342 other professional employees in the public school system. The state administration estimated that 50.38% of its total 1955-57 biennial general fund budget, or \$623,462,352, would be expended on public education. In 1955 Pennsylvania had 101 institutions of higher education; colleges and universities numbered 76.

Social Insurance and Assistance, Public Welfare and Related Programs.—In the first six months of 1955 expenditures by the department of public assistance reached \$65,388,000, including \$38,827,000 of state funds and \$26,561,000 of federal funds. The assistance rolls contained an average of 143,346 cases, including 57,048 cases of old-age assistance, 29,194 cases receiving aid to dependent children, 28,039 general assistance cases, 16,385 blind pensioners and 12,680 cases receiving aid for the permanently and totally disabled.

Seven institutions comprised the state penal and correctional system. Ten medical and surgical hospitals are state-owned, for the support of which \$13,790,000 was granted by the general assembly in the 1953-55 session. A budgetary request of \$17,157,138 was recommended for the 1955-57 biennium. The budget of the state mental hospital program, involving 21 institutions with approximately 42,000 mental patients, was

estimated at \$106,888,500, an increase of \$16,173,500 over the previous biennial expenditures. Four state institutions were operating exclusively for the care of the mentally retarded with a 1955-57 estimated budget of \$23,750,000. The newly constructed Eastern Psychiatric institute was to begin full operation early in 1956, concentrating on research and training.

Transportation.—Of the 100,695 mi. of highways in Pennsylvania in 1954, 41,080 mi. were in the state highway system under the supervision of the department of highways. Included in this total were 637 mi. in the cities of Pennsylvania and 2,370 mi. in the boroughs. The Pennsylvania Turnpike, by 1955 consisting of 360 mi. of highway, operated by the Pennsylvania Turnpike commission, now stretched from the Delaware river to the Ohio state line. There were 11,136.24 mi. of railroads in operation in Pennsylvania in 1953.

Banking and Finance.—As of Dec. 31, 1954, 317 banking institutions operated under state charters, with total resources of \$7,026,773,417.62. There were 843 insured commercial banks, of which 550 were national banks, 94 were state banks with membership in the federal reserve system and 199 were state banks not members of the federal reserve system. Seven insured mutual savings banks also functioned in the state. The total assets and liabilities of insured commercial banks in Pennsylvania on Dec. 31, 1954, were \$13,530,752,000. The number of depositors in all state banking institutions was 4,753,864. As of Dec. 31, 1954, 733 building and loan associations with assets of \$895,738,473.55 were operating in the commonwealth.

The total 1955-57 appropriations proposed by the state administration to the Pennsylvania general assembly from the general fund amounted to \$1,312,197,463. Appropriations and allocations from the motor licence fund for 1955-57 were estimated at \$494,165,656. The gross bonded debt of the commonwealth as of Sept. 1, 1954, stood at \$415,150,000. An additional estimated deficit for the last biennial state operations was \$74,732,533.

Table I.—Principal Crops of Pennsylvania

Crop	Indicated 1955	1954	Average, 1944-53
Corn, bu.	58,480,000	63,204,000	59,537,000
All wheat, bu.	16,172,000	19,796,000	19,856,000
Oats, bu.	35,552,000	33,411,000	25,732,000
Rye, bu.	8,968,000	8,800,000	4,894,000
Barely, bu.	420,000	315,000	316,000
Potatoes, bu.	13,680,000	14,500,000	18,568,000
Tobacco, lb.	40,815,000	43,416,000	49,472,000
All hay, tons	3,431,000	3,497,000	3,485,000
Apples, bu.	6,000,000	6,020,000	6,008,000
Peaches, bu.	2,250,000	2,550,000	2,189,000
Pears, bu.	185,000	185,000	225,000
Cherries, tons	12,100	10,600	8,240
Grapes, tons	25,000	26,600	17,250

Source: U.S. Department of Agriculture.

Agriculture.—According to the 1950 federal census, the commonwealth had 146,887 farms, among which 43,833 were devoted to dairy activity. In 1954 the total value of Pennsylvania's agriculture amounted to \$1,983,000,000. The farms of Pennsylvania covered 14,112,841 ac., 49% of the total land area. In 1954 Pennsylvania ranked 14th in total cash income from farm marketings, with \$748,860,000 in agricultural earnings. Thirty-five per cent was derived from dairy products, while 28% was obtained from poultry and eggs. The income from all livestock and poultry amounted to \$573,495,000 or 77% of the total farm cash income.

The value of fruits and crops totalled \$346,598,000 for 1954, compared with the revised estimate of \$307,896,000 for 1953.

Table II.—Principal Industries of Pennsylvania

	All em- ployees, 1953	Salaries and wages, 1953 (in 000s)	Value added by manu- facture, 1953 (in 000s)	Value added by manu- facture, 1952 (in 000s)
Food and kindred products	92,507	\$323,462	\$ 687,657	\$ 676,357
Tobacco manufactures	16,923	38,418	84,528	73,244
Textile mill products	119,233	374,367	601,187	567,291
Apparel and related products	154,092	373,845	556,504	477,527
Furniture and fixtures	25,974	85,294	137,750	108,583
Paper and allied products	39,302	155,954	305,523	253,571
Printing and publishing industries	54,561	242,000	423,212	413,512
Chemicals and allied products	51,033	217,734	547,461	472,221
Petroleum and coal products	29,732	139,389	323,709	301,766
Rubber products	18,170	75,278	159,363	119,458
Leather and leather products	31,989	87,147	131,522	131,455
Stone, clay and glass products	67,789	268,015	509,080	485,589
Primary metal industries	291,381	1,338,360	2,303,385	1,830,154
Fabricated metal products	120,375	507,870	814,143	776,508
Machinery (except electrical)	139,348	628,425	1,029,488	1,017,459
Electrical machinery	123,679	516,178	1,064,844	1,034,161
Transportation equipment	81,938	386,116	583,636	440,215
Instruments and related products	29,508	119,865	202,125	166,321
Miscellaneous manufactures	44,311	154,900	248,943	248,943
Administrative and auxiliary	42,424	210,036	...	...

*Withheld because the estimate did not meet publication standards, either on the basis of the associated standard error of estimate or on the basis of a consistency review.

Source: U.S. Department of Commerce, *Annual Survey of Manufactures*, 1953.

Manufacturing.—According to the records of the state department of labour and industry, the business and industrial establishments of the commonwealth covered by the Pennsylvania unemployment compensation law at the end of 1954 totalled 196,000 concerns, employing an average of 3,020,808 workers earning \$11,066,855,000 in wages and salaries during that year. It was estimated that 20,100 manufacturing companies operated during 1954, with 1,470,343 workers engaged in manufacturing getting \$5,900,940,000 in earnings for these 12 months. By a 1953 estimate, Pennsylvania's industrial establishments produced \$24,600,421,000 worth of products for the U.S. market.

Mineral Production.—Table III shows the tonnage and value of those mineral commodities produced in Pennsylvania in 1952 and 1953 (pre-

Table III.—Mineral Production of Pennsylvania

(In short tons, except as noted)

Mineral	Quantity 1952	Value 1952	Quantity 1953	Value 1953
Cement (bbl.)	40,038,000	\$103,389,000	42,094,000	\$114,023,000
Clays	3,731,000	12,640,000	3,575,000	9,988,000
Coal, anthracite	40,583,000	379,714,000	30,949,000	299,140,000
Coal, bituminous	89,181,000	473,476,000	93,331,000	516,490,000
Cobalt (lb.)	640,000	...	564,000	...
Coke*	18,851,000	247,910,000	23,383,000	324,003,000
Ferroalloys*	583,000	142,335,000	661,000	163,485,000
Iron ore	1,111,000	...	1,143,000	...
Iron, pig	16,870,000	829,289,000	20,504,000	1,039,286,000
Lime	1,203,000	13,842,000	1,335,000	16,010,000
Natural gas (000 cu. ft.)	108,684,000	30,758,000	105,558,000	30,717,000
Natural gasoline (000 gal.)	7,000	548,000	...	...
Petroleum (bbl.)	11,233,000	47,740,000	10,649,000	45,680,000
Sand and gravel	14,696,000	19,920,000	14,715,000	20,692,000
Slate	215,000	4,488,000	202,000	4,420,000
Stone	25,610,000	44,676,000	26,193,000	48,094,000
Sulphuric acid*	337,000	5,600,000	336,000	6,005,000
Other minerals . . . . .	...	14,432,000	...	16,325,000
Total . . . . .	...	\$1,145,633,000	...	\$1,121,579,000

*Values for processed materials are not included in the totals.

†Value included with other minerals.

liminary) whose value exceeded \$100,000. In 1953 Pennsylvania led the states in output of cement and slate, was second in clay, coal, lime and stone, and ranked third among the states in the total value of its mineral output, with 7.80% of the U.S. total.

Pension, Old-Age: see SOCIAL SECURITY. See also under various states.

Pensions, Veterans': see VETERANS ADMINISTRATION (U.S.).

Performing Right Societies: see SOCIETIES AND ASSOCIATIONS, U.S.: *American Society of Composers, Authors and Publishers.*

Perón, Juan Domingo (1895—), president of Argentina, was born on Oct. 8 near Lobos, south of Buenos Aires, and was educated in military schools. He became one of the leaders of a nationalist clique of young army officers who in 1943 helped overthrow the regime of Pres. Ramón S. Castillo. Perón became war minister and later vice-president under Pres. Edelmiro Farrell, and in 1946 was himself elected president on the Labour party ticket. In 1949 a constitutional change was accomplished which permitted Perón to succeed himself, and in Nov. 1951 he was re-elected president for a second term and was inaugurated on June 4, 1952.

Late the following month his wife, Eva, died. She had wielded an extraordinary political influence in Argentina on behalf of her husband, through the María Eva Duarte de Perón Welfare foundation and through her leadership in national labour groups, and among the so-called "shirtless ones" of the lower classes.

Friction which began in Nov. 1954 between Perón and the Catholic Church culminated in a short-lived revolt of the Argentine navy on June 16, 1955. The revolt was suppressed in Buenos Aires the same day, but Perón's position was obviously weakened and there were rumours of his impending resignation. He announced on July 15 that he had resigned as leader of the Peronista party but would remain as president of the nation. On Aug. 31 he offered to resign the presidency if that was necessary to keep the peace in Argentina, but he withdrew his offer a few hours later and threatened instead to wipe out his opposition.

A new revolt broke out on Sept. 16, and this time it was successful. Perón resigned three days later and sought political sanctuary aboard a Paraguayan gunboat anchored in Buenos Aires harbour. On Oct. 2 he flew to exile in Paraguay, but on Nov. 2 he left by plane, bound, it was announced, for Nicaragua.

Persia: see IRAN.

Peru. A republic situated on the west coast of South America, and bounded on the north by Ecuador and Colombia, on the east by Brazil and Bolivia, on the south by Chile and on the west by the Pacific ocean, Peru has an area of 506,189 sq.m.

The population, 9,396,000 according to a 1955 official estimate, is composed approximately of 52% "white" and mestizo and 46% Indian; there are also some Negro and Asiatic elements to the extent of about 2%. Lima, the capital, has a population (1952 est.) of 926,400. The population estimates for other major cities are: Callao, 104,500; Arequipa, 100,900; Cuzco, 84,400; Trujillo, 49,600; Iquitos, 44,000; Chiclayo, 41,600; Huancayo, 36,500; Sullana, 28,470; Ica, 27,300; and Piura, 15,600. Language: Spanish, although Quechua is still spoken by some of the highland Indians; religion: predominantly Roman Catholic. President in 1955: Gen. Manuel Odría.

History.—The Peruvian government under Pres. Manuel A. Odría maintained during 1955 a policy of tight political control and relative economic freedom. The stability of the regime and its liberal concessions to foreign capital provided a confident atmosphere in which investments increased and numerous developmental programs were undertaken. Exports in general were high, and the Peruvian sol remained steady at 19 to the U.S. dollar.

General Odría announced that for constitutional and personal reasons he would not be a candidate to succeed himself in the "free and democratic" election scheduled for June 1956. With conventional political parties languishing from seven years' inactivity and Victor Raoul Haya de la Torre's Apra (Alianza Popular Revolucionaria Americana) checked by the stringent law for the Security of the Republic, speculation centred on the identity of the candidate who would be selected by Odría to perpetuate his policies. Former President Manuel Prado y Fargateche was prominently mentioned in this connection. An antigovernment plot attributed to exiled Gen. Zenón Noriega was firmly suppressed in January, but by October there was talk of amnesty for the offenders.

Four U.S. firms, headed by the American Smelting and Refining company, formed a \$200,000,000 corporation to exploit the rich copper reserves at Toquepala in southern Peru. The Cerro de Pasco corporation hoped to make Peru one of the world's leading exporters of zinc in 1956 by investing more than \$80,000,000 to enlarge its refinery at La Oroya. Extensive exploration resulted in new petroleum discoveries in the northwestern part of the country. Construction was begun on a four-inch pipeline to connect Agua Caliente on the Pachitea river with Pucallpa on the Ucayali as part of a program to increase oil production in the montana region of eastern Peru.

Work continued on the hydroelectric plant and steel mill being built along the Santa river with French financial assistance. Advances were noted in the cement, tire, paper and match industries, and the guano industry experienced a revival. An \$18,000,000 irrigation project was initiated in northern coastal Peru with a loan from the International Bank for Reconstruction and Development. The bank also lent Peru \$5,000,000 to develop a modern service to maintain its recently expanded highway system. Peru and Bolivia jointly began surveys for a railroad along the southern shore of Lake Titicaca between Puno, Peru, and Guaqui, Bolivia.

Ecuador notified the Council of the Organization of American States in September that Peruvian forces were poised to attack, but investigation by the guarantors of the 1942 Rio de Janeiro protocol revealed no unusual activity along the frequently disputed frontier. Like Ecuador and Chile, Peru refused to submit its claim to sovereignty over a 200-mi. belt of coastal waters to the International Court of Justice. Several U.S. concerns paid fines for unauthorized fishing within the designated zone. Peru declined to join the International Sugar agreement, and its subsequent attempts to have its quota for sugar exports to the United States raised were only partially successful.

(R. HN.)

Education.—In 1953 there were 10,421 public primary schools with 23,147 teachers and 908,936 pupils and 1,348 private schools with 4,214 teachers and 137,900 pupils. The 114 public secondary schools had 2,686 teachers and 47,873 students; 204 private secondary schools had 3,100 teachers and 35,471 students. University education was available at four public universities—Lima (8,771 students in 1952), Arequipa (890), Cuzco (791) and Trujillo (1,616)—and the Catholic university of Lima (1,453).

Finance.—The monetary unit is the sol, valued at 5.26 cents U.S. currency, exchange certificate rate, and 5.20 cents, free rate, on Sept. 30, 1955. The 1955 budget was balanced at 3,264,758,000 soles. Actual revenue in 1954 (preliminary figures) was 3,357,000,000 soles; expenditure, 3,434,000,000 soles. The direct public debt on Dec. 31, 1953, totalled 1,859,194,890 soles, of which 361,674,020 soles represented the external debt. Currency in circulation (Aug. 31, 1955) totalled 1,622,000,000 soles; demand deposits, 2,485,000,000 soles. The U.S. department of commerce estimated U.S. direct investments in 1954 at \$255,000,000, of which mining and smelting investments accounted for \$172,000,000. The cost-of-living index (Lima) stood at 183 in Aug. 1955 (1948=100). National income in 1953 was estimated at 17,205,000,000 soles.

Trade and Communications.—Exports in 1954 totalled 4,792,000,000 soles; imports, 4,916,314,000 soles. Leading exports were cotton (26%), sugar (13%), lead (11%), copper (7%) and petroleum and products (7%). Leading customers were the U.S. (36%), the U.K. (14%), Chile (11%), Belgium (6%) and Japan (6%); leading suppliers, the U.S. (52%), the U.K. (9%), Germany (8%), Argentina (7%) and Canada (3%).

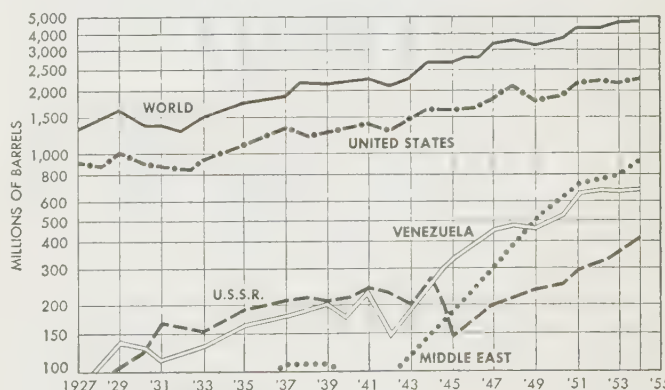
Railroads (1951) totalled 2,800 mi.; highway mileage 19,466, of which 7,894 mi. were hard surfaced. On Jan. 1, 1955, there were 51,471 automobiles, 39,940 trucks and 4,940 buses. According to *Lloyd's Register of Shipping*, the merchant marine had 52 vessels (100 tons and more) aggregating 103,000 gross tons on June 30, 1954. Telephones (Jan. 1, 1954) numbered 58,017, 83.4% of which were automatic and 71% of which were located in Lima.

Agriculture.—Production estimates in 1954 (preliminary figures) included cotton (ginned) 105,800 metric tons; sugar 635,000 tons; rice (milled) 170,300 tons; wheat 169,000 tons. In 1954, 84,434 tons of cotton and 457,691 tons of sugar and derivatives were exported. In 1952 there were 3,188,600 cattle, 15,903,800 sheep, 3,380,900 alpacas and llamas; (1951) 975,000 pigs and 1,150,000 goats. In 1954, 5,266 metric tons of wool were exported.

Minerals.—Production of the principal minerals in 1954 (preliminary figures) was as follows: copper (in ore) 41,510 short tons; lead 119,823 tons; zinc (in ore) 170,882 tons; silver 19,933,482 oz.; gold 147,278 oz.; antimony 932 tons; iron ore 2,170,000 tons. Petroleum production totalled 17,161,394 bbl. (J. W. Mw.)

Petroleum. Factors contributing during 1954 to the slower pace in the United States petroleum industry were a substantial decrease in exports, the decline in military requirements and the modest slump that was experienced in general business activity. Hence domestic crude-oil production declined and the amount of crude oil processed in refineries fell off, with a comparable decrease in the output of such key products as motor fuel and fuel oil. Nevertheless, continued crude-oil productivity and refinery capacity continued high, with drilling activity setting a new record of 53,000 wells, an increase of 3,500 over the preceding year, and operable refinery capacity at 8,379,000 bbl. daily, up approximately 372,000 bbl. U.S. crude-oil output in 1954 was 2,312,000,000 bbl., compared with 2,359,998,000 bbl. in 1953.

In the first nine months of 1955, crude-oil production was 1,839,000,000 bbl. compared with 1,737,000,000 bbl. for the corresponding period of 1954, and it was estimated that the year's production would probably exceed that of 1954 by about 6%.



TOTAL WORLD PRODUCTION OF PETROLEUM and output of four principal producing areas

rent consumption was double that of 1941 and 60% larger than in 1946.

Table II.—U.S. Petroleum Production

Year	Crude oil (000 bbl.)	Natural gas liquids* (000 bbl.)	Total liquid petroleum (000 bbl.)	Natural gas (000,000 cu.ft. gross)
1st 9 mo. 1955†	1,839,000	192,000	2,031,000	6,850,000
1st 9 mo. 1954†	1,737,000	183,000	1,920,000	8,150,000
1954†	2,312,000	245,200	2,557,200	11,014,000
1953†	2,359,998	242,396	2,602,394	10,645,798
1952	2,289,836	223,897	2,513,733	10,272,566
1951	2,247,711	204,965	2,452,676	9,689,372
1950	1,973,574	182,119	2,155,693	8,479,650
1949	1,841,940	157,275	1,999,215	7,546,825
1948	2,020,185	147,079	2,167,264	7,178,777
1947	1,856,987	132,863	1,989,850	6,733,230
1946	1,733,939	117,809	1,851,748	6,190,200
1945	1,713,655	114,884	1,828,539	5,902,180
1940	1,353,214	58,867	1,412,081	3,694,100
1935	996,596	41,204	1,037,800	2,498,005
1930	898,011	55,320	953,331	
1925	763,743	28,702	792,445	

*Natural gasoline and benzol. †Estimated. ‡Preliminary. §Not available.
Sources: U.S. Bureau of Mines; American Gas Association.

Great as had been this U.S. increase, it was exceeded by the rate of increase in the consumption of petroleum products outside the United States, particularly in the last few years. It seemed probable that this demand would reach 15,500,000 bbl. per day by 1975, from an estimated 7,250,000 bbl. per day in 1955, which itself was two and a half times greater than the slightly more than 2,750,000 bbl. consumed daily in 1945. The reasons were the recovery in Europe from the effects of World

Table III.—U.S. Production of Motor Fuel

(In 000 bbl. of 42 gal.)			
Year	Quantity	Year	Quantity
1st 9 mo. 1955*	1,005,000	1948	919,723
1st 9 mo. 1954*	945,000	1947	841,664
1954†	1,264,920	1946	775,816
1953*	1,266,925	1945	793,431
1952†	1,192,965	1940	616,314
1951	1,139,659	1935	469,571
1950	1,024,181	1930	444,322
1949	960,747	1925	268,668

*Preliminary. †Estimated. ‡Figures for 1952 and prior include some motor fuel used as jet fuel components.
Source: U. S. Bureau of Mines.

War II, increased industrialization and the drive to raise living standards throughout the world.

For the second consecutive year the combined production of the rest of the world in 1954 exceeded that of the United States. Total world production was 4,968,600,000 bbl., with the U.S. accounting for 46.53%. This compared with 4,747,207,000 bbl. in 1953, with the U.S. contributing 2,359,998,000 bbl. or 49.71%.

In the middle east alone, crude-oil reserves were estimated to be three times as large as those of the United States. According to *World Oil*, estimated reserves as of July 1, 1955, were as follows: United States, 30,060,000,000 bbl.; rest of North America, 4,402,500,000; South America, 12,377,500,000; Europe, 11,384,000,000; Africa, 115,000,000; middle east, 93,265,

Table I.—World Production of Crude Oil

(In 000 bbl.)					
Year	United States	Per cent	Rest of world	Per cent	Total world
1st 9 mo. 1955*	1,839,000	46.0	2,161,000	54.0	4,000,000
1st 9 mo. 1954*	1,737,000	47.1	1,953,000	52.9	3,690,000
1954†	2,312,000	46.53	2,656,600	53.47	4,968,600
1953†	2,359,998	49.71	2,387,209	50.29	4,747,207
1952†	2,289,836	50.93	2,206,060	49.07	4,495,896
1951†	2,247,711	52.44	2,038,345	47.56	4,286,056
1950	1,973,574	51.90	1,829,333	48.10	3,802,907
1949	1,841,940	54.11	1,562,079	45.89	3,404,019
1948	2,020,185	58.91	1,409,001	41.09	3,429,186
1947	1,856,987	61.46	1,164,681	38.54	3,021,668
1946	1,733,939	63.15	1,011,728	36.85	2,745,667
1945	1,713,655	66.04	881,304	33.96	2,594,959
1940	1,353,214	62.94	796,607	37.06	2,149,821
1935	996,596	60.24	657,892	39.76	1,654,488
1930	898,011	63.60	513,893	36.40	1,411,904
1925	763,743	71.45	305,190	28.55	1,068,933

*Estimated. †Preliminary.
Source: U. S. Bureau of Mines.

petrochemical industry making alcohols, ethers, plastics, detergents, cloth fibres and fertilizers. It was estimated that the demand for oil in the United States would be likely to reach 14,000,000 bbl. daily by 1975, nearly 6,000,000 bbl. more than the estimated 8,330,000 bbl. daily consumption in 1955. Cur-

*Estimated. †Preliminary. ‡Not available prior to 1932.
Source: U.S. Bureau of Mines.

000,000; far east, 2,934,200,000; Australia-New Zealand, 1,000,000; total world, 154,539,200,000.

It was believed that the petroleum industry in the United States would again establish a new record for capital expenditures in 1955. The total approached \$6,000,000,000, largely reflecting expanded drilling and improvements and additions to refining facilities. The heavy outlay was an important factor in the expansion of the nation's economy and stemmed from record automobile output and the belief that the demand for petroleum products would grow in the United States at the average rate of 5% a year for the next ten years. In addition, U.S. companies operating abroad were steadily building up facilities to meet their demands. Capital expenditures of these companies in 1955 were expected to exceed the \$1,000,000,000 spent in 1954.

(See also CO-OPERATIVES; FOREIGN INVESTMENTS; GEOLOGY.)

(L. M. F.)

Philadelphia. The estimated population of Philadelphia, Pa., was 2,130,600 in 1955, an increase of nearly 68,000 over the 1950 national census count of 2,071,605. Public and parochial schools had in 1955 a combined enrolment of 353,060. Philadelphia is the third largest city in the country and the largest in Pennsylvania. It covers 127.2 sq.mi. of land and includes 7.8 sq.mi. of water.

Commercial and industrial activity continued high during 1955. Employment in Philadelphia, and in a seven-county region of which the city is the hub, showed a slight increase. Available estimates placed employment in manufacturing industries of this greater area at 580,000. Nonmanufacturing employment stood at 837,000, a rise of 15,000. Of these labour forces, an estimated 57% consisted of Philadelphia residents.

Philadelphia, whose fresh water port located on the Delaware river is the largest of its kind in the world, exceeded New York in foreign import tonnage during 1954. Total export and import traffic amounted to 78,997,127 short tons, an increase of 5,500,000 tons over the previous year. Of this amount, more than 46,000,000 tons were moved in domestic coastwise traffic. Foreign water-borne tonnage included 2,600,000 tons of exports valued at \$376,000,000 and 30,300,000 tons of imports valued at \$722,000,000. The city government department of commerce estimated unofficially that foreign water-borne commerce would reach at least 38,000,000 short tons in 1955. Exclusively a cargo port for many years, Philadelphia inaugurated its first regularly scheduled passenger run to Bermuda on Aug. 26.

Retail sales in the city reached \$2,668,000,000 in 1954 and bank clearings totalled \$57,147,000,000.

The city's assessed real estate value for 1955 was \$3,662,618,350, with personal property assessed at \$1,516,094,238. Philadelphia's realty tax was \$3.025 per \$100. The city's funded indebtedness consisted on Sept. 1, 1955, of \$537,555,800 of issued bonds, of which \$201,796,566 were self-supporting and not a charge against the city's borrowing limit. Operating budget appropriations for 1955 were \$192,051,609; appropriations in 1954 were \$196,214,643.

Of nearly \$54,000,000 in public works contracts let by the city during the first nine months of 1955, water mains and sewers accounted for \$10,990,000; building improvements and repairs for \$13,500,000; street paving and repair for \$7,049,000; subways for \$1,484,000; and recreational facilities for \$1,893,000.

The city pushed its International Airport expansion program in 1955, commencing work on taxiway lighting and a \$1,500,000 maintenance terminal. It opened an \$800,000 air freight termi-



SPECTATORS FLEEING refinery explosion at Whiting, Ind., Aug. 27, 1955

nal. In the city planning field, a preliminary physical development plan was prepared for the huge northeast and an industrial pilot project of 125 ac. was started to attract new industry. Formal dedication of the partially completed Independence Mall, located north of Independence hall, took place July 4. The city organized a special city-wide co-ordinating committee to combat juvenile delinquency; set up a zoning advisory commission to revise city zoning ordinances; approved final plans for a \$10,000,000 expansion of the gas manufacturing works and distribution system; opened a \$4,000,000 water treatment plant and a new prison shops building; and began work on construction of five modern cottages and a community building at its home for the aged. Survey work started for an expressway along the Delaware river. Development of Penn Center, a large cleared area west of the city hall, proceeded, with the erection of a modern office building, start on foundations for another building and partial completion of Pennsylvania boulevard. The Walt Whitman bridge, connecting South Philadelphia and South New Jersey at Gloucester, reached midpoint in its four-year construction schedule.

The administration of the city in 1955 was Democratic; the mayor was Joseph S. Clark, Jr. (J. S. Ck.)

Philanthropy: see DONATIONS AND BEQUESTS.

Philately. On July 28, 1955, Pres. Dwight D. Eisenhower, Vice-Pres. Richard M. Nixon, Secretary of State John F. Dulles, Postmaster General Arthur Summerfield, Secretary of Defense Charles E. Wilson and many other government officials, together with diplomatic representatives of 73 foreign governments and a select philatelic group, gathered on the White House lawn to launch the issuance of a three-cent "atoms for peace" stamp. This was the philatelic highlight of 1955.

Sixteen stamps were released during the year. As in 1954 six of these were a part of the "liberty" postage issue, bringing the set two-thirds of the way to completion. For some reason postal officials waited until Aug. 25 to resume issuing the new postage set and then released the six stamps in less than three months. The 50-cent Susan B. Anthony was placed on sale at Louisville, Ky., on Aug. 25, in conjunction with the annual convention of the Society of Philatelic Americans.

On Sept. 21 the 30-cent Robert E. Lee value went on sale at Richmond, Va., coincident with the opening of the convention of the American Philatelic society. Three days later (Sept. 24) the 40-cent John Marshall stamp went on sale at Richmond. Then followed the \$1 Patrick Henry value, which was placed on sale at Joplin, Mo., in conjunction with the 4-State Federation of Stamp Clubs' exhibition. On Oct. 20 a one-half-cent stamp portraying Benjamin Franklin was issued in Washington, D.C., when the golden jubilee exhibition of the Washington Philatelic society was opened. The last regular postage value of the year was the six-cent Theodore Roosevelt stamp, released Nov. 18 in New York.

The first seven months of 1955 witnessed the release of all but one of the commemoratives or special stamps, and that was what might be referred to as an added starter. Nine commemoratives were released during the year. The first was the three-cent (brown) adhesive marking the 150th anniversary of the Pennsylvania Academy of the Fine Arts, with first-day ceremonies in Philadelphia, Pa.

On Feb. 12 the centennial of the land-grant colleges (three-cent green) appeared at Lansing, Mich., followed on Feb. 23 by a stamp marking the 50th anniversary of the International Rotary movement (eight-cent blue).

The armed forces reserve was next to be honoured by a stamp, released in Washington, D.C., on May 21 (three-cent blue).



EARLY KINGS OF PORTUGAL honoured in a 1955 Portuguese commemorative issue of stamps

Then followed the release of an entirely new type of stamp, for use on certified mail, or modified registry, which was also issued in Washington on June 6 (15-cent red). On June 21, Franconia, N.H., was the site of issue of a three-cent green stamp picturing the Old Man of the Mountain.

On June 28 the centenary of the Soo locks at Sault Ste. Marie, Mich., was marked by a three-cent commemorative (blue), followed by the "atoms for peace" stamp on July 28 and the Fort Ticonderoga bicentennial adhesive (three-cent sepia) at Fort Ticonderoga, N.Y., on Sept. 18. The final commemorative of the year was not announced until Nov. 7, marking the centennial of the birth of Andrew W. Mellon, financier, secretary of the treasury and principal donor of the National Gallery of Art in Washington, D.C. This stamp was placed on sale in Washington Dec. 20 (three-cent maroon).

Two special groups of stamps made their appearance during 1955. One, observed by many countries, marked the golden jubilee of Rotary International. The second, also observed on a world-wide scale, commemorated the tenth anniversary of the United Nations.

What is conceded to be the greatest private collection ever formed came onto the market in 1955 following the death of Alfred H. Caspary, New York financier. Caspary's collection, valued at more than \$2,000,000, was placed with H. R. Harmer, Inc., New York city, for dispersal by auction in a series of 16 sales. The first, held Nov. 15 and embracing the United States postmasters' provisionals, realized \$225,340.

The Smithsonian institution in Washington, D.C., repository of the national postage stamp collection, received congressional authorization and presidential approval to construct a new \$36,000,000 museum. As one result, the national stamp collection practically doubled its holdings through governmental transfers, private gifts and bequests. (See also POST OFFICE.)

(F. R. B.)

Philippines, Republic of the. A republic situated in the western Pacific Ocean east of Indochina and consisting of an archipelago of 7,100 islands, totalling 115,707 sq.mi. The 1948 census tabulated 19,234,182 persons, and a census estimate for July 1, 1955, totalled 21,848,000. The chief city is Manila, whose metropolitan area contains about 1,400,000. Other cities are Cebu 90,000, Iloilo 125,000 and Bacolod 115,000. Statistics list Davao at 126,000, Basilan at 125,000 and Zamboanga at 117,000 for 1955, but all three cities politically include large rural areas and populations. The official capital is Quezon City, whose 22,000 persons are included in the figure for metropolitan Manila, but most government offices remain in Manila. Nearly 1,000 Americans and 8,000 other occidentals are resident in the Philippines. By official count the Chinese population numbered 142,000.

Most Filipinos are Roman Catholic or native Aglipayan Catholic in religion, the total estimated at 19,500,000. In the southern islands live an estimated 850,000 Mohammedans, whereas about 475,000 Protestants and 700,000 pagans are widely scattered.

President in 1955: Ramón Magsaysay.

History.—Issues that dominated the domestic scene during 1954 and 1955 were the combativeness of congress toward President Magsaysay, the opposition to the president from his own Nacionalista party, the difficulty of securing capable leadership in government offices, the continued failures of judicial machinery to render justice to the masses of the people, and the inability of the government to collect the whole of assessed taxes.

This was counterbalanced by the president's tremendous popularity among the mass of Filipinos.

The president's program was based upon issues of internal security, upholding the constitution, securing efficiency in government, reorganizing the government financial structure, basic land reform and maintaining his foreign policy of friendship to the United States and participation in programs of the free nations of the world. A special session of congress in July finally passed a bill which gave the president power to break up large landed estates and carry out basic land reform. A Nacionalista party convention in August completely endorsed the president's entire program and prepared to name a slate of candidates for office for the November elections which eliminated the president's strongest opponents.

Thus President Magsaysay won from both congress and his own political party both legislation and backing for his basic reform programs.

During the year the Philippines and Japan agreed to terms of reparations for World War II damage caused by the Japanese to the Philippines. Though Filipinos had set the total damage at about \$8,000,000,000, they realistically compromised on a settlement of \$800,000,000 spread over a 20-yr. term. Small cash payments, services in removing sunken ships from Philippine harbours, the provision of \$500,000,000 in capital goods and the provision of \$250,000,000 in investment funds and loans formed the main features of the settlement.

Education.—The national budget for the year 1955-56 authorized an expenditure of \$91,672,000 upon all forms of public education. Including private schools, for which no expense figures were obtainable, there were, Nov. 1954, 26,579 elementary schools having 3,441,864 pupils and 8,925 teachers, 1,607 secondary schools having 605,000 pupils and 21,730 teachers, 381 collegiate institutions with an enrolment of 178,161 students taught by 6,248 professors. Total enrolment was 4,225,025.

Finance.—The peso is the basic monetary unit, divided into 100 centavos, with exchange selling and buying rates very close to the par value of 2 pesos to the U.S. dollar. In July 1955 the internal purchasing power of the peso stood at 0.3205, against a 1941 base of 1, with the cost of living standing at 312, against a 1941 base of 100. On June 30, 1955, there were 54 banks in operation, and total bank resources stood at \$682,450,000, with bank deposits totalling \$515,350,000. Currency in circulation in June 1955 totalled \$329,650,000. Foreign exchange reserves

had dropped to \$248,030,000. The national debt amounted to \$629,050,000. The national expense budget was set for the fiscal year 1955-56 at \$388,000,000, with government revenue estimated at \$326,060,000, requiring further deficit financing. National income for calendar 1954 was estimated at \$3,719,000,000, the highest figure yet attained.

Communications and Trade.—Railroad mileage operative in 1954 was 740. freight carried was approximately 1,500,000 tons and passengers carried numbered 8,504,000. Highways totalled 18,550 mi. at the end of 1954, with 116,000 licensed motor vehicles. Domestic air lines flew 9,150,000 mi., carrying 252,000 passengers and 12,780,000 lb. of freight. There were 47,000 telephones at the end of 1954, and about 13,000 mi. of telegraph lines. Forty-five broadcasting stations were listened to through an estimated 400,000 radio receiving sets.

The total export trade of the islands in the calendar year 1954 totalled \$412,100,000. The ranking items comprised copra \$128,800,000, sugar \$107,000,000, logs, lumber and timber \$34,400,000, abaca \$26,000,000, base metals \$40,000,000, coconut oil \$16,800,000, desiccated coconut \$13,600,000, embroideries \$11,600,000, precious metal concentrates \$11,000,000 and canned pineapple \$4,650,000. The import trade totalled \$452,600,000, resulting in another unfavourable trade balance. The ranking items were cotton and manufactures \$63,800,000, petroleum products \$42,400,000, iron and steel manufactures \$36,500,000, automobiles, parts and tires \$31,100,000, general machinery \$30,380,000, grains and products \$27,100,000, dairy products \$23,000,000, paper and products \$19,160,000, chemicals and drugs \$19,100,000, rayon and other synthetic textiles \$19,090,000. During the year the United States took 60.7% of the exports and supplied 67% of Philippine imports. Japan took 12.1% of the exports and supplied 6.1% of the imports. During October a trade agreement calling for the exchange of about \$20,000,000 worth of goods was negotiated with western Germany.

Agriculture.—Land cropped during 1955 was estimated at 16,652,000 ac. Rice harvested totalled 7,310,000 ac., maize about 3,440,000 ac., coconut 2,445,000 ac. and abaca 590,000 ac. Fruits totalled 830,000 ac. and root crops 700,000 ac. The index of agricultural production for the year 1954 had reached 117 against a 1952 base of 100, and the expectation for 1955 was a still higher figure. Livestock figures on Jan. 1, 1955, indicated water buffalo at 2,836,000, cattle 846,000, goats 422,000, horses 230,000, sheep 22,000, pigs 6,423,000 and chickens 42,100,000.

Manufacturing.—The manufacturing index lifted to 127 against a 1952 base of 100. For 1954 statistics indicated total "factories" as 11,464, but only 3,239 made reports to government agencies. This latter number of concerns reported 2,439,000 industrial labourers. Of reporting firms, 779 processed food products, 588 processed wood products and furniture, 552 worked with textiles and clothing products, 258 manufactured chemicals or drugs, 301 operated in the metals and machinery industries, 99 produced paper products and 88 produced tobacco products. The total value of manufactured products rose above \$400,000,000 for the year.

Mining.—The index of mining production stood at 147.7 against a 1949 base of 100. Figures for 1954 showed production of gold at 416,000 oz., silver 527,000 oz., copper 14,350 metric tons, manganese 9,400 metric tons, chromite 451,000 metric tons and coal 120,000 metric tons. Iron ore production during the first half of 1955 totalled 725,000 tons.

(J. E. Sp.)

ANNIVERSARY CEREMONIES in the Philippines July 4, 1955, marking the ninth year of independence



Philosophy.

For the past quarter century philosophy has been engaged in a large internal controversy over its own proper nature and function. Under the impact of scientific thought, the traditional enterprise of philosophy as primarily a quest for reality and the good life had been challenged. A serious attempt had been made to establish in its place philosophy conceived as analysis: logical, methodological and linguistic. For a time the major schools of metaphysics and value theory, such as idealism and realism, were severely discredited. The analytical philosophy described its role as primarily the clarification of meaning. It was associated, moreover, with a rigorous positivism that restricted knowledge to science, describing statements that are nonscientific in principle as meaningless and treating value judgments as emotive rather than cognitive.

But by 1955 it had become evident that the logician-scientist-philosopher, though well entrenched and here to stay, had not dislodged and was not likely to displace the traditional philosopher who seeks humane wisdom through broad interpretations of reality and a search for the meaning of existence. There were signs of a genuine resurgence of metaphysics, and the traditional schools of thought, though often altered importantly by the influence of analysis and positivism, were making a strong stand. There was indication, however, that today's philosophers were more concerned with specific problems, whether theoretical or practical, than with the construction of large speculative systems, and that speculation itself had been effectively tempered by the demand that philosophy must constantly accept the criticism of the sciences. Moreover, there were signs of increased communication and co-operation among philosophers, as among scientists, and less inclination to favour isolated and totally independent efforts in the treatment of philosophical questions. Increased co-operation was made possible in part through projects financed by private foundations.

Philosophy in 1955, a decade after the close of World War II, was clearly affected by the war and by the large political, social and cultural events that followed it. The interest in the analysis of culture, shared with the cultural anthropologists, continued, as did the concern for the philosophy of history and the attempt to understand and interpret contemporary history. Much attention was given to problems relating to the meaning of human existence, the vocation of man and the ground of human values. In all these matters the attitudes characteristic of recent thought generally obtained. There was little optimism regarding either the future of society generally or the character of the human individual, yet pessimism, nihilism and negativism in the estimate of humanity seemed to be steadily receding in favour of a cautious hopefulness. There was an increased emphasis on value problems, and the strong subjectivism and relativism of the prewar period, that denied an objective status to moral and other values and insisted that they have no absolute nature or foundation, were subjected to vigorous criticism. There was a serious effort to ground morality, both public and private, on a basis that was stable and lasting and yet provided for the great variety of human aptitudes and changing circumstance.

The most important recent event in moral philosophy was the fifth series of the Woodbridge lectures delivered late in 1954 at Columbia university by Clarence I. Lewis, professor emeritus at Harvard university, on "The Ground and Nature of the Right." *The Human Career*, a work in the philosophy of education by Robert Ulich, was an important effort to indicate on naturalistic grounds the possibilities of human growth and achievement. In the philosophy of history much attention was given to the final four volumes which completed Arnold Toynbee's ten-volume monumental work, *A Study of History*. The

Dutch historian Pieter Geyl published a collection of essays entitled *Debates With Historians*, analyzing several major historians including Ranke, Michelet and Toynbee.

Although there was no decline in interest in the philosophy of science or in social philosophy, there was in 1955 a clear indication that concern for the philosophical issues of religion continued to grow. Religious subjects comprised a larger segment of the curriculum of higher education, and advanced writings on religion enjoyed a larger reading public. There was an increase in the publication of classical writings in religion and religious philosophy, as well as a steady output of new analyses and interpretations of religion.

Whereas the traditional approach to fundamental philosophical problems in religion was oriented especially to the question of the existence and nature of God, contemporary writers more frequently centred their attention on the fact of human existence and the problem of its meaningfulness. Existentialism, the philosophy that takes its stand totally on this fact, which treats reality primarily through subjective analyses of existence and has a profound concern for the human condition, was clearly established by 1955 as the main contemporary influence on religious thought. In this connection the major forerunners of existentialism, Kierkegaard and Nietzsche, were still exerting a decisive influence, while the impact of Freudianism, with its psychological analyses of the nonrational factor in human behaviour, seemed to be increasing.

Among the interesting philosophical events of the year was the celebration on July 31 of the Josiah Royce centenary at the University of California at Los Angeles in honour of America's foremost idealist and metaphysician. A mark of the vitality of philosophical idealism, which had for several decades been eclipsed by pragmatism, realism and positivism, was the creation of the Foundation for Idealistic Philosophy.

If idealism showed signs of new stirrings, realism, its long time rival, was thriving, especially the realism of neoscholasticism, the philosophical position that enjoys strong support from Catholic philosophers. The neoscholastic realists vigorously opposed the various forms of both positivism and subjectivism that threatened belief in the objective status of reality and values. Yet they worked ingeniously to incorporate into their philosophy the gains made by both the positivists and existentialists. It was evident that neoscholasticism is a philosophy with a broad appeal that extends to non-Catholics as well as Catholics and that its attractiveness is not identified simply with its capacity as an intellectual groundwork for religion.

An unusually large number of philosophical writings were published during 1955, reflecting interest in a larger variety of problems in every area of the philosophic enterprise. Moreover, the publication of old philosophical classics and near classics as well as the reprinting of comparatively recent works indicated a rapidly growing philosophical reading public. A leading publication in the field of philosophical analysis was the *Philosophy of Analysis*, the 1952 Hertz lecture of the British Academy delivered by the American philosopher Brand Blanshard. The analytical genius of the 17th-century mathematician Leibniz was examined in R. M. Yost's work *Leibniz and Philosophical Analysis*. Leibniz' metaphysical analyses were an important element in a two-volume publication of his work under the title *Leibniz: Philosophical Papers and Letters*, translated by L. E. Loemker. Both aestheticians and art critics were served an interesting critique of aesthetic theories by a group of analytical philosophers from Cambridge, Oxford and elsewhere under the title *Aesthetics and Language*.

In the philosophy of science, considerable attention was directed to the questions of explanation, causality and induction and to the usual problems of meaning and method. The mathe

matician G. Pólya's two-volume *Mathematics and Plausible Reasoning* brought mathematical analogy to the treatment of inductive inference and illustrated the role of guesses and hunches in mathematics. The American philosopher A. C. Ben-jamin, in a work entitled *Operationism*, presented a thorough examination of the concepts of operational meaning and opera-tional method that had resulted in part from the impact of rela-tivity physics on the philosophy of science. P. W. Bridgman, the Harvard physicist largely responsible for today's formulation of operationism, published *The Nature of Some of Our Physical Concepts*, lectures delivered in 1950 at the University of London on the distinction between "instrumental" and "paper and pen" operations in physics. A major contribution to scientific philoso-phy was *Foundations of Biology* by Felix Mainx, a monograph of the "International Encyclopedia of Unified Science," spon-sored by philosophers and scientists interested in a unification of all departments of knowledge.

Antique scholarship was aided by a new journal, *Phronesis*, founded in the Netherlands for the pursuit of ancient philosophy.

(S. M. Mc.)

Phosphates: see MINERAL AND METAL PRODUCTION AND PRICES.

Photography. While 1954 was a good steady year of pro-duction, with more than \$700,000,000 worth of photographic products manufactured in the United States alone, the year 1955 showed a 10% to 15% advance in photo-graphic sales for the first eight months. Sales and earnings of the Eastman Kodak company for the first six months of 1955 increased 13.6% over the same 1954 period and 11% over the first half of 1953. Sales of Bell & Howell company for 1954 reached a high of \$40,699,495, representing a 36.5% increase over its 1953 sales of \$29,816,408.

Exports from the United States of motion-picture films and equipment during the first quarter of 1955 totalled \$11,372,066, a 36% gain over the same 1954 period. Exports of all other photographic goods during the first quarter of 1955 amounted

to \$10,038,877, an increase of 23% over the same 1954 period. Exports of still- and motion-picture products during 1954 amounted to \$75,346,886.

Germany produced 3,024,861 still cameras during 1954, repre-senting an increase of 23.9% over 1953. Continued increases in German camera production were indicated for 1955. There were 310,411 still camera units exported to the United States in 1954.

Cameras and Equipment.—The British Photo fair was held in May 1955 at the New Horticultural hall, Westminster. More than 50 exhibitors displayed their photographic products. This exhibition was the first important British photo fair in 20 years. The great Photokina fair is held every two years, and the next one was to be at Cologne, Ger., in 1956 from Sept. 29 through Oct. 7.

With so many technical advances in the 35-mm. miniature camera field the past few years, there had been an increased use of these cameras all over the world. The new 35-mm. high-speed films and the new colour films added a heightened inter-est. The Kodak works in Germany manufactured the new 35-mm. Retina IIIC camera with such important new features as interchangeable lens components to give 35-mm., 50-mm. and 80-mm. focal lengths, a new synchro-compur shutter, built-in exposure meter, new light-value system, view finder and range finder combined in one window, and a new focusing mount replacing the former bellows. Kodak also brought out an im-proved Model C Pony with a 44-mm. Kodak Anaston f/3.5 lens and flash 300 shutter in the low-price range.

Graflex, Inc., introduced the Graphic 35 early in 1955. This new miniature camera created special interest because of the new push-button focusing, a focusing method based on the split-image principle, but activated by two buttons on each side of the lens and shutter assembly. The photographer merely squeezes these buttons to automatically rotate the lens mount in or out. Other features of this camera were Spectramatic flash settings, a system for simplified flash photography, Visi-Ready footage

GALLERY VIEW of "The Family of Man," photographic exhibit assembled by Edward Steichen for the Museum of Modern Art, New York city. The work of photographers of 68 nations was represented in the collection of more than 500 pictures placed on display early in 1955



scale for instant depth of field readings and all-metal body construction. Shutter speeds ranged from 1/300 sec. to 1 sec., plus bulb. There was also a built-in synchronizer for all flash lamps including electronic flash.

Anso made the Anscoflex II, with built-in yellow filter and a close-up attachment, for the low-price field. Bolsey Corporation of America produced the improved Bolsey Jubilee 35-mm. camera with Set-O-Matic shutter adjustment for simpler picture taking.

Graflex, Inc., made a modified version of the Pacemaker Graphic early in 1955. This latest press camera modification included the adaptation of a new Graphic range finder that permits use of various lenses coupled to the range finder with interchangeable cams. The optical view finder automatically corrects for parallax as the camera is focused. A built-in Rangefinder projects two beams of light which when superimposed on the subject by activating the focusing knob indicates the camera is in focus.

Stereo Photography.—Interest in stereo photography continued through the year with a few new stereo still cameras appearing in Germany and the United States. Realist, Inc., introduced the Realist "45" stereo camera, which was fitted with a pair of Steinheil Cassar lenses and manufactured in west Germany. Graflex, Inc., showed a new Stereo-Graphic camera at the convention of photographic dealers in Atlantic City, N.J., during April 1955. This 35-mm. stereo camera had a new method of lens arrangement, called Depthmaster Auto-focus, requiring only one adjustment for picture taking. The lens diaphragm control on the front of the camera is marked bright, hazy and dull, and when the one adjustment is made the camera is ready for picture taking. The shutter is cocked automatically each time the film is advanced. A number of manufacturers produced split-frame stereo attachments for making a stereo pair of pictures on a single 24x36-mm. frame. The Ernst Leitz works in Wetzlar, Ger., produced the Leica Stemar Stereo system, a twin-lens attachment with matched 33-mm. Elmar f/3.5 lenses that give good stereo pictures up to about 15 ft. A distant prism attachment is slipped over the twin lenses for taking stereo pictures beyond 15 ft.

A new table viewer for stereo slides was announced by the Bell & Howell company. The new viewer projects a stereo still picture on an 8x10-in. screen similar to that of a television set. The projector and screen are combined into one lightweight, blower-cooled, 15½-lb. unit.

Emulsions.—The new Cronar polyester photographic film base sensitized with Photolith emulsion was being introduced by du Pont to the graphic arts industry for lithography and photo-engraving, and to the motion-picture industry for both negative and printing films. Although thinner than regular film base (.0042 in. compared with .0058 in.), litho-sensitized Cronar polyester photographic film base has an average tear strength (load in grams) of 225, compared with 40 for coated cellulose tri-acetate. In tests of folding endurance, Cronar-supported Photolith withstood 20,000 flexings, while tri-acetate base broke after only 15 flexings under the same 50% relative humidity. It also had considerably better dimensional stability than most other films.

A number of 70-mm. du Pont motion-picture films were available, such as: Superior 2 panchromatic, Superior 3 panchromatic, and High Speed Rapid Reversal Pan for the U.S. air force's conversion of its 16-mm. gun-cameras to the larger size. A new rough-textured warm tone surface, Artweave ZL, was added to the line of du Pont projection papers. Varilour variable contrast photographic paper was also introduced for use with du Pont's filters for providing a contrast range from grade No. 0 to No. 3.



GRAND PRIZE WINNING PHOTOGRAPH in the 1955 National High School Photographic awards competition. The photograph was taken by Robert Ludlum, age 17, of Santa Barbara, Calif.

Polaroid corporation introduced three new emulsions for use in their cameras and "picture in a minute" system of photography. They were: Polaroid Polapan 200 Type 42, 400 Type 44 and Professional Pan Type 43. These films had a greater tone range than the orthochromatic type 41 Polaroid film, along with increased range in speed and exposure latitude. The 200 and 400 films had the equivalent American Standards association speed ratings.

Monodex Super White photofinishing paper made by Ansco was introduced for use in continuous processing systems. This paper featured a super white finish by use of chemical brightening agents. The same firm made the Ardura warm tone portrait enlarging paper similar to their Indiatone but with four times the speed.

The Kodak Tri-X ultra-high-speed panchromatic film was made available in roll type and became increasingly popular with amateur and professional photographers, and for special 35-mm. motion-picture photography. Although the film was rated at 200 ASA for daylight and 160 ASA for artificial light, many picture takers obtained acceptable results at speeds up to 600 ASA or more. The Tri-X super-fast film was also available for 16-mm. motion-picture cameras. The trend throughout the industry in Europe and the United States was toward faster emulsions, at the same time retaining many of the features of the slower films such as grain size and latitude.

Adox thin-emulsion film was exported to the United States in 35-mm. and 120 sizes by C. Schleussner of Frankfurt, Ger., and proved to be of special interest because of the extremely fine grain emulsion. The thin emulsion layers were about two-thirds as thick as normal photographic emulsions, and gave extremely fine grain, long-scale gradation, high image resolution. This film was of special value for miniature camera users for making negatives that would give sharper prints when enlarged.

Colour Photography.—Kodak's fast 35-mm. Ektachrome film appeared in the early part of 1955, with a speed about three times faster than the regular Ektachrome sheet and roll film. The daylight type had an exposure index of 32 ASA. Processing Ektachrome kits were made available for the photographer. Anscochrome High Speed Color Transparency film was introduced about the same time. This was the first high-speed colour film for all popular cameras, with a film speed increase of three times. Later in the year Ansco produced the 16-mm. Anscochrome with a high-speed emulsion for use in 16-mm. motion picture cameras. This was followed by the Anscochrome Shee Film in a variety of sizes.

Kodak processing materials were available for the new Ektachrome and also for Kodachrome colour films. By the end of 1955 these films were in a new type package without a processing charge included in the price of the film.

Kodak introduced two new papers for making colour prints from colour negatives and transparencies. One was Kodak Color Print Material Type C for making prints from colour negatives such as Ektacolor and Kodacolor; the other was Kodak Color Print Material Type R for making colour prints from transparency positives such as Kodachrome, Anscochrome and Ektachrome.

Flash Photography.—Aug. 1, 1955, marked the 25th anniversary of the introduction of the photoflash bulb in the United States, by the General Electric company. Production of photoflash lamps had increased from 303,000 in 1930 to about 515,700,000 in 1955, when approximately 15,000,000 cameras owned in the United States were equipped for flash picture taking. It was estimated that about 25% of all pictures taken were with flash.

Electronic flash photography made important advances during the year, with new models appearing in Europe and the United States. The continued use of dry battery power showed a definite trend away from the original wet batteries that require recharging. Also, the power packs of these units were getting lighter. The new Amglo Champion electronic flash, made by the Amglo corporation, had a model weighing only 28 oz., and good for 500 flashes before the battery required replacement. This unit could be carried in a pocket or hooked on a belt with a connecting cord to the electronic flash lamp on the camera. The Limelite corporation in Los Angeles, Calif., produced their Lime-lite "60" portable electronic flash which used two 240-volt dry-cell batteries in the power pack unit. Heiland's Strobosar Six electronic flash contained a high-low selector switch to adjust the flash output. It gave a choice of full power or one-fourth power, to make a difference of two f-stops in exposure.

Graflex, Inc., obtained controlling interest in the Strobo Research company and started manufacturing the original Stroboflash units for all cameras and especially for the popular Speed Graphic press cameras.

The Multiblitz electronic flash was produced in West Germany in a variety of portable and studio models with AC or wet-cell battery power units. The Braun Hobby "100" electronic dry battery flash, manufactured in Germany, was being imported to the United States by E. Leitz, Inc., for use with their Leica cameras.

Philips of Eindhoven, Neth., brought out a new all-gas filled hidget capless flash bulb called the Philips Photoflux PFr. There was no metal base on this lamp and the lead-in wires extended outside the sealed glass base of the bulb, which fit into a reusable metal adapter base with built-in ejector mechanism.

Motion-Picture Photography.—A new 16-mm. Cine-Kodak E-100 was announced with a full-size telescopic view finder, a speed range of 16 to 64 frames per second, and a special pressed spring power motor which exposes up to 40 ft. of film with one winding. Kodak also made six new models of the Kodascope Pageant sound projector for the audio-visual trade. The main feature of these projectors was the new Super-40 shutter which shifts automatically between two- and three-bladed positions to provide increased screen illumination while retaining freedom from flicker during showing of either sound or silent pictures.

Keystone Camera company made a 16-mm. movie camera known as the Keystone Newport. DeJur-Amsco corporation developed their 8-mm. Voyager, intended for the lower-price field. This firm also made the Spectator 8-mm. turret movie camera which uses three lenses on the turret mount and takes 25 ft. of

double-eight roll film. The Bolex division of Paillard Products, Inc., introduced the 8-mm. M-8 projector with such important features as: a film guard that automatically reforms any "lost loops" during projection, fast $f/1.6$ and $f/1.5$ lenses and the ability to rewind 400 ft. in 15 sec. The Kalart company made a new 8-mm. viewer and editor for movie fans known as the Kalart Editor-Viewer-Eight. It is a practical 8-mm. table-top movie viewer, and a complete outfit for film editing and repair.

The Bell & Howell company made a number of new motion-picture lenses such as: (1) the Bell & Howell-Angénieux three-inch $f/2.5$ telephoto lens for 16-mm. motion-picture cameras; (2) a 10-mm. $f/1.8$ short focal length lens manufactured by Pierre Angénieux of St. Héand, Fr., to Bell & Howell specifications; (3) a Bell & Howell-Angénieux one-inch $f/0.95$ lens which combines ultra speed with sharp definition and full colour correction; (4) an aerial reconnaissance 6-in. $f/2.5$ lens for taking detailed aerial photos of military and other strategic installations at altitudes ranging from 1,000 to 3,000 ft.

Zoomar, Inc., made a new Zoomar lens for 35-mm. motion-picture studio work, the Zoomar 35-mm., with a maximum speed of $f/2.8$ and a zoom range from 40 mm. to 120 mm. They also produced a new Zoomar 16-S and Zoomar 8 lens for 16-mm. and 8-mm. motion-picture photography. There was also a Zoomar 10-in. and 20-in. telephoto lens added to the line.

Family of Man.—Outstanding in the photographic world for 1955 was the exhibition of more than 500 photographs by 257 photographers at the Museum of Modern Art in New York city. Under the direction of Edward Steichen, the photographs were selected from 68 countries and arranged as a theme exhibition known as "The Family of Man." The photographs presented the story of man from birth to death, in special sections with quotations from world literature, to build up the continuity of life. About 240,000 copies of *The Family of Man* book were printed to meet the demand for a permanent record of this exhibition. (See also ELECTRONICS; MOTION PICTURES; NEWSPAPERS AND MAGAZINES.) (W. D. MN.)

Physics. **The Artificial Satellite.**—The most widely discussed physics event of 1955 was probably the July announcement in the United States by the National Academy of Sciences and the National Science foundation of plans for an artificial satellite. It was expected that by 1957 or 1958 a small body would be sent into space and would rotate about the earth, thus in a very small way imitating the earth's natural satellite, the moon. The body was expected to be a sphere about 18 in. in diameter, and multistage rockets would originally carry it to a height of about 250 mi. It would then circle the earth about once every 90 minutes, moving with a velocity of about 18,000 m.p.h. It would probably be visible from the earth with the aid of low-power field glasses. The satellite orbit would gradually move in closer to the earth, and eventually the satellite would be disintegrated as a result of frictional heating in the upper atmosphere.

The government of the U.S.S.R. also announced that it was planning to build and launch a satellite. Scientists generally expected that the proposed satellites would be of great value in making sustained observations of solar radiations and cosmic rays at levels that are beyond almost all of the earth's atmosphere, as well as in observing the composition, density and temperature of the atmosphere itself at high levels.

Einstein and Fermi; Elements 99, 100 and 101.—In August the groups at the University of California, Berkeley, the Argonne National laboratory, Lemont, Ill., and the Los Alamos (N.M.) Scientific laboratory who in the previous year had announced the discovery of elements 99 and 100, gave names in honour of Einstein and Fermi to these elements. Albert Einstein died in April 1955; Enrico Fermi died in Nov. 1954. For 99 the



RE-ENACTMENT of Otto von Guericke's famous experiment proving atmospheric pressure which took place at Libertyville, Ill., in 1955 when teams of horses, directed by costumed handlers, attempted to pull apart two metal hemispheres from which the air had been removed. The re-enactment was a scene in the film *Atmospheric Pressure* produced by Encyclopædia Britannica Films Inc.

name einsteinium (chemical symbol E) was suggested, and for element 100 the name fermium (symbol Fm).

In June a group at the University of California, led by G. T. Seaborg, announced the production and identification of element 101. A few atoms of the element were produced by bombarding the mass 253 isotope of element 99 with alpha particles from a cyclotron. The alpha particles, which carry 4 units of mass and 2 charge units, were believed probably to have combined with the E^{253} to form atoms of element 101, of mass 256, with emission of 1 mass unit as a neutron. In any event, there was definite evidence that atoms of some isotope of element 101 were formed. The half life of the 101 atoms seemed to be of the order of 30 minutes. The new element was given the name mendelevium (symbol Mv), in honour of the 19th-century Russian chemist Dmitri Mendeleyev, whose principle of using the periodic table in predicting properties of undiscovered elements had been, in the words of the discoverers of 101, "the key to the discovery of the last seven transuranium elements."

Mesons and Hyperons; Antiproton.—The work of many physicists continued to be directed toward the problems of the various elementary particles which are found in nature. The number of different kinds of such particles is now fairly considerable; in addition to the electron, proton and neutron of stable matter, and the photon, positron and neutrino, there are the charged pi and mu mesons, which have masses of 273 and 206 m , respectively, where m is the electron mass, and the neutral pi meson, of mass 264 m . A group of particles known as "heavy mesons," or K particles, distinguished as tau, theta, kappa or chi heavy mesons, had been described within the past few years; these mesons have masses of the order of 1,000 m . A further group of at least three different kinds of mesonlike particles had during the past year or two come to be known as hyperons; these particles have masses greater than 2,000 m —in one case as great as 2,600 m —and are given the name hyperon because their masses are greater than the proton mass, 1,836 m . (The name meson originally signified a mass between the electron and proton masses.) All the mesons and hyperons are highly unstable, decaying eventually into some combination of proton, neutron, electron, positron, photon or neutrino.

Mesons and hyperons had first been observed in studies of highly energetic cosmic-ray particles, but in the past few years pi and mu mesons had been produced in the laboratory, by means of atomic collisions involving the high-energy ions produced in particle accelerators. With the use of higher-energy particles from the accelerators heavier particles could also be produced, and by the end of the year particles from the cosmo-

tron accelerator at the Brookhaven National laboratory, Upton, N.Y., or from the bevatron at the University of California Radiation laboratory had been used in collisions in which both heavy mesons and hyperons were formed.

Cosmic rays continued to be perhaps the major source of new observations on mesons and hyperons, and the use of "stripped emulsions" was found to be of great value in these studies. In this technique, sheets of photographic plate emulsion are piled together; cosmic-ray particles passing through the stack of emulsion sheets leave tracks, such that on development of the emulsion the paths of the particles and their decay products may be studied. The kinds of particles and their modes of decay may be deduced from the observations.

An elaborate experiment using such stripped emulsions was carried out jointly by groups from the universities of Bristol, Eng., and Milan and Padua, It. In Oct. 1954 a stack of emulsions, of 15-l. volume and containing 250 sheets of emulsion, each 0.06 cm. thick, was exposed in a balloon over northern Italy for six hours, at an altitude of about 80,000 ft. After processing the stack was divided among the Bristol, Padua and Milan groups and among workers at the universities of Brussels and Genoa, at the University college and Institute for Advanced Studies, Dublin, and at the Institute for Theoretical Physics, Copenhagen. The examination of photographic emulsions for cosmic-ray particle tracks is a tedious operation, and this experiment represented a noteworthy example of international co-operation on a laborious scientific task. A report in June on the first four months' examination of the emulsion indicated that about 80,000 particles were recorded, and that the potentialities of the method were as great as had been hoped. Among the first results were new information on the modes of decay of several heavy mesons and on the decay of a hyperon, data on the associated production of hyperons and heavy (K) mesons in a single event, and description of the simultaneous production of a K^+ , K^- pair, similar to the pair production of positrons and electrons. There was also some further evidence for the existence of atomic nuclei in which a neutron is replaced by a neutral hyperon; such nuclei break up upon decay of the highly unstable hyperon.

Further evidence for the existence of the antiproton was announced in October by a group headed by E. O. Lawrence and E. Segre at the University of California. The antiproton would be a particle of the same mass as the proton, but with a negative charge in place of the positive charge of the proton. It would be expected that an antiproton would not long exist in the presence of ordinary matter, but would combine with a proton, with resultant annihilation of the two particles and release of energy corresponding to the combined proton-antiproton mass. Previously, there had been "events" in cosmic-ray studies which seemed to indicate the presence of an antiproton. The Californi-

group stated that they had formed antiprotons artificially, in collisions between copper nuclei and ions of several-billion-volt energy produced in the Berkeley bevatron.

The Caesium Clock.—Clocks of very high accuracy, utilizing internal transitions of caesium atoms, were constructed under the direction of J. R. Zacharias and J. G. Yates at the Massachusetts Institute of Technology, Cambridge, and by a group under L. Essen and J. V. L. Parry at the National Physical Laboratory, Teddington, Eng. Much pioneer work in atomic clocks had been done by H. Lyons, of the national bureau of standards, Washington, D.C. A clock of much higher accuracy than the crystal vibrator clocks, the most accurate that are in current general use, is desirable for many reasons. The period of rotation of the earth on its axis, for instance, is believed to vary somewhat from day to day, with variations which are of the order of 1 part in 100,000,000. The new caesium clock had an achieved stability of 1 part in 1,000,000,000, and a stability ten times greater was believed to be fairly readily attainable.

The nucleus of a caesium atom possesses magnetic properties such that it interacts with the magnetic field of the spinning electrons which constitute the non-nuclear part of the atom. The nucleus will take up certain defined positions with respect to the electrons, and varying energies are associated with these positions; transitions between these various energy states may be induced by applying an oscillating external magnetic field. Atoms whose nuclei have undergone an energy transition may be separated from those whose nuclei have not by passing a beam of the atoms through a highly inhomogeneous stable magnetic field, additional to the oscillating field. A detector may be arranged which will measure the quantity of atoms separated from the beam as a result of their having undergone the energy transition in question. This "molecular beam" technique may be utilized for making observations of properties of many kinds of atomic nuclei. Caesium was suitable for a "clock" because it possesses an energy transition which is very sharply defined and because a beam of caesium atoms, emerging from an oven of hot caesium gas, is fairly easily attained. The caesium beam serves as a clock by virtue of the fact that the energy transitions will occur only when the oscillating magnetic field which induces the transitions has the required characteristic frequency (which is of the order of 9,000,000,000 oscillations per second). The oscillating circuit which makes the oscillating magnetic field may therefore be kept very closely at the required frequency by the use of correcting elements which respond to a change in number of atoms arriving at the detector after having undergone the internal energy transition.

The M.I.T. clock was contained in a metal can 6 ft. long and 10 in. in diameter (although with considerable external electronic equipment), and an atomic beam which used only about 0.000001 g. of caesium per day was sufficient. It was expected that comparatively routine manufacture of similar clocks for physical and astronomical laboratories might be started in the near future. The Teddington group pointed out that the caesium clock was a first example of the use of an atomic frequency standard with an accuracy greater than that obtained by using a unit of astronomical time and represented "the highest accuracy ever achieved in the measurement of any physical quantity in terms of a definitive standard." It was suggested that the caesium frequency replace present astronomical observations as the standard for our time unit.

The Hodoscope.—A new kind of instrument for observing the paths of nuclear particles was described by M. Conversi and A. Gozzini, of the University of Pisa, It. An energetic particle, as an electron or a meson, in passing through a gas leaves a trail of electrons and ions; that is, in its collisions with the gas atoms the particle knocks off atomic electrons, leaving the atoms

with net electrical charges. If a strong electrical field is applied to the region of the ion trail, before ions and electrons have had time to recombine into neutral atoms, the electrons will be accelerated by that field, and as a result of the acceleration will give a luminous glow. Conversi and Gozzini utilized this effect in their detector, which they called a hodoscope. The instrument consists of a large number of small neon-filled glass tubes, arranged in layers within a latticework of aluminum plates which can be electrically charged so as to set up the required electrical field. The passage of a particle through the neon tube chamber is recorded by particle counters placed outside the chamber, and these counters set off a circuit by which a strong electric field, of as much as 10,000 v. per centimetre, is applied in the hodoscope chamber. The momentary luminous glow may be photographed, and the lighted neon tubes very nicely show the path of the particle.

Atomic Velocities in a Gas.—The distribution of the velocities of the atoms and molecules in a gas had long been assumed to be as theoretically predicted by James Clerk Maxwell about 100 years ago; in this distribution the particles have an average velocity, which rises with the gas temperature, but individual molecules may have velocities that are much greater or less than the average velocity. There had been abundant indirect evidence to place the "Maxwellian distribution law" among the virtually unquestioned laws of physics, but attempts to measure directly the velocity distribution had not been altogether successful. It was of interest that a satisfactory confirmation was obtained by R. C. Miller and P. Kusch of Columbia University, New York, N.Y. The velocity distribution was obtained for potassium and thallium atoms in atomic beams emerging from a hot oven. Good agreement was obtained between observed distribution in the beam and that predicted by theory on the assumption that the atoms in the oven gas were in a Maxwellian velocity distribution. (See also ATOMIC ENERGY; ELECTRONICS; INTERNATIONAL GEOPHYSICAL YEAR, 1957-58; METEOROLOGY; STANDARDS, NATIONAL BUREAU OF.)

(R. L. SL.)



"FINAL TRIP TO THE COSMOS," a 1955 cartoon by Long of the *Minneapolis Tribune* (Minn.)

Physiology. **A New Adrenal Cortical Hormone.**—Until relatively recently attempts to isolate the active hormonal principles of the adrenal gland had resulted in the isolation and identification of 28 steroids, seven of which had biological activity; *i.e.*, were able to maintain life in an animal from which the adrenals had been removed.

After the removal of the known active hormones from glandular extracts, there remained an amorphous fraction that had high biological activity. This, of course, suggested the presence of a yet unidentified adrenal cortical hormone.

The known adrenal hormones possess a variety of biological effects. The specific effects or activities are related to the chemical structure of the compound and can be divided into three main classes. One group is most potent in causing the deposition of glycogen in the liver and in maintaining the work capacity of muscles during continued exercise. Another group acts mainly on the kidney, causing the retention of salt and normalization of the salt content of the blood. The third group seems to be concerned mainly with the synthesis of body proteins and with the development of secondary sex characteristics during growth.

The unknown hormone in the amorphous fraction demonstrated properties that placed it in the second class or salt active group. The activity of this fraction in this respect was much greater than that of any of the known adrenal hormones.

The new hormone, obtained from the amorphous fraction, was first isolated in 1953. Analytical, biological and clinical work progressed rapidly during 1955 in spite of the small amounts available.

The new hormone was named aldosterone. It is about 30 times as active as any known adrenal cortical hormone in maintaining sodium balance and well-being in an animal from which the adrenals have been removed. It is less active than cortisone in causing glycogen deposition. Likewise on the basis of a few trials it has no effect on rheumatoid arthritis. In one respect its action is unique in that it was reported to reduce pigmentation in patients with Addison's disease. It was recently detected in the peripheral blood of normal men and thus is probably a natural hormone. Its activity is great enough to account for all the activity of the amorphous fraction, and it was believed that its discovery would probably complete the list of natural adrenal cortical hormones.

Fats in Nutrition.—Fats and oils in the diet are known to be the richest source of calories; however, the opinion has existed that these materials are optional components of diet and not really necessary for good nutrition.

In addition to the above concept the idea has also developed that fats, in addition to being nonessential, may have a deleterious effect on the health and longevity of those that consume high-fat diets for long periods of time. Such dietary habits have been shown to result in an elevated incidence of high blood pressure and hardening of the arteries and a high incidence of disease of the coronary arteries.

As a result of these observations much attention was paid during the preceding several years to the use of low-fat or fat-free diets in an effort to control the development of diseases of the blood vessels as well as to prevent obesity.

However, considerable investigational work seemed to indicate that fats and oils are not optional components of the diet but that by virtue of their presence in the diet a more satisfactory nutritional state results. In addition, it was shown that the complete absence of fat in the diet in a carefully designed experiment can have adverse effects on a number of physiological functions.

Young rats maintained entirely on a low-fat or fat-free diet grow at a much slower rate than do rats eating a diet containing fat. The experimental data suggested that the optimal rate of

growth results when the diet contains fat to the amount of 30% by weight or 50% on the basis of caloric content.

The attainment of sexual maturity by young rats is definitely delayed when these rats are fed low-fat diets from the time of weaning. Pregnancy and lactation are critical criteria for evaluation of the nutritional value of a diet. In this respect they are more valuable criteria than growth alone. Reproductive failure occurs when rats are raised to maturity on fat-free diets.

The experiments relating to the improvement of pregnancy and lactation by the presence of adequate dietary fat suggested that it is not the caloric value of the fat *per se* that is responsible for the beneficial effects, but rather the chemical nature of the fat. Thus a small single dose of an unsaturated fat (100 mg. of ethyl linoleate) given three weeks before the animals were bred ensured a normal pregnancy. A saturated fat (hydrogenated coconut oil) was ineffective. (An unsaturated fat is one in which the fatty acid contains one or more double bonds; *i.e.*, unsaturated with hydrogen.)

Another important indication of the nutritional condition of an animal is the ability of its tissues to perform work. Two different laboratories reported that the capacity of rats to continue strenuous exercise is improved on high-fat diets as compared with diets of low fat content or fat-free.

One of the strong arguments for the use of low-fat diets was that these diets cause a lowering of blood cholesterol, the substance deposited in the lining of the blood vessels, causing narrowing of the opening, in hardening of the arteries. On the basis of recent work, however, it appeared that the lowering of blood cholesterol is accompanied by an increase in the deposits of free cholesterol in the liver and adrenals. Fats in the diet prevent these deposits from appearing under otherwise identical experimental conditions. The presence of unsaturated fats, as far as the above effect is concerned, seems to be necessary. In addition, fat-deficient rats are more susceptible to X-irradiation than are normal rats and also show greater capillary fragility and permeability.

There was good evidence that fat is an essential component of the diet for good nutrition. Some of the beneficial effects of fat depend definitely on the presence of small amounts of unsaturated fats, while other effects seem to be related to the caloric value alone.

Further work was necessary to determine what the optimum value for total fat in the diet should be and what portion of this should consist of unsaturated fats.

The Properdin System.—The adult human being, as well as other species, possesses a high degree of resistance or immunity to infection by various bacteria and viruses. A portion of this immunity is acquired; *i.e.*, an infection with certain bacteria or virus has resulted in the appearance in the blood of a definite chemical substance or antibody that can destroy or neutralize the original infecting agent at a time subsequent to the original infection. An innate (or natural) immunity also exists. Little is known of the factors or the mechanisms concerned in this phenomenon. It has been supposed that certain animals can produce substances in their blood that are similar but not identical to antibodies. These substances differ chiefly in that their production is not related to previous exposure to or infection with any bacteria or virus. Likewise, these materials are not specific; *i.e.*, they will destroy or inactivate a wide variety of infectious agents. Recent work established the existence of such a substance and the system in which it participates to result in natural immunity.

This system was termed the properdin system.

Properdin is a plasma protein (a euglobulin) that is present in varying amounts in the blood of various species of animals. Its participation in the immune reaction is believed to be as

allows: Properdin, in the presence of traces of magnesium ion normally present in plasma) combines with a substance (probably a carbohydrate) in the wall of the bacterial cell. The bacteria thus "prepared" are acted upon by a third substance, a complement (possibly an enzyme) in the plasma, and in the process the cell is destroyed. The action on some viruses is believed to be similar.

A method was devised by which it was possible to remove properdin from plasma and determine the amount present. On the basis of this method the mechanism of action and the possible role in natural immunity was established.

Among common animal species, the rat is resistant to infection, whereas the guinea pig is susceptible. When the blood of these animals was tested for normal properdin content, the rat had the higher concentration (25–50 units per millilitre) and the guinea pig the lower (1–2 units per millilitre). Human blood also has a rather low concentration (four to eight units per millilitre).

Outside the body, it is possible to demonstrate that human blood serum has a high killing power for various bacteria. Thus human serum has high bactericidal activity against a strain of *typhosy bacillus*. When properdin is precipitated and thus removed from normal serum, this serum becomes nonbactericidal.

Certain high molecular weight carbohydrates such as native dextrans or levans when injected intravenously into mice increase the susceptibility of these mice to infection. The explanation lies in the demonstration that dextran or levan combines with properdin or inactivates the complement or both.

When rats are irradiated with X-rays in high dosage over the entire body they will die as the result. An overwhelming infection in which bacteria appear in the blood in large amounts is common and a contributing factor in the eventual fatal outcome. Again the probable cause is the demonstrated very low blood level of properdin that comes about as a result of the radiation.

These experimental results briefly relate a few of the reasons that establish the properdin system as an important factor in natural immunity.

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Pickersgill, John Whitney (1905–), Canadian politician and federal cabinet minister, was born on June 23 at Wycombe, Ont. He was educated at the University of Manitoba and at Oxford and Paris universities. He was a lecturer in history at Wesley college, Manitoba, 1929–37. In 1937, he became third secretary in the department of external affairs, Ottawa, but was almost immediately attached to the office of Prime Minister William Lyon Mackenzie King. In 1942, he was appointed private secretary to the secretary of state for external affairs, holding this post until 1945 when he was named special assistant to the prime minister, continuing until he was appointed clerk of the privy council and secretary to the cabinet in June 1952. Pickersgill entered politics when appointed secretary of state in June 1953 and in August of that year was elected member of parliament for Bonaville—Willingate, Nfd.

On July 1, 1954, he was named minister of citizenship and immigration.

Pickersgill became the central figure of a *cause célèbre* in national politics when early in April 1955, he said in speech at Victoria, B.C., "I do not believe any immigrant, no matter where he comes from or how good he is, is as good as another Canadian baby." Though he indicated only that he was a be-

liever in the "cradle" as the best method of increasing Canada's population and did not mean to say that Canadians were superior to foreign peoples, some sections of the press and others made Pickersgill's remark into a "Canadian baby incident" in national politics. (M. L. S.)

Pig Iron: see IRON AND STEEL.

Pigs: see LIVESTOCK.

Pineapples: see FRUIT.

Pipelines: see FEDERAL POWER COMMISSION.

Pittsburgh. In 1955, the physical redevelopment program of Pittsburgh, Pa., moved ahead. The district's long-projected sewage treatment system was assured by creation of the Allegheny County Sanitary authority, with \$100,000,000 available for construction. A Regional Industrial Development corporation was organized with Gwilym A. Price as chairman and John P. Robin as president. The Metropolitan Study commission, after two years of work, proposed a plan to streamline governmental functions in 129 political subdivisions of the county.

Mellon park, in the heart of the downtown business district, made possible by a \$4,300,000 gift by Mellon family foundations, was opened together with a six-level underground garage. The Parking authority completed two additional open-deck garages, its third and fourth. The cross-town thoroughfare moved into final planning phase and clearing of teeming "lower hill" for construction of a large auditorium and convention hall seemed assured.

In Gateway centre a state office building was under construction and plans were ready for another to be built for the Bell Telephone company.

The University of Pittsburgh completed a new building for the Schools of Engineering and Mines, pushed construction of a science building, announced that it would build dormitories and a student centre, and pressed construction contracts totaling more than \$20,000,000 in the Medical centre. Pennsylvania College for Women, 86-year-old liberal arts institution, changed its name to Chatham college.

Manufacturing employment in the Pittsburgh district averaged 1% lower in the first eight months of 1955 than in the same period in 1954 and 14% lower than in the like months of 1953. Estimated total employment in the district was 2% below 1954 and 7% below 1953.

The Bureau of Business Research of the University of Pittsburgh estimated the value added by manufacturing in 1955 in the four-county Pittsburgh area to be about \$2,100,000,000 and the total value of products manufactured to be about \$4,800,000,000.

Population (1950 census), 676,806; area, 55.49 sq.mi. Local government total budgets: city, \$48,320,743; Pittsburgh school district, \$24,959,564; Allegheny County, \$37,504,191. City real estate tax rates: land, 32 mills; buildings, 16 mills. The school levy was 11¼ mills on all real estate; county, 9½ mills. Assessed taxable real estate valuation in the city was \$1,112,837,843 and in Allegheny county, \$2,634,793,147. Bonded indebtedness as of Jan. 1, 1955, was: city, \$49,421,300; school district, \$13,132,000; Allegheny county, \$94,184,000. Enrolment in public schools was 79,271; in Catholic parochial schools, 48,734.

(C. F. Ls.)

Pius XII (1875–), the 262nd successor of St. Peter in the see of Rome, was elected by the cardinals in conclave on his 63rd birthday, March 2, 1939, and was crowned as pope on March 12. (See *Encyclopædia Britannica*.)

Delayed by the grave illness he suffered during the winter of 1954, Pope Pius XII's Christmas message was published and

broadcast, unpronounced, on Jan. 3, 1955. In this document he called on all nations to live in peace and harmony. This can be achieved, the pontiff said, if "a bridge of truth" between east and west is built on the principles of Bethlehem and founded not on the "governmental or social systems" of the democratic and communist worlds but "on the divine moral order" and on the human beings living in these two worlds.

During the first two months of 1955, citizens of Rome could be seen kneeling on the cobbles of St. Peter's square in silent prayer for the pope, who was still gravely ill. On March 2, visibly ailing and weary, he appeared for seven minutes at a window of his study on the upper floor of the Vatican palace to bless the thousands of persons who had come to manifest their attachment on the day of his 79th birthday, the sixteenth of his elevation to the pontificate.

On April 3, appearing, at last, fit and vigorous, the pope made his first Palm Sunday appearance in two years. He took part in the ceremonies opening Holy week and held an audience for 1,000 delegates to the World Congress of Prevention of Work Accidents.

On April 10, Easter Sunday, the pope made his first ceremonial outdoor appearance. In a strong and clear voice he delivered his traditional message. He appealed for international talks to achieve "progressive disarmament" and "lasting understanding" among power blocs. The main part of his message, in which he imparted his blessing to the world, was devoted to the hopes and terrors of the nuclear age. Alluding to the U.S.S. "Nautilus," the pope said: "Without fear or trepidation we have noted the recent advances . . . of nuclear energy . . . in the service of men."

On April 24, at the occasion of the seating of 14 newly appointed scholars in the Pontifical Academy of Sciences, the pope defined the mission of the scientist. "The mission confided to you," he said, "ranks among the most noble, for you should be in a sense the discoverers of the intentions of God. It pertains to you to interpret the book of nature, to describe its contents and to draw the consequences therefrom for the good of all."

On Sept. 7, 1955, the pope addressed 1,500 delegates to the tenth International Congress of Historical Sciences. "The Catholic Church," he declared, "does not identify itself with any culture. This is not permitted to her by her very essence. She is, nevertheless, disposed to maintain relations with all cultures. She recognizes and allows to subsist all that in them is not opposed to nature. But in each one she introduces the truth and the grace of Jesus Christ and thereby confers a deep likeness on them all." (See also ROMAN CATHOLIC CHURCH; VATICAN CITY STATE.) (J. LaF.)

Planned Parenthood: see BIRTH CONTROL.

Plastics. Unrevised totals for 1953 and 1954 production of plastics and synthetic resins in the U.S. are given in the table.

Much of the development work which took place in the plastics industry in 1955 centred on a group of improved resin formulations which were made available during the year.

Among these was a new type of polyethylene produced by a catalytic technique and known to the trade by various names, including, among others, low-pressure polyethylene, high-modulus polyethylene, high-density polyethylene and Ziegler process polyethylene. Although methods of production varied among the several producers, accounting in part for the confusion in nomenclature, all of the new polyethylenes were characterized in general by higher heat resistance (up to 250° F. or slightly higher), greater rigidity and stiffness and higher impact strength than conventional polyethylenes. While the new material would prob-

Production of Plastics and Synthetic Resins in the U.S.

	(in pounds)	1954	1953
Cellulose plastics (all)*†		123,200,000	129,000,000
Phenolic and other tar acid resins * †		396,000,000	460,200,000
Urea and melamine ‡		253,350,000	242,600,000
Styrene and styrene-derivative polymer and copolymer resins*		500,100,000	492,300,000
Vinyl resins		516,800,000	511,400,000
Miscellaneous§		539,150,000	446,600,000

*Includes fillers, plasticizers and extenders.

†Includes sheets, rods, tubes and moulding and extrusion materials.

‡All dry resin except moulding material which includes filler.

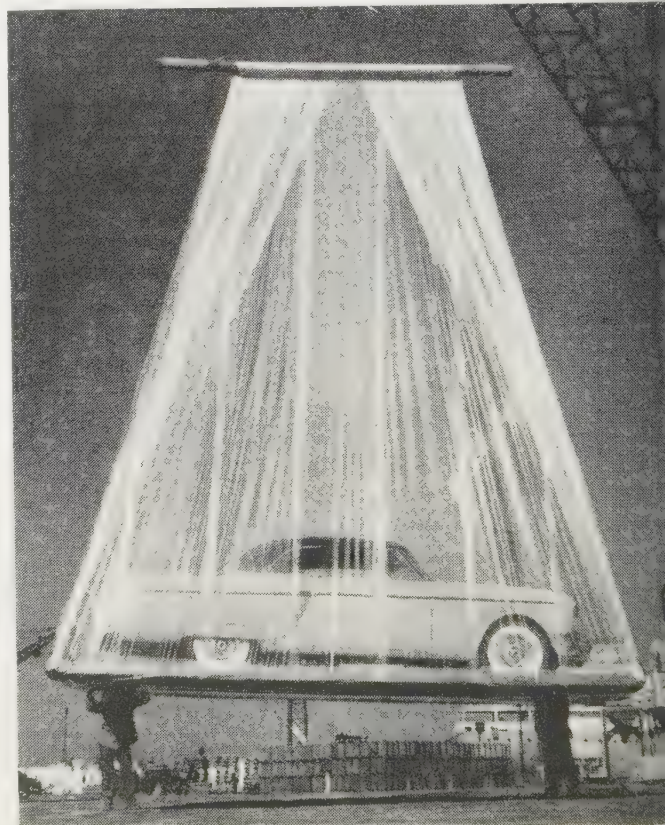
§Includes acrylic, polyethylene, nylon, silicone and other resinous moulding materials, as well as petroleum resins and coumarone indene.

Source: U.S. Tariff Commission.

ably overlap into many fields now serviced by conventional polyethylene (which, continuing its phenomenal growth, was estimated to have reached a consumption figure of 330,000,000 to 340,000,000 lb. in 1955), it was expected primarily to broaden the over-all base for plastics applications, especially in such markets as toys, housewares, packaging, piping and industrial components.

Considerable activity was also noted in the production and use of nylon moulding material in 1955. Manufacturers found increasing use for moulded nylon wheels, cams, bearings, gears and component parts. Similarly, polyester film, which started to move into prominence in 1954, broadened its market areas in 1955 to take in a variety of new applications ranging from recording tapes, chemical drum liners and electronic capacitors to ladies' shoes, metallic fabrics and toys.

Interest in polyurethane foams for upholstery, clothing and industrial applications was stimulated by indications that there would be large-scale production in the United States within the next few years. Vinyl foams moved in increasing volume into such end products as arm rests, crash pads, gasketing, wearing apparel, cushioning and packaging. The mouldable styrene foam introduced in 1954 also showed up in 1955 in a number of new



DEMONSTRATION OF STRENGTH OF MYLAR polyester film, under full scale production by the du Pont company in 1955. The material has a tensile strength of about 23,500 lb. per sq.in. Its chief use is for electrical insulation either alone or laminated to other materials

applications ranging from Christmas displays to huge ball-shaped marine floats.

Other variations in moulding compounds introduced during the year included a new form of cellulose acetate with a high heat distortion point of 225° F. and low moisture sensitivity and a new lightweight plastic, combining styrene, acrylonitrile and butadiene for exceptionally high impact strength.

Great strides were made during 1955 by the sheet-forming industry. Refinements in both machinery and methods made possible the forming of larger, more intricately designed pieces to greater depths—and consequently opened new outlets for formed pieces in packaging, displays, toys, housings and various industrial components. A few companies also set up continuous automatic production lines for sheet forming, and more appeared to be in the offing for 1956.

Another moulding technique which gained momentum during 1955 was known as premix or gunk moulding. This method involves the mixing together of resin, filler, reinforcement, catalyst and other ingredients into a puttylike mass which is then weighed out and inserted into the mould. The technique offers a means for economical and rapid moulding of parts with varying wall thicknesses, intricate contours and moulded-in inserts. In 1955 its biggest application was for automotive parts.

Also of note in 1955 was the development of techniques for laminating sheets of decorative, abrasion-resistant vinyl to metal or to reinforced plastics and then forming the combinations into housings, doors, etc. Another application which aroused interest was melamine tableware produced by moulding a lithographed foil as an integral part of the finished piece. (See also CHEMISTRY.)

(C. A. BN.)

Platinum: see MINERAL AND METAL PRODUCTION AND PRICES.

Plums: see FRUIT.

Plutonium: see ATOMIC ENERGY.

Pneumonia: see RESPIRATORY DISEASES.

Poetry: see AMERICAN LITERATURE; CANADIAN LITERATURE; ENGLISH LITERATURE; FRENCH LITERATURE; JEWISH LITERATURE; LATIN-AMERICAN LITERATURE; LITERARY PRIZES; RUSSIAN LITERATURE; SPANISH LITERATURE.

Poland. A people's republic of eastern Europe, Poland is bounded east by the U.S.S.R., south by Czechoslovakia, west by Germany and north by the Baltic sea. Area: 20,359 sq.mi. Pop.: (1950 census) 24,976,926; (1955 est.) 27,100,000; national minorities (Germans, Jews, Byelorussians, Ukrainians, Lithuanians, Slovaks and Czechs) 250,000. Language: Polish. Religion: Roman Catholic. Chief towns (pop., 1955 est.): Warsaw 965,000; Lodz 670,000; Wroclaw 490,000; Cracow 430,000; Poznan 370,000; Szczecin 300,000; Gdansk 180,000; Stalinogrod (Katowice) 200,000 and 11 other towns with a population of more than 100,000. First secretary of the Polish United Workers' (Communist) party in 1955, Boleslaw Bierut; chairman of the council of state, Aleksander Zawadzki; chairman of the council of ministers, Jozef Cyrankiewicz.

History.—*Foreign Affairs.*—In 1955, both the Warsaw government and the Polish nation followed anxiously the attempts at solving the German question. While both were in agreement as to the necessity of maintaining the existing Polish-German frontier, there was probably divergence between them as to the divisibility of German reunification under a really representative government. All escapees from Poland affirmed that the Polish people would welcome the reunification of Germany, if that would mean for Poland a common frontier with the free world. The Communists considered such an eventuality dangerous.

Following a similar decision of the U.S.S.R., the Warsaw gov-



STALIN PALACE OF CULTURE AND SCIENCE, opened in Warsaw, Pol., in July 1955

ernment on Feb. 18 passed a decision terminating a state of war between Poland and Germany.

The second conference of seven European people's democracies and the U.S.S.R., held in Warsaw from May 11 to 14, was attended by their respective premiers and foreign and defense ministers. At the first conference held in Moscow from Nov. 29 to Dec. 2, 1954, it had been decided to strengthen and further co-ordinate their military power if the Paris agreements were ratified. As N. A. Bulganin, the Soviet premier, said in Warsaw, the ratification of these agreements created a new situation. A collective treaty of mutual assistance was signed on May 14 by the eight premiers. On the same day Marshal Ivan S. Konev was appointed commander-in-chief of the unified armed forces. By May 30 all the signatory states had ratified the Warsaw treaty.

On July 6, the fifth anniversary of the signing of an agreement between Poland and the German Democratic Republic on the demarcation of the Polish-German frontier, celebrations were held in Warsaw and in east Berlin. Otto Grotewohl, east German premier, visited Warsaw, while Bierut went to Berlin. The two governments published a declaration which stated that the Oder-Neisse frontier was final.

Home Affairs.—Jozef Swiatlo, a high official of the Polish ministry of state security, who had escaped from Poland in Dec. 1953, was broadcasting from Sept. 1954 through Radio Free Europe a series of talks disclosing the details of the Polish police-state system. This campaign had unexpected results in Poland. Stanislaw Radkiewicz, minister of state security, was dismissed on Dec. 7, 1954, the ministry was disbanded and a committee of state security was created instead at the ministry

of the interior. The *Trybuna Ludu*, the chief party organ, called on the newly created committee to extirpate all manifestations of misuse of state power and to preserve respect for law and justice. In Jan. 1955 Roman Romkowski, deputy minister of the former ministry, and Jacek Goldberg-Rozanski and Anatol Fejgin, its former two directors, were arrested for "using forbidden methods of investigation" and "gross cases of despotic action." Many innocent persons were released from prisons and forced labour camps of which there were at least 226, including 64 for women, with a total of about 180,000 inmates.

Another development was the calling back to Poland of the Polish *émigrés* and political exiles. In August thousands of Poles in Great Britain, the United States, France and other countries received by post at their private addresses an appeal signed by 45 names inviting them to return home to help in building a new Poland. The letter contained a quotation from a speech by Bierut in which it was said that the people's Poland would generously forget "all the guilts and faults" of those returning. Among the few Poles who had returned by the end of the year was Hugon Hanke, the so-called "premier" of the Polish government in exile, no longer recognized by an overwhelming majority of Polish political leaders in exile.

Polish organizations abroad countered this Warsaw campaign by asking (through the British Broadcasting Corporation, the Voice of America and Radio Free Europe) what had happened to at least 200,000 Poles detained in Soviet prisons and camps of forced labour, among them 16 Polish underground leaders who were arrested at the beginning of 1945. In October, breaking a nine-year silence, the Soviet authorities admitted that one of the 16 leaders, Gen. Leopold Okulicki, last commander of the underground Polish anti-German army, had died in a Moscow prison on Christmas eve 1946. (See also EASTERN EUROPEAN ECONOMIC PLANNING.) (K. SM.)

Education.—Schools (1953-54): nursery 8,200, pupils 380,000; primary 22,980 (including 14,116 seven-grade); pupils about 3,000,000, teachers about 100,000; special 111, pupils 13,800; secondary 792, pupils 195,000, teachers about 5,000; vocational about 3,000, pupils 474,000; teachers' training colleges 149, pupils 44,000; adult education courses 980, pupils 145,000; institutions of higher education 82 (including 7 state universities, 1 Catholic university at Lublin and 8 colleges of engineering), students 136,000 (including 1,967 at the Catholic university).

Finance.—Monetary unit: zloty with official exchange rate, high and fictitious, of 4 zlotys to the U.S. dollar. Budget (1954 est.; 1955 est. in parentheses): revenue 115,350,000,000 zlotys (122,000,000,000 zlotys); expenditure 103,480,000,000 zlotys (114,900,000,000 zlotys), including 53,600,000,000 zlotys (60,800,000,000 zlotys) invested in the national economy.

Foreign Trade.—(1938; 1950 in parentheses). Exports U.S. \$223,000,000 (U.S. \$631,000,000); imports U.S. \$231,000,000 (U.S. \$844,000,000). Main sources of imports (1950): U.S.S.R. 40.1%; Czechoslovakia, Hungary, Rumania and Bulgaria 18.3%; Germany (eastern and western) 15.5%; U.K. 2.2%; rest of western Europe 14.6%; U.S. 1%. Main destinations of exports (1950): U.S.S.R. 23.2%; four eastern European countries 24.6%; Germany 13%; U.K. 7.7%; rest of western Europe 27.7%; U.S. 1.7%. In 1955 the Soviet share in Polish foreign trade amounted to 38%, that of people's democracies (including German Democratic Republic and China) to 32%. Polish trade with 17 western European countries (1952; 1953 in parentheses): exports U.S. \$258,000,000 (U.S. \$235,800,000); imports U.S. \$172,000,000 (U.S. \$154,100,000).

Transport and Communications.—Railways (1950, standard gauge): 24,552 km.; passenger traffic (1950) 26,352,000,000 passenger-km.; freight traffic (1950) 32,000,000,000 ton-km.; freight carried 148,128,000 metric tons. Roads (1950, hard surfaced): 96,605 km. Licensed motor vehicles (1950 est.): cars 30,000; commercial 40,000. Shipping (1954, ships of 100 tons and over): vessels 142, total tonnage 291,000 gross tons. Freight traffic in Polish ports (external trade, metric tons, 1950): loaded 12,453,000, unloaded 3,215,000. Ships entered (1950): 7,250,000 net registered tons. Air transport (1953): 2,507,000 km. flown; 3,334,000 passenger-km. Telephones (1954): 235,000. Radio licences (April 1954): about 1,500,000; loudspeakers served by relay stations 1,250,000.

Agriculture.—Main crops (metric tons, 1934-38 average within post-1945 boundaries; 1951-53 estimated average in parentheses): wheat 1,965,000 (1,600,000); barley 1,632,000 (1,000,000); rye 6,854,000 (6,300,000); oats 2,830,000 (2,000,000); millet 130,000 (61,000); potatoes 38,014,000 (28,200,000); sugar beets 5,962,000 (7,700,000). Sugar, raw (1948-50 average; 1953 in parentheses): 954,000 (1,120,000). Livestock (1950; 1953 estimates in parentheses): cattle 7,164,000 (7,400,000); pigs 9,928,000 (8,400,000); sheep 2,194,000; horses 2,797,000.

Industry.—Employment outside agriculture (1938; 1954 estimate in parentheses): 2,730,000 (6,000,000). Production (metric tons, 1938; 1954 in parentheses): coal 38,104,000 (91,256,000); lignite 10,000 (7,200,000); crude petroleum 507,000 (250,000); electricity 3,977,000,000

kw.hr. (15,000,000,000 kw.hr.); pig iron 880,000 (2,400,000); steel 1,441,000 (4,000,000); zinc, metal 108,000 (1955, plan: 198,000); cement 1,719,000 (3,500,000).

Pole Vaulting: see TRACK AND FIELD SPORTS.

Police. Problems of economy and efficiency were of primary concern to police administrators of the United States in 1955. They were confronted at the beginning of the year with an unbroken seven-year upward crime trend and with a 35% increase in operating cost since 1950 (based on the average of the per capita costs in all population groups). The principal increment in expenditures resulted from salary increases, which amounted to 25% for patrolmen and 22% for chiefs (based on the average of median salaries in all population groups). Salary expenditures had increased 39%; the difference between this figure and the salary increment is accounted for by additional policemen.

Police employees in state and local governments increased from 248,000 to 259,000 (more than 4%) between Oct. 1953 and Oct. 1954. City police employees increased from 164,000 to 171,000 (more than 4%) between April 1954 and April 1955. Employees in the latter group who were without arrest power (civilians) increased 7% to 16,000. The percentage of police employees who were civilians increased from 7.5 in 1950 to 9.6 in 1955. Substitution of civilians for police officers in clerical, communications and other inside work, as well as such outside tasks as guarding school crossings and checking compliance with parking regulations, was responsible for this trend.

Effective police manpower had not increased in proportion to the number of men added to the forces. Shortened work weeks and more liberal provisions for annual and holiday leaves absorbed a substantial part of the added manpower. For example, a change from a 48- to a 40-hour week decreases available man-hours by about 17%. A total of 132 cities of more than 10,000 population reduced the police work week in 1954, compared with 122 cities in 1953 and 159 in 1952. The work week was reduced to 40 hours in 57 of the 132 cities.

The 1955 police administrator was thus confronted with the problem of meeting demands for shorter work weeks and pay increases, of checking the upward crime trend and of avoiding prohibitively high operating costs. The solution lay in the more effective use of manpower.

Efforts of the police to use their forces more effectively in preventive patrol was apparent in trends toward more complete motorization and greater use of one-man patrol cars. Among 235 cities of more than 50,000 population, the number of patrol cars increased one-third between 1950 and 1955, and the number of departments that used some one-man patrol cars on all three shifts and the number that used one-man cars exclusively both increased 19% in the same period. The exclusive use of one-man cars had increased 78% in all cities since 1950.

The police continued to demonstrate their appreciation of the value of mechanical and electrical devices. Several departments adopted crash helmets for their motorcycle officers and seat straps for their cars. More than 600 radar units were in use for scanning the speed of motorists. Mobile emergency headquarters units for communications during disasters were provided in increasing numbers. Teletype networks increased in number and coverage. Some departments experimented with small radio receivers for their foot patrolmen. Increased use was noted of punch-card sorting and tabulating machines for statistical analyses, bookkeeping tasks, processing traffic tickets and warrants and searching fingerprint files.

In 1954, 61 city police employees, as compared with 63 in 1953, were killed while on active duty in cities that represented more than 97% of the urban population. Deaths from any mis-

hap, such as traffic accidents, incurred in line of duty are included. On the whole, the death rate among policemen was highest in the states that had the highest aggravated assault rate. The death rate was highest in cities of less than 10,000 population (6.6) and lowest in cities between 10,000 and 25,000 (2.0). Cities of more than 250,000 inhabitants had a death rate of 2.6, compared with 4.3 for cities between 100,000 and 250,000; with 2.8 for cities between 50,000 and 100,000; and with 4.8 for cities between 25,000 and 50,000.

The 1955 experience of the police in England and Wales was similar to that in the U.S. in some respects. The work week was shortened, pay increases were granted, pensions for police widows were improved and about 2,000 police houses were built. During the year there was a continuing diminution in police strength, although the number of policewomen rose slightly.

The 62nd annual conference of the International Association of Chiefs of Police was held in Philadelphia, Pa., in Oct. 1955. More than 1,000 police executives were in attendance, with nearly 40 representatives from Canada, China, Egypt, Germany, Guatemala, Indonesia, Iran, Japan, the Philippine republic and Thailand. Subjects of special interest discussed at the conference included traffic, civil defense, public relations, juvenile delinquency, professionalization, police training in colleges and universities, one-man patrol car operation, legal restrictions that hamper the police, and the American Bar foundation survey of the administration of criminal justice. (See also CRIME; FEDERAL BUREAU OF INVESTIGATION; SECRET SERVICE, U.S.)

(O. W. W.)

Poliomyelitis. The year 1955 was one of excitement, temporary disappointment and strongly renewed hope for the prevention of paralytic poliomyelitis by vaccination against it. The Salk vaccine was the centre of interest and of controversy.

In 1954 the National Foundation for Infantile Paralysis undertook and paid for a nation-wide poliomyelitis vaccine field trial to determine whether the vaccine developed by Jonas Salk of the University of Pittsburgh, Pa., could in fact protect children against paralytic poliomyelitis under natural conditions of exposure to the disease. In the course of this trial, the largest controlled medical experiment in history, 440,000 children received three injections each of the Salk vaccine, 210,000 got injections of a harmless pink fluid (placebo) and 1,830,000 were kept under observation for possible polio attacks until Jan. 1, 1955.

For the first three months of 1955, a time of relative quiet on the polio front, the enormous amount of information collected in the field trial was studied and analyzed at the Poliomyelitis Vaccine Evaluation centre established at the University of Michigan, Ann Arbor. The centre and the study were under the direction of Thomas Francis, Jr., professor of epidemiology. The study was kept in secret code to prevent premature and incorrect leaks of information.

On April 12 a scientific convocation was called at the University of Michigan to hear and assess Francis' evaluation of the field trial and the Salk vaccine. Approximately 500 scientists and physicians most concerned with poliomyelitis attended the meeting.

The Francis Report.—The Francis report, as it was immediately named, marshalled convincing evidence that the Salk vaccine was both safe and effective. Concerning the safety of the vaccine, Francis noted that neither minor reactions, such as fainting, dizziness or mild skin rashes, nor so-called major reactions, such as high fever, paralysis or kidney disease, could be attributed to the vaccine. These reactions occurred with equal or greater frequency among children who had received only inoculations of the harmless placebo substance. Nor was there

any evidence at all that the vaccine was a source of poliomyelitis infection.

In measuring the effectiveness of the vaccine, Francis placed greatest reliance on the evidence obtained from the placebo study areas, where strictly controlled and almost identical populations were compared. "On this basis," he told his audience, "it may be suggested that vaccination was 80 to 90 per cent effective against paralytic poliomyelitis; that it was 60 to 70 per cent effective against disease caused by Type I virus and 90 per cent or more effective against that of Type II and Type III virus."

(There are only three immunologic types of polio virus known, though there are many hundreds of strains of polio virus. Each type is capable of causing paralytic disease. However, in any epidemic situation, one or another type is usually predominant. One of the most important features of the Salk vaccine is the fact that it is trivalent, offering protection against all three types of polio virus. In making the vaccine, the virus is inactivated [or killed] by treating it with formalin.)

Salk's New Dosage Schedule.—Salk was also a speaker at the April 12 meeting in Ann Arbor. After crediting, with due modesty, the many other investigators whose efforts had made possible the development and evaluation of the vaccine to which his name was attached, he pointed out the following important results of his continuing research:

The vaccine available in 1955 was an improvement over that made in 1954 because it had been since discovered how to prevent and avoid the damaging effect of a chemical preservative added to the vaccine.

A better dosage schedule for giving the vaccine had been worked out. Salk's new dosage schedule, put into effect in 1955, called for a second injection of vaccine two to four weeks after the first injection and a third injection, or booster shot, to be given at least seven months later. The effect of this "full immunization" schedule, Salk said, would be to increase greatly the level of protective antibodies against the disease, often above the level produced by an attack of the disease itself, and also to extend considerably the length of time that the artificially induced immunity to paralytic polio would last.

(The duration of immunity produced by the Salk vaccine had not yet been determined by the close of the year. This matter was still subject to extensive and continuing scientific research. Records of inoculated children must be reviewed for many years. Animal experiments were also being conducted. The weight of scientific opinion was that full immunization with three injections of the Salk vaccine, the third injection being delayed seven months, would provide a high degree of protection against paralytic polio for a considerable number of years.)

Vaccine Licensed.—Another event of April 12 was the licensing of the Salk vaccine as "safe, pure and potent" for general use, sale and distribution by the Laboratory of Biologics Control of the National Institutes of Health, a part of the U.S. public health service legally responsible for licensing all biologic products. On the basis of convincing evidence supplied by the Francis report and other data, the U.S. secretary of health, education and welfare issued licences for immediate distribution of the vaccine to six commercial manufacturers who had been in the process of making it for many months beforehand according to certain "minimum requirements" previously established. The six firms were: Cutter laboratories; Eli Lilly and company; Parke, Davis and company; Pitman-Moore company (division of Allied Laboratories, Inc.); Sharp and Dohme division of Merck and Company, Inc.; and Wyeth laboratories.

The summarized scientific content of the Francis report, Salk's new dosage schedule and the announcement of the licensing of the vaccine were immediately communicated on April 12 to approximately 40,000 physicians in the U.S. and Canada through



EMERGENCY WARD of the Haynes Memorial hospital, Boston, Mass., filled with iron lungs after an epidemic of polio in Aug. 1955

a closed-circuit television broadcast to 64 cities.

Vaccine Supply.—In Oct. 1954, six months before the results of the Francis report were known, the National Foundation for Infantile Paralysis had taken a "calculated risk" of placing advance orders for 25,000,000 c.c. of vaccine. It had also made advance plans, in co-operation with public health officers, school officials and medical societies, for the administration of this vaccine before the 1955 polio season to all children in the first and second grades in school and to "polio pioneers" of the 1954 field trial.

Approximately 9,000,000 children were eligible for this 1955 vaccine program. The National foundation's calculated risk was considered both a moral obligation and a practical expedient for assuring a vaccine supply in 1955. It permitted vaccine manufacturers to keep production lines going and it recognized the critical fact that vaccine production and safety testing took time (now a minimum of 120 days, formerly 90 days).

Temporary Setback.—The 1955 vaccine program got under way on April 16 in San Diego, Calif. Within ten days it began to run into difficulties. In California and Idaho a disproportionately high number of cases of poliomyelitis were reported suddenly among children who had received the vaccine. These cases were quickly traced to two lots of vaccine from one manufacturer. It was soon evident that there had been some sort of a laboratory accident. The offending vaccine was immediately withdrawn. But on May 7 the surgeon general of the U.S. public health service called the entire nation-wide immunization program to a halt.

Public Health Service Technical Report.—Several hectic weeks of investigation and conference with experts on the part of the public health service took place. On May 26 a revised set of minimum requirements for the manufacture and testing of the Salk vaccine were promulgated, making, as it was said, "a safe vaccine safer." These technical revisions called for larger testing samples, for two consecutive negative tests of vaccine pools and for tests of random samples of final containers, and also forbade certain reheating practices. A technical report on the Salk vaccine was issued by the public health service on June 10, saying in part:

"Events which in the traditional course of scientific development would have covered years were telescoped into months and,

as a result, both successes and failures have been magnified. . . . We are therefore concerned with an effective vaccine for the prevention of poliomyelitis, and we are concerned with a safe vaccine. . . . We have every belief that this vaccine will fulfill its bright promise."

A subsequent public health service report of Aug. 25, dealing with the specific circumstances that had interrupted the vaccine program, declared that investigation of manufacturing practices and consideration of detailed processing data "warrants the presumption that a combination of inadequate inactivation and failure of the safety tests permitted the presence of undetected infective amounts of live virus in some lots of vaccine." However, the public health service again repeated its belief that the revised minimum requirements of May 26 "provide adequate safeguards for the routine production and use of poliomyelitis vaccine."

6,500,000 Children Vaccinated.—Vaccine was again released by the public health service in June, at first in dribbles, then in ever-increasing quantities. By fall approximately 6,500,000 U.S. children had received at least one injection of vaccine and about half this number had two injections. With the reopening of schools in the fall, the vaccine program was stepped up. So long as the vaccine was in short supply, priorities for its use were established. Priorities were based on past experience of poliomyelitis attack rates in various age groups. The first priority category was the 5 to 9 age group; to come thereafter, in order, 6 months to 5 years, 10 to 14 years, 15 to 19 years and pregnant women.

Results of 1955 Vaccine Program.—It became evident quite early in the usual polio season that even one injection of the Salk vaccine was helping to cut down the 1955 incidence of paralytic polio among the children who received it. The attack rate was only one-quarter to one-third as high among vaccinated as among unvaccinated children.

These promising early results encouraged hopes and plans for "universal vaccination" against paralytic polio in the near future. Active research programs, looking toward a still better vaccine and improved methods of making it, continued throughout the year. Especial effort was directed toward finding cells other than monkey kidney cells (from monkeys imported from India) on which the polio virus needed for vaccine manufacture could be grown in tissue culture. The possibility of producing a live virus vaccine also continued under investigation.

Continued Need for Rehabilitation.—In spite of the vaccine program a substantial number of cases of poliomyelitis, approximately 30,000, were reported in the U.S. in 1955. This emphasized the fact that patients stricken with paralytic polio before or, occasionally, in spite of vaccination would continue to need help and rehabilitation. It was estimated that among the 750,000 people in the United States who still endured moderate to severe aftereffects of paralytic polio, at least 35,000 needed and would benefit by full-scale rehabilitation programs. To assist patients in iron lungs, and if possible to free them from this device, two new respiratory centres, one in New York city and one in Columbus, O., were opened in 1955, bringing the total of such centres in operation to 14.

The U.S. was not alone in beginning a vaccine program in 1955. An excellent program was inaugurated under governmental auspices in Canada, where nearly 1,000,000 children received two doses of Canadian-made Salk vaccine without a mishap. In Denmark about 500,000 children were vaccinated.

(H. E. V. R.)

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Political Parties, British. **Conservative Party.**—The year 1955 was an important one in the history of the Conservative party. On April 6 Sir Winston Churchill resigned the premiership, and was succeeded by Sir Anthony Eden. On April 21 Sir Winston's resignation as leader of the party (a post he had held for 14 years) was read and Sir Anthony Eden was appointed his successor.

The general election resulted in the Conservative majority over Labour rising from 26 to 67, and over all parties from 18 to 58. Only three Conservatives lost their seats, two being victims of the redistribution of boundaries. This was the first occasion in 90 years when a government had increased its majority, and previously, spring elections had not been considered fortunate for the Conservative party.

Apart from the Finance bill, the legislation before the general election was not of a major character. It included an act to protect children from harmful publications, colonial development and welfare and a measure affecting Scottish crofters, while further improvements in benefit rates under the National Insurance act came into operation.

During the year the Conservative party maintained an individual membership of 2,750,000 in England and Wales. The six by-elections before the general election showed no change. The Conservatives held five and Labour one.

About 4,000 representatives attended the Bournemouth conference in October. Several resolutions congratulated the government; others called for economy, electoral reform, copartnership, expansion of technical education and vigorous action against monopolies. One resolution, which was rejected, advocated an extension of postal voting to the holidays. R. A. Butler, chancellor of the exchequer, spoke of the dangers of inflation and intimated clearly that the necessary measures would be taken.

For the first time Sir Anthony Eden addressed a mass meeting at the end of the conference as premier and leader of the party.

The Young Conservatives had 145,000 members and 2,000 branches in 1955, and claimed to be the largest voluntary political youth movement in the free world.

Publicity and organizational activities reached a climax during the general election campaign when from party headquarters alone 14,000,000 leaflets and 180,000 posters were issued.

(M. C.-W.)

Labour Party.—The total membership of the Labour party as returned in the 1955 report was 6,498,027. Of this figure, 5,529,760 was trade union affiliated membership, 933,657 individual membership and 34,610 Socialist and co-operative society membership.

The major event for the party during the year was the general election. Labour put forward 620 official candidates, of whom 277 were elected. There were 26,760,661 votes cast, representing 76.8% of the electorate, compared with 82.6% in 1951. Labour polled 12,405,246 votes, 46.3% of the total, 1,500,000 less than in 1951. Comparison with previous elections is complicated by the fact of redistribution; over the country, four Labour and two Conservative seats were abolished, and three Labour and eight Conservative seats were created. Thirty-seven seats were won on minority votes, 25 Conservative, 11 Labour and 1 Liberal. Apart from the general election there were nine by-elections during the year. None of these involved any change in representation.

Labour's election manifesto, entitled "Forward With Labour," approved at the start of the election campaign by the National Executive committee, was based on the party's policy "Chal-

lenge to Britain." The manifesto covered all aspects of policy. In international affairs it called for immediate top-level talks, a cessation of hydrogen bomb tests and the admission of Communist China to the United Nations. In home affairs the emphasis was on checking the rise in prices and strengthening the social services. Producer marketing boards were proposed for the distribution of agricultural and horticultural produce.

The Labour party in parliament was highly critical of the government on home economic affairs and urged greater action in international affairs. A resolution moved by C. R. Attlee called again for top-level talks between the Soviet Union and the west. Another resolution, moved by Edith Summerskill, asked for an international scientific conference to study the effects of nuclear tests. The 1955 budget was criticized as being in contrast with the government's grim economic policy a few weeks earlier; it was suggested that it was an "electioneering" budget. It was also criticized for bestowing benefits once again predominantly on companies and the well-to-do.

The annual conference at Margate in Oct. 1955 was devoted mainly to electoral organization and future policy. A new program of policy statements was announced, and a document on party organization was discussed and received. The National Executive committee elected E. G. Gooch as chairman, and Miss Margaret Herbison as vice-chairman for the year 1955-56.

On Dec. 7 Clement Attlee resigned his 20-year leadership of the Labour party and received an earldom from the queen. Hugh Gaitskell was elected as his successor. (A. W. Bx.)

Liberal Party.—The general election was more memorable for the British Liberal party than for either victors or defeated challengers. It was the first since 1929 in which Liberals did not lose both seats and many votes. Declarations on the night of May 26 suggested the likelihood of a greatly increased total poll and possibly more M.P.'s, with only one more candidate (110) than in 1951; but changed local circumstances caused slumps that shattered both prospects. Representation remained at six, with seats and members unchanged. Aggregate votes fell 8,000 to 722,395. But the Liberal percentage of all votes (2.7) was up by 0.15.

In North Devon, Hereford and Denbigh, Liberals were newly in second place. At Inverness, where a by-election in Dec. 1954 gave the first strong hint of a hopeful trend, John Bannerman, Scottish rugby international, chairman since September of the Scottish Liberal party, reduced the Conservative majority to 966; and in Orkney and Zetland Joseph Grimond, Liberal whip, had a clear majority for the first time.

The manifesto, "Crisis Unresolved," was widely acknowledged as the clearest election warning of economic difficulties that were acute by summer. It treated the danger as a continuance of the crisis with which the Liberal manifesto dealt in 1951. Its remedies were freer economy, reduced public expenditure and more incentives for workpeople.

The assembly's general effect was restatement. Chief developments were the assertion of general armaments limitation as a greater step toward peace than abolition of thermonuclear weapons; a call for revision of the United Nations charter and to give right of entry to all sovereign states accepting the charter's terms.

(R. A. Sm.)

Political Parties, U.S. A heart attack suffered by Pres. Dwight D. Eisenhower in Sept. 1955 upset all previous political calculations and left both major political parties uncertain at the close of the year about the identity of their 1956 presidential candidates and those candidates' chances for election.

Before he was stricken, there was an almost universal assumption in political circles that the president would seek a

second term. Eisenhower himself said nothing to clarify the enigma surrounding his intentions. He suggested at times that any new term bid on his part was doubtful. At other points he seemed to be enjoying the presidency with a verve that indicated he wanted four more years of it despite his advancing age, 65 on Oct. 14.

The president's heart attack stunned Republicans. It left them in palpable confusion as to their campaign plans and their nominee. Democrats accepted the stricture with genuine outward sorrow but also with an inward surge of hope that, with Eisenhower off the G.O.P. ticket, their nominee might have a much better chance of election.

The immediate reaction of most leaders of both parties was that the president would not run again. But as the doctors' bulletins from his sickroom at Fitzsimons Army hospital in Denver continued to glow with reports of his progress toward recovery, hopes revived in the Republican leaders that he would find himself able later to undertake a limited campaign for re-election. These hopes were bolstered as the president was welcomed rousingly back to Washington, D.C., went to his Gettysburg, Pa., farm and began to resume his White House duties on an ever-increasing scale.

If the president decided not to run, the field of potential Republican candidates ranged from the reluctant to the anxious, from the experienced to the merely hopeful.

By his discreet handling of a delicate role immediately after the president's heart attack, Vice-Pres. Richard M. Nixon appeared to have enhanced his position as a possible heir apparent. Evidently sobered by the responsibility that was his as a man separated from the presidency by a single heartbeat, Nixon took steps in a New York speech to sound a bipartisan viewpoint far more pleasing to the Democrats than the Republican speeches he had made during the 1954 congressional campaign.

In that campaign Nixon had become the number-one target of Democrats angered by his remarks indirectly linking them with communism. They were so stirred they assembled what they called a "chamber of smears," largely from clippings of his campaign speeches. Their attack was so vigorous that Republican National Chairman Leonard W. Hall charged the opposition with operating "a highly organized campaign . . . to besmirch" the vice-president.

In a frank mood in March, Nixon had told the Republicans that as a party they were "not strong enough to elect a president." He said the G.O.P. had to have "a presidential candidate strong enough to get the party elected." His plain implication at that time was that only Eisenhower could fill this role.

In the mind of some party leaders another Californian, Chief Justice Earl Warren, ranked above Nixon among the G.O.P. presidential possibilities if Eisenhower did not run. Although Warren said in April that his purpose to remain on the bench was "irrevocable," there remained the possibility that he might change his mind if Eisenhower himself requested Warren to do so.

A third Californian, Sen. William F. Knowland, was less reluctant. Knowland, the senate Republican leader, said as early as January that he would not join in a "draft Eisenhower" movement. He said he did not think the Republicans wanted a "reluctant" candidate who had to be pushed into making a race. After the president's heart attack, Knowland said that if Eisenhower did not plan to run again he should make the fact known early so the country could appraise other candidates.

The possible candidacies of Nixon, Warren and Knowland all were clouded to some extent by the announcement of Gov. Goodwin J. Knight that he wanted California's G.O.P. convention votes pledged to him as a favourite son candidate, although he conceded he was no serious contender for top place on the

ticket.

There was a widespread outbreak of possible favourite son candidacies among the Republicans. Included in this category were governors Christian Herter of Massachusetts, Walter J. Kohler of Wisconsin, William G. Stratton of Illinois and others less widely known on a national scale.

Harold E. Stassen, previously an unsuccessful bidder for the Republican nomination, remained in the public eye while functioning as Eisenhower's special assistant for disarmament. Some politicians took at less than face value the contention of former Gov. Thomas E. Dewey of New York, twice the Republican nominee, that he had retired from the active field. There was mention of the president's brother, Milton Eisenhower, president of Pennsylvania State university, University Park, and many others.

On the Democratic side, the principal contender at the end of the year seemed to be Adlai E. Stevenson, former Illinois governor who met defeat at Eisenhower's hands in 1952. Despite his loss of four southern states in that year, Stevenson was regarded generally as the man to beat for the Democratic nomination.

One who might undertake that task was Sen. Estes Kefauver of Tennessee, a 1952 primary election winner who did not fare well when the chips came down for Stevenson at the party's 1952 nominating convention.

Voluntarily confined to an early role as New York state's favourite son, Gov. Averell Harriman gravitated more and more toward a position where he might become the candidate if Stevenson stumbled in his race for the nomination.

Behind Harriman was an imposing line of potential favourites, best known of whom was Sen. Lyndon B. Johnson of Texas, the senate's Democratic leader. Himself a victim of a heart attack in midsummer, Johnson's return to physical vigour was marked by his political manoeuvrings to set the stage for the 1956 convention's selection of what he called a "moderate" candidate and the writing of a platform that would offend neither of the divided northern and southern wings of the party.

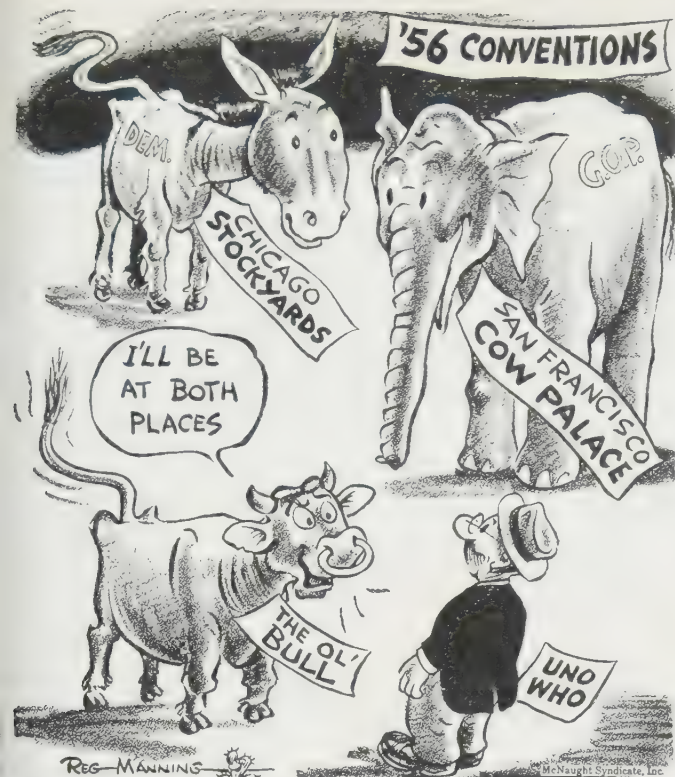
Gov. G. Mennen Williams of Michigan made it clear he would be receptive to a nomination if Stevenson were eliminated. Sen. Stuart Symington, a Missourian who had warred with the Eisenhower administration on the issue of whether the free world or the U.S.S.R. controls the air, continued to be regarded as a dark horse candidate. Gov. Frank J. Lausche of Ohio was a possible favourite son aspirant.

Former Pres. Harry S. Truman switched suddenly to a waiting game after saying four times between April and August that he was for Stevenson for the nomination. Truman said in November he was not backing any candidate and would not make up his mind until the following spring.

In congress, where the legislative records the two parties would carry into the presidential and congressional campaigns were being written, the Democrats generally pursued what Speaker of the House Sam Rayburn, Texas Democrat, described as a "loyal opposition" course. Senator Johnson undertook to get along with the president on many issues but marshalled his forces for telling upsets of the Republicans on several political questions.

At the close of the congressional session, when Eisenhower said that not enough of his proposals had been passed, Johnson fired back that the Democratic-controlled senate was not a "rubber stamp" and would not follow presidential instruction "like a bunch of second lieutenants carrying out orders."

In most instances, congressional Democrats went along on foreign policy matters. They helped save the president's foreign trade program from an attack by Republican protectionists and gave him the defense appropriations he asked. But they too



"DON'T WORRY 'BOUT THE BOVINE," a cartoon of 1955 by Manning of the McNaught Syndicate, Inc.

sharp partisan exception to his highway construction, school building and farm programs. They boosted his housing and minimum-wage recommendations. They tried unsuccessfully to cut individual income taxes \$20 a year as a basis for whooping up the 1956 issue that they were for the "little fellow" while they tried to hang a "big business" sign on the Eisenhower administration.

In this latter connection, the Democrats centred fire on big businessmen they contended had violated ethics by permitting a conflict of interest while they held federal appointment. Biggest Democratic target on this score was Harold E. Talbott, secretary of the air force, who resigned after a controversy over his alleged solicitation of business for an engineering firm in which he was interested.

The Democrats fought to the point of a presidential cancellation the Dixon-Yates contract for construction of a private power plant to supplement the Tennessee Valley authority (TVA) system. By and large, however, they regarded falling farm prices as their biggest vote-getting issue for 1956 and set about making the most of it.

In an almost straight party vote, Democrats forced through the house a bill restoring high, rigid price supports on basic field crops, a program congress had abandoned previously in favour of flexible supports at President Eisenhower's urging.

The Democrats made Secretary of Agriculture Ezra Taft Benson a prime target for their attacks. Benson and other Republican officials said the drop in farm prices was a result of the "inherited mess" of crop surpluses built up under Democratic rigid price props.

Despite Democratic concentration on farm belt woes, Republicans paeanned a theme of "peace-prosperity-progress." They pointed to booming business, rising wages and corporate incomes, a fairly stable price level and increasing employment. In this, the Republicans felt, they had the makings of a 1956 victory. Toward the end of the year they began to boast that many voters who once thought the Democrats the most likely party to bring good times were coming around to the belief that the

G.O.P. offered better prosperity insurance.

Republicans worked hard on organization. They assembled their 48 state chairmen for a campaign school in Washington, D.C., and flew them to Denver for a breakfast where Eisenhower uttered some prophetic words to the effect that "humans are frail—and they are mortal." He urged the party not to become dependent on one man, words remembered sharply a few weeks later when he was stricken with a heart attack.

The G.O.P. earlier had chosen San Francisco as the site for its 1956 convention in compliance with Eisenhower's wishes. Although its scheduled four-day meeting there, beginning Aug. 20, had been arranged on the obvious basis that Eisenhower would be the nominee, there was no move to lengthen the sessions when his entry became doubtful.

Democrats had picked Chicago and an Aug. 13 date to start a convention their leaders were striving months in advance to make as harmonious as possible. Democratic National Chairman Paul M. Butler sought to smooth over the loyalty oath controversy which had split the 1948 and 1952 conventions.

Butler said the party was willing to take back into the fold any penitents among 1952 general election bolters. Gov. Allan Shivers of Texas, who supported Eisenhower in that year, said that whether his state backed the party nominee in 1956 would depend on "the issues, the platform and the nominee." He made it clear he was against Stevenson. However, Speaker Rayburn spearheaded a Texas "loyalist" movement aimed at wresting the state party machinery away from Shivers and aligning it with the national ticket.

Sen. Barry Goldwater of Arizona, chairman of the Republican senatorial campaign committee, charged that union leaders were planning "massive use of political slush funds." He said the union merger would put too much political power in one man's hands. Union leaders vigorously denied these charges as they did a suggestion by Senator Knowland that they were trying to "capture" the Democratic party, make it over in the image of the British Labour party and win control of the government by 1960 at the latest. (See also ELECTIONS, U.S.; SOCIALISM; UNITED STATES.) (J. L. BE.)

Political Science. In 1955 there was continued progress in the internationalization of political science with dominant emphasis in the fields of international politics and administration, comparative government and political behaviour. The Third World congress of the International Political Science association was held in Stockholm, Swed., at the end of August and the subjects discussed were "Political Implications of Development Programs," "Small and Large States in International Organization," "The Government of Great Cities," "The Role of Party Systems in Democracy," "The Role of Public Opinion Polls in the Study of Political Parties" and "Relations Between Social Classes and Political Parties." The movement toward extending knowledge in the theory and practice of public administration was also advanced in a number of ways. For example, the first general course at the Advanced School of Public Administration for Central America got under way in 1955 at San José, Costa Rica, a project jointly maintained by the governments of five Central American countries and the United Nations; the United Nations, in co-operation with the government of Egypt, also established a public administration training centre at Cairo, Egypt; and the Foreign Operations administration of the U.S. government created administration training centres in a number of countries, among them Iran, Pakistan and South Vietnam. One of the major problems of the so-called underdeveloped countries is the management of state enterprises. Following the successful Rangoon conference of the United Nations on this subject in 1954,

the International Institute of Administrative Sciences in co-operation with the Royal Institute of Public Administration held a conference at Oxford, Eng., the two subjects discussed being "Common Elements in the Management of Business and Public Institutions" and "Increased Efficiency of State Economic Enterprises."

Another field of political science which had shown marked growth in recent years and where international collaboration was the rule was that of public opinion research. An example of this was the annual conference of the World Association for Public Opinion Research held at Konstanz, Ger., in Sept. 1955.

In the United States there were a number of interesting developments. One of these was a trend toward the establishment of joint courses in business and public administration where the effort was to elucidate the common organization and managerial elements in both areas and to focus on problems of policy formation and decision making. In 1955 there were several developments in this direction, one of them being the elevation of Cornell university's school of business and public administration to full graduate status.

A second trend, which began shortly after World War II, was the rapid growth of interest in political behaviour, this being part of a larger emphasis on the behavioural sciences sponsored primarily by the Ford foundation and the Social Science Research council. A number of seminars and training centres relating to political behaviour cropped up in 1955, an example being a faculty seminar at the University of Pennsylvania on "Research in Political Behavior: Its Achievements, Problems, Prospects," which met five times during the 1955 academic year. This was an interuniversity experiment attended by about 30 faculty members representing 10 different disciplines. The major purposes of the seminar were to provide an interdisciplinary forum for the discussion of fundamental issues which arise when behavioural research is discussed, and to identify, analyze and evaluate the major types of behavioural research both within and outside of the field of political science.

In the United States, as in other countries, the recent period for professional political scientists had been a time of intensive re-examination and self-analysis, as to both scope and content. This was illustrated, for example, in the report of Northwestern university's comprehensive survey of political science methodology as published in the *American Political Science Review* for March 1955. There was a new ferment in the subject, as well as a judicious review of past methods. According to this survey, there were no less than five areas in which modern methodologies had led to intensified or somewhat original forms of activity. The first of these was studies relying on "gross [unrefined] quantitative data" in such areas as legislative personnel, voting in legislative assemblies and other centres of interest in government and politics. The second category also relied on quantitative data but the items of evidence were more precisely defined and more severely judged before acceptance and the analysis to which they were subjected was more sophisticated. The third type, which appeared to be increasingly attractive, was the intensive examination of a process, event or series of occurrences, such as the full circumstances surrounding the passing of an important law. The fourth area, where the method was not new but the sophistication was notable, was the field of political biography. The fifth concentrate, although not given a name by the authors of the survey, had to do with a dynamic realism in describing the political process. The overall trend in the United States, said the authors of the survey, was a transition from the political scientists' main preoccupation with the historical-legal approach to what might be described as an empirico-descriptive approach.

In short, to return to the world view, the year 1955 saw a

continuation of the growth of international collaboration combined with the development of new groups and subgroups on political science in which the dominant emphases were on international politics, comparative public and private administration, comparative government, political behaviour and interdisciplinary co-operation. (M. E. Dk.)

Polo. The Triple C team from Detroit, Mich., carried off the United States open championship by defeating the Brandywine four of Kennett Square, Pa., in the final of the 1955 tourney played on Oak Brook's International field at Hinsdale, Ill., on Sept. 11. Scoring six times in the last two chukkers, the team of Don Beveridge, Bill Linfoot, Billy Barry and Harold Barry erased a 7-3 deficit to triumph 9-8. By their victory they gained permanent possession of the 45-year-old trophy, biggest prize in American polo. R. Williams, Ray Harrington, Clarence (Buddy) Coombs and Bill Mayer rode for the losing side. Meadow Brook of Westbury, L.I., took the Paul Butler national handicap title at Hinsdale on Sept. 18 by halting Oak Brook, 13-6. Hugo Dalmar, Pete Bostwick, Alan Corey, Jr., and Devcreux Milburn made up the winning quartet. A Triple C four successfully defended the national 20-goal crown, turning back the Milwaukee Polo club, 6-4, in the title game at Milwaukee, Wis. A Farmington (Conn.) team retained 12-goal honours by subduing the Blind Brook Polo club, 8-5, at Harrison, N.Y.

Indoors, the Squadron A team of Phil Brady, Jack Ivory and George Sherman captured national senior laurels by beating the New York Athletic club trio of Archie Young, Herb Pennell and John Pflug, 11-8, in the deciding contest of a three-game series at the Squadron A armory in New York. New York A.C. took the opening contest, 13-7, then Squadron A squared the series at 1-1 by winning the second game, 8-4. The national 12-goal title fell to the New York A.C. team of Fred Rice, Pennell and Zenas Colt when they defeated Squadron A, 14-12. A Huntington (L.I.) team of Ray Koch, Vince Rizzo and Joe Rizzo triumphed in the Sherman Memorial tourney by topping a New York trio, 12-11. The New Haven Polo club won the first Parsells Memorial event and Squadron A took New York league honours.

Cornell captured the national intercollegiate championship tourney by turning back Yale, 19-5, in the final at Squadron A armory. (T. V. H.)

Popular Music: see MUSIC.

Population, Movements of: see REFUGEES.

Populations of the Countries of the World: see AREAS AND POPULATIONS OF THE COUNTRIES OF THE WORLD.

Population Statistics: see CENSUS DATA, U.S.

Pork: see MEAT.

Porto Rico: see PUERTO RICO.

Portugal. A republic of southwestern Europe, forming part of the Iberian peninsula, Portugal is bounded east and north by Spain. Area: 35,529 sq.mi., including Azores (890 sq.mi.) and Madeira (308 sq.mi.). Pop.: (1950 census) 8,510,240, including Azores (318,558) and Madeira (269,769); (1955 est.) 8,771,000. Language: Portuguese. Religion: Roman Catholic. Chief towns (pop., 1950 census): Lisbon (cap.) 783,226; Oporto 281,406; Setubal 44,235; Coimbra 41,977; Vila Nova de Gaia 38,003; Funchal (Madeira) 37,035. President of the republic in 1955, Gen. Francisco Higinio Craveiro Lopes; prime minister, Antonio de Oliveira Salazar.

History.—The financial year 1954 closed with a surplus of 52,500,000 escudos on a total revenue of 6,735,600,000 escudos. For the same year the balance of payments showed a credit of 1,387,000,000 escudos, which was about 697,000,000 escudos less than in 1953, notwithstanding expanding foreign trade returns

and more favourable terms of trade. For 1955 a budget surplus of 3,800,000 escudos was estimated on a total revenue of 7,334,500,000 escudos.

The national development plan was revised in the light of the first two years' experience: provision was made for a net increase in expenditure of 1,242,600,000 escudos for the four-year period ending 1958; 944,000,000 escudos of this was earmarked for home and overseas electrification schemes. It was estimated that reduced rates following the change-over from thermal to hydroelectric power generation had resulted in an economy amounting already to more than 12,000,000,000 escudos in charges paid by consumers. Rates in the Lisbon district were 40% lower than before World War II. The Sorraia valley scheme, a multiple purpose hydroelectric project involving, initially, the construction of two dams about 150 km. northeast of Lisbon, was reported to have made rapid progress. In addition to providing two power stations with a combined output of 16,500,000 kw.hr. a year, this scheme would ultimately permit the irrigation of more than 27,000 ha. of hitherto barren land in the Sorraia valley and in the Vila Franca de Xira area, where it was planned to produce crops of rice, wheat, maize and animal pastures.

A Portuguese delegation led by José Frederico Ulrich, president of the Nuclear Energy board, attended the international conference at Geneva on the peaceful uses of atomic energy. It was announced that Portugal's main lines of development in the field of nuclear energy would be: (1) prospecting for radioactive minerals in the national territory, home and overseas; (2) the use of radioisotopes in medicine; and (3) building and equipping atomic power plants.

With the arrival in August at Lisbon of a new motor ship, the "Niassa," Portugal's ten-year plan for the postwar renewal of its merchant fleet was completed. The plan involved the expenditure of about 4,000,000,000 escudos: more than 60 new ships had been built, some in Portuguese shipyards but the majority abroad. The creation of the new merchant fleet, comprising more than 200 vessels of a total dead weight of nearly 600,000 tons, represented an immense economic effort.

A number of measures including the supply of prefabricated buildings as well as some ambulatory schools and libraries, were taken to provide increased educational facilities in remote country districts. (F. B. H.)

See Oswald Blackston, *Portuguese Panorama* (London, 1955); Honor Wyatt, *The Young Traveller in Portugal* (London, 1955).

Education.—Schools (1952-53): primary 14,176, pupils 931,946, teachers 17,597; secondary 345, pupils 54,370, teachers (in the 44 state schools only) 1,196; vocational (1953) 204, pupils 35,170. Teachers' training colleges (1952-53) 16, students 2,042. Colleges of music and fine arts: 6, students 2,214, teachers 113. Universities (1953) 4, students 14,131, professors and lecturers 755.

Finance and Banking.—Monetary unit: escudo, with an official selling rate of 28.95 escudos to the U.S. dollar. Budget (1954 est.): revenue (ordinary) 5,328,000,000 escudos; expenditure (ordinary) 5,179,000,000 escudos. Internal debt (1953) 10,440,600,000 escudos; external debt 6,799,800,000 escudos. Currency circulation: (Dec. 1954) 9,800,000,000 escudos; (July 1955) 9,650,000,000 escudos. Bank deposits: (Dec. 1954) 124,180,000,000 escudos; (July 1955) 24,600,000,000 escudos. Gold reserves (Aug. 1955): 425,000,000 U.S. dollars.

Foreign Trade.—(1954) Imports 10,141,000,000 escudos; exports 7,295,000,000 escudos. Main sources of imports: dependencies 19%; continental European Payments union countries 42%; U.K. 15%; U.S. and Canada 9%. Main destinations of exports: dependencies 28%; continental E.P.U. 25%; U.K. 15%; U.S. and Canada 11%. Main exports: cork 20%; fish 11%; wine 2%.

Transport and Communications.—Roads (1953) 28,819 km. Motor vehicles in use (1953): cars 74,084; commercial vehicles 27,700. Railways (1954): 3,614 km.; passenger-

km. (1953) 1,574,000,000; goods, ton-km. (1954) 685,200,000. Shipping: merchant vessels of 100 gross tons and over (July 1954) 335; total tonnage 571,023. Telephones (Jan. 1954): 208,143. Radio receiving sets (Dec. 1953): 397,850.

Agriculture.—Main crops (metric tons, 1954): wheat 748,000; barley 104,000; oats 126,000; maize 387,000; rye 190,000; rice 144,000; potatoes 1,034,000; dry beans 28,000; broad beans 49,000; olives 283,000; olive oil 43,000. Wine production (1954-55): 1,128,000 metric tons. Meat production (metric tons, 1954): 85,000. Livestock (Dec. 1952): cattle 973,000; sheep 3,948,000; pigs 1,253,000; horses 85,000; mules 123,000; asses 245,500; goats 1,244,000. Timber (1953, metric tons): 4,400; raw cork (1952) 150,000. Fisheries (catch landed, including Azores and Madeira, 1953): 296,325 metric tons.

Industry.—Fuel and power (1954): coal 431,900 metric tons; lignite 65,140 metric tons; manufactured gas 56,010,000 cu.m.; electricity 1,639,000,000 kw.hr. Raw materials (metal content, metric tons, 1953): tungsten 2,939; manganese 5,300; lead 1,640; pyrites (production) 651,000; tin concentrates (metal content, 1954) 1,200; superphosphates (1952) 328,000; gold (1953) 462 kg. Manufactured goods (metric tons, 1954): cotton yarn 40,200; woven cotton fabrics 32,760; cement 784,300.

Portuguese Overseas Territories. Under this heading are grouped the Portuguese possessions in Africa and Asia. Their total area is approximately 803,835 sq.mi. and the total population (1950 census) 11,863,548. Areas, populations, capital towns and governors of the territories are given in the table.

History.—Changes in the constitutional status of the overseas territories came into force on Aug. 1, 1955. Angola, Mozambique and the state of India were all granted new statutes providing, among other things, for the establishment of legislative councils, composed of 23 members, 18 of whom are elected and 5 nominated by the provincial governor. These bodies have power to approve or reject measures proposed by the governor and to introduce bills themselves. They replace the former purely consultative *conselhos do governo*. Their resolutions cannot be overruled either by the governor or by Lisbon except on the grounds that they do not accord with the constitution of the republic. In the other provinces, where the new statutes do not provide for legislative councils, the existing *conselhos do governo* are given "closer contact with the respective Governors, to assist them in their functions."

Disturbances in the Indian territories of Gôa, Damão and Diu on Aug. 15 (India's Independence day) were on a much larger scale than in previous years. The number of lives lost was never precisely established: it was variously reported at between 20 and 30, with many more injured, when the Portuguese opened fire on groups of *satyagrahis*, so-called "peaceful demonstrators," who had marched across the frontier in defiance of orders to stop. These casualties gave rise to high feelings and some public disorder within India itself: Premier Jawaharlal Nehru was accused of having obliquely encouraged the demonstrators' marches into Portuguese territory while at the same time purporting to disapprove of them. In the beginning of September the Indian government declared that *satyagraha* to "liberate" Gôa was no longer desirable, and steps were taken to disperse the volunteers encamped at numbers of points along the border. At the same time Nehru reaffirmed India's determination not to

Portuguese Overseas Territories

Country	Area (sq.mi.)	Population (1954 est.)	Capital (pop., 1950 census)	Governor
AFRICA				
Angola	481,351	4,243,000	Luanda 141,647	*Capt. José Agapito da Silva Carvalho
Cape Verde Is.	1,557	168,000	Praia 9,980	Manuel Marques Abrantes Amaral
Guinea	13,948	541,000†	Bissau 18,309	Comdr. Diogo de Melo e Alvim
São Tomé and Príncipe Is.	372	53,000	São Tomé 7,817	Lieut. Col. António Pires Barata
Mozambique	297,731	6,040,000†	Lourenço Marques 93,303	*Comdr. Gabriel Mauricio Teixeira
ASIA				
India‡	1,538	643,000	Nova Gôa 31,950	*Brig. Gen. Paulo Bénard Guedes
Macao	6	200,000	Macao 166,544	Adm. Joaquim Marques Esparteiro
Timor	7,332	469,000	Dili 43,589	Capt. Cesar Maria de Serpa Rosa

*Governor general. †1955 est. ‡Comprises Gôa (1,390 sq.mi.); Damão (134 sq.mi.); and Diu (14 sq.mi.).



PORTUGUESE BORDER GUARDS beating Indian passive resistance demonstrators who made "peaceful marches" into Diu in Aug. 1955, according to the Indian source of the photograph

tolerate the presence of the Portuguese in Gôa, even if the Gôans themselves wanted them. As Lisbon remained equally intransigent the deadlock persisted. The closing of the Portuguese legation in Delhi and of all consular services on both sides of the frontier, demanded by India, produced a complete rupture of diplomatic relations.

(See also INDIA.)

Celebrations which had been planned for mid-November in Macao to mark the fourth centenary of Portuguese occupation were cancelled in consequence of a Peking declaration toward the end of October that Macao belonged to China; Portugal thus seemed to be facing the imminent prospect of another delicate situation in its overseas territories.

In Angola and Mozambique new institutes were established for scientific and medical research. The Limpopo railway connecting the Mozambique port of Lourenço Marques with Southern Rhodesia was inaugurated. Oil prospectors in Angola, about 30 km. from the city of Luanda, reported successful results from experimental wells.

(F. B. H.)

Angola.—Schools (1953): primary 1,030, pupils 51,407, teachers 1,598; secondary 21, pupils 2,582, teachers 189; vocational 164, pupils 4,276, teachers 1,185. Teacher training colleges 2, students 121, teachers 10. Principal products (metric tons, 1953; 1954 in parentheses): sugar (*tel quel*) 52,000 (52,000); coffee 75,000 (60,000); broad beans (exports) 20,159; sisal (exports) 30,579; palm kernels (exports) 11,600 (9,200); cottonseed 11,000 (13,000); palm oil (exports) 6,683; diamonds 729,400 metric carats; maize (1951) 135,000 metric tons. Foreign trade (1954): imports 2,753,884,000 escudos; exports 2,957,436,000 escudos. Roads (1953): 35,800 km.; motor vehicles (1953): 19,795. Railways (1953): 2,477 km. Shipping (1953): vessels entered 3,943, of which Portuguese 3,169; total gross tonnage 4,515,401. Budget (1955 est.): ordinary revenue 1,324,630,626 escudos, extraordinary revenue 397,500 escudos; ordinary expenditure 1,125,750,626 escudos, extraordinary expenditure 596,380,000 escudos. Monetary unit: angular, at par with the escudo. (Escudo valued at 3.478 cents U.S.)

Cape Verde Islands.—Schools (1953): primary 119, pupils 6,167, teachers 149; secondary 1, pupils 637, teachers 20. Principal products: castor oil, coffee, mustard, brandy, oranges and hides. Foreign trade (1953): imports 271,849,000 escudos, exports 292,583,000 escudos. Shipping (1953): vessels entered 4,032; gross tonnage 6,527,755. Roads (1953): 545 km. Budget (1955 est.): balanced at 40,692,290 escudos (ordinary) and 21,600,000 escudos (extraordinary).

Guinea.—Schools (1952): primary 63, pupils 3,287; secondary 1, pupils 121; vocational 2, pupils 80. Principal products (metric tons, 1953): palm kernels 13,000; peanuts (exports) 2,600. Foreign trade (1951): imports 162,100,000 escudos, exports 143,600,000 escudos. Shipping (1953): vessels entered 83; gross tonnage 186,483. Budget (1955 est.): balanced at 97,004,310 escudos (ordinary) and 37,350,000 escudos (extraordinary).

São Tomé and Príncipe Islands.—Schools (1952): primary 18, pupils 2,558; secondary 1, pupils 43; vocational 1, pupils 93. Principal products (exports, metric tons, 1953): palm kernels 6,479; cocoa beans 10,883; copra 4,932. Foreign trade (1953): imports 117,470,000 escudos, exports 246,471,000 escudos. Shipping (1952): vessels entered 2,098; net tonnage 582,734. Budget (1955 est.): balanced at 50,308,671 escudos (ordinary) and 35,500,000 escudos (extraordinary).

Mozambique.—Schools (1953): primary 1,574, pupils 198,609, teachers 2,008; secondary (state and state-aided only) 6, pupils 956, teachers 100; vocational 67, pupils 5,925, teachers (1952) 185; teachers' training colleges 4, students 341, teachers 18. Principal products (metric tons, 1953): bananas 18,000; copra (exports) 24,400; sugar (1954, *tel quel*) 113,000; cotton, lint (1954) 35,000; cottonseed (1954) 69,000. Foreign trade (1953): imports 2,288,070,000 escudos, exports 1,619,757,000

escudos. Shipping (1953): vessels entered 3,274; gross tonnage 10,095,517. Roads (1953): 37,171 km.

India.—Schools (1952): primary 162, pupils 29,743, teachers (in the 162 state schools only, 1953) 264; secondary (state, 1953) 4, with 944 pupils and 29 teachers, (private, 1952) 64 with 13,172 pupils; vocational (1952) 9, pupils 568. Teachers' training college (1953) 1, students 28, teachers 4. University college (1953), students 159, teaching staff 20. Copra production (1953) 2,000 metric tons. Foreign trade (1951): imports 87,170,000 rupees, exports 25,930,000 rupees. Shipping (1953): vessels entered 258; gross tonnage 1,663,301. Roads (1953): 720 km. Budget (1955 est.): ordinary revenue 149,075,222 escudos, extraordinary revenue 76,345,250 escudos; extraordinary expenditure 76,345,250 escudos. Monetary unit: rupee=5.97 escudos.

Macao.—Schools (1952): rudimentary 89, pupils 17,947; primary 11, pupils 2,113; secondary 5, pupils 587; vocational 1, pupils 107. Foreign trade (1950): imports 171,900,000 patacas, exports 13,100,000 patacas; imports (1951) 344,300,000 patacas. Shipping (1950): vessels entered 13,679; net tonnage 4,922,437. Budget (1955 est.): balanced at 93,191,354 escudos (ordinary) and 22,000,000 escudos (extraordinary). Monetary unit: pataca=5.70 escudos.

Timor.—Schools (1953): primary 132, pupils 6,292, teachers 208; secondary 3, pupils 107, teachers 10; vocational (1952) 2, pupils 36. Foreign trade (1953): imports 63,562,000 escudos; exports 52,119,000 escudos. Roads (1953): 2,127 km. Shipping (1953): vessels entered 679; gross tonnage 137,640. Principal products (exports, metric tons, 1953): copra 1,191; coffee 1,381.

United States.—On June 10, 1955, the president signed into law the Postal Field Service Compensation act, which, he stated, represented the greatest forward step for the country's postal employees in more than a century. This act raised by an average of 8.1% the salaries of the 500,000 postal employees, including 15,000 in the Washington area. The annual increases provided in the law averaged about \$320.

Revenues of the post office department for the fiscal year ended June 30, 1955, amounted to \$2,349,476,528 and expenditures to \$2,712,150,122, resulting in a gross operating deficit of \$362,673,594. Efforts of the postmaster general to obtain from congress postal rate increases on first-class mail from three to four cents an ounce and on air-mail from six to seven cents an ounce failed.

On June 30, 1955, U.S. treasury savings stamps were on sale at approximately 17,000 post offices. Sales from July 1, 1954, to June 30, 1955, amounted to \$16,697,641.90. During the year U.S. savings bonds with a sale value of \$47,629,331.25 were sold in behalf of the treasury department. At the close of the fiscal year 1955, bonds were on sale at 5,560 post offices.

Through the 36,316 post offices, the 4,439 postal stations conducted under contract agreement and the 2,652 classified stations and branches, 55,195,500,000 pieces of mail matter were received for domestic mails and foreign destinations, transported and delivered during the fiscal year ended June 30, 1955. This mail had a total weight of 10,841,225,000 lb., an increase of 2,982,300,000 pieces but a decrease of 167,415,000 lb. from the preceding year.

On June 30, 1955, there were 171,000 mi. of domestic air-mail routes in the United States. Following intensive traffic and cost studies, the post office department initiated in 1953 air service on a space available basis for three-cent first-class mail between New York, Washington and Chicago. This proved so successful that the experimental "air lift" by 1955 provided direct service through 24 major and local service air lines to about 200 U.S. cities in 33 states.

During the 1955 fiscal year rural route service was available to more patrons than ever before. Approximately 38,000,000 persons, comprising an estimated 9,570,986 families, were served by 32,076 rural free delivery routes covering 1,544,704 mi. each week day. These figures represented a reduction of 294 in the number of rural routes from the year preceding, but an increase of 17,415 in route mileage; also an increase in the number of families served estimated at 135,965, or more than 500,000 persons.

Parcel post revenues for the September quarter of the 1955 fiscal year reflected increases in rates over the comparable quar-

ter of the preceding year ranging from three to six cents for domestic packages of one pound or less, depending on the distance sent. The increases on each additional pound ranged from two to four cents, also varying with the distance. The additional revenue from these rate increases amounted to about \$34,400,000. This was offset, however, by a reduction of approximately \$19,800,000 which resulted from a decrease in parcel post volume, leaving a net increase in parcel post revenue of \$14,600,000. Also during the 1955 fiscal year, added gross revenue from other domestic mail rate increases, including box rents, amounted to approximately \$5,506,000.

At the close of the fiscal year ended June 30, 1955, there were 2,711,110 depositors in the postal savings system, as compared with 2,934,795 on June 30, 1954, a decrease of 223,685, or 7.7%. The outstanding principal to the credit of depositors at the close of the year was \$2,007,996,458, a decrease of \$243,422,779, or 10.8%. In addition there were accrued interest obligations amounting to \$95,466,479.86, making a total liability to depositors of \$2,103,462,937.86.

During the 1955 fiscal year the post office department operated 3,174 government-owned buildings.

A new position of assistant postmaster general for personnel was approved by congress in 1953. Subsequently a bureau of personnel was established by the postmaster general, and for the first time in history responsibility for the department's 500,000 employees was centralized in one office.

During the 1955 fiscal year a complete revision of the postal manual was undertaken by the department. Chapters 1 and 2 of a new postal manual containing all the information needed by the public regarding domestic and international mail was issued in condensed loose-leaf form. A loose-leaf directory of post offices and a directory of international mail were published which had previously been issued in bound form. A publication entitled *Post Offices by Counties*, which contains an alphabetical list of post offices arranged by counties within the various

states, was published.

On June 30, 1955, 14 regional headquarters offices had been established, at Cincinnati, O.; Chicago, Ill.; Dallas, Tex.; Portland, Ore.; Minneapolis, Minn.; St. Louis, Mo.; Washington, D.C.; Philadelphia, Pa.; San Francisco, Calif.; Boston, Mass.; New York, N.Y.; Atlanta, Ga.; Denver, Colo.; and Memphis, Tenn. This decentralization of management was expected to provide operating economies, prompt action on necessary changes and better administration, because decisions would be made by those personally familiar with local conditions. Policy making and over-all direction would be the function of the Washington staff.

(I. Gg.)

Canada.—Many improvements were made during 1954-55 to meet current expansion. Gross postal revenue reached an all-time peak of \$151,717,273 from business transacted at 12,318 post offices; expenditures totalled \$144,013,279, compared with \$132,363,594 the previous year; 46,902,959 money orders were sold to the value of \$690,824,786, increases respectively of 2.4% and 2.2%.

There were increases in domestic and international first-class mail rates and an extension of "drop" letter rates to rural routes. Air-mail service for articles other than letters, postcards and parcels was extended to countries in Europe, Asia and Australasia and to South Africa, and air parcel post was extended to five additional lands. Parcel post agreements were signed with South Africa and the U.S.S.R.

There were 3,335,000,000 mail items of all classes handled by the post office, a 6% gain. There were 189 projects for new post offices or additions to existing ones in the planning stage, 28 post office buildings were completed and 47 were under construction.

Two more towns received full letter carrier service, and there were 123 letter carrier walks established throughout Canada servicing about 88,000 families.

Projects undertaken included the installation of a transorma electric sorting unit at Peterborough, Ont., the development of a model electronic mail-sorting machine at Ottawa and the purchase of 500 specially designed stamp-vending machines. About 1,200 postmasters of the smaller offices with some assistants became eligible for superannuation. (See also AVIATION, CIVIL; PHILATELY.)

(W. TL.)

Potash: see MINERAL AND METAL PRODUCTION AND PRICES.

Potatoes. The white (Irish) potato crop of the U.S. was again in 1955 a problem crop. Production of 383,771,000 bu., 8% more than 1954 but 4% below average, was nevertheless about 30,000,000 bu. in excess of probable market requirements. The 1,444,000 ac. for harvest was a modest 2.5% expansion over 1954, stimulated, perhaps, by buoyant spring markets, and far below the average for the previous decade of 1,967,000 ac.; nevertheless, it did not show the reduction of 5% to 15% from 1954 which had been recommended by the U.S. department of agriculture. The yield was 265.8 bu. per acre, as compared with 252.8 bu. in 1954 and 213.1 bu. per acre average 1944-53.

Generally favourable weather and advancing technology were major factors in the high yields; size and quality were generally good.

Prices were highly erratic, but extraordinarily high in the late spring of 1955, rising by as much as 200% as a freeze damaged the early crop in the southeast, then broke very sharply as the early, intermediate and late crops were harvested progressively. In October, producers received an average of 72.3 cents per bushel, as compared with 93.8 cents per bushel a year earlier. Representatives of potato growers urged that culls plus



"WELL, WHATA-YA KNOW, ONE FOR ME," a 1955 cartoon by Fitzpatrick of the St. Louis Post-Dispatch (Mo.)

U.S. Potato Production by Leading States
(In thousands of bushels)

State	Indicated 1955	1954	Average, 1944-53
Late crop			
Maine	65,875	48,960	61,758
Idaho	50,000	40,800	41,758
New York	29,760	31,560	33,341
California	18,170	15,410	14,195
Washington	16,365	13,200	10,595
Colorado	15,945	17,600	18,126
Oregon	14,295	13,200	11,613
Minnesota	14,056	16,605	15,190
North Dakota	13,720	20,600	19,958
Pennsylvania	13,395	14,500	18,568
Wisconsin	10,905	11,610	12,358
Michigan	8,270	9,800	14,252
Intermediate crop			
New Jersey	6,982	5,784	10,207
Virginia	6,369	4,789	7,775
Delaware	2,659	2,002	582
Kentucky	1,766	1,445	2,496
Missouri	1,188	1,080	1,989
Maryland	1,044	767	1,500
Kansas	333	259	896
Early crop			
California	32,085	22,800	27,770
Florida	10,178	9,786	5,698
North Carolina	7,000	5,889	8,508
Texas	2,772	2,033	3,479
Arizona	1,969	1,513	1,601
Alabama	1,426	3,925	4,036
Tennessee	1,236	1,425	2,366
South Carolina	1,102	1,595	1,979

20% of all potatoes grading U.S. no. 2 or better be withheld from the market.

The U.S. department of agriculture in September activated a diversion program under which growers received supplementary payments for 1955-crop potatoes diverted to starch, flour or feed. By early October, producing areas approved included all of Maine, Oregon, Washington and Colorado, plus some sections of California and Idaho. Payment was 50 cents per hundred-weight through December; 40 cents January through March, and 30 cents April through June, but only in areas that submitted satisfactory marketing plans for moving their crop.

The Commodity Exchange administration of the U.S. department of agriculture suspended the several potato traders who defaulted on 128,000,000 lb. of May futures contract potatoes on the New York Mercantile exchange.

The important potato crop of western Europe was indicated as generally smaller than in 1954 or normal. The Canadian crop was a large one and prices were much depressed.

Sweet Potatoes.—The U.S. 1955 sweet potato crop was indicated at 36,101,000 bu., 20% above the 29,880,000 bu. of 1954 but 23% below the average crop of 46,951,000 bu. Harvested acreage was only 339,000 ac., 2% less than 1954 but very small by comparison with the 496,000 ac. average for 1944-53. Yields averaged 106.6 bu. per acre, as compared with 86.5 bu. in 1954 and an average for 1944-53 of 94.3 bu. Louisiana with 9,800,000 bu. was the leading producer, followed by North Carolina (4,500,000 bu.), and Virginia (3,045,000 bu.). Average price to producers in October was \$1.44 per bushel as compared with \$1.84 per bushel in October 1954.

(J. K. R.)

Poultry: see EGGS; LIVESTOCK; MEAT.
Precious Stones: see GEM STONES.

Presbyterian Church. Eleven church organizations in the United States bear the name "Presbyterian" in their official titles. The total number of congregations in the 11 branches of Presbyterian churches approximated 15,000 in 1955, with a communicant membership numbering about 3,850,000. Membership was concentrated in three branches: 237,233 in the United Presbyterian Church, 784,050 in the Presbyterian Church in the United States and 2,658,903 in the Presbyterian Church in the United States of America. The combined membership of these three, totalling 3,680,186, comprised 96% of the total of the 11 groups of Presbyterians.

The major effort at union among Presbyterians was projected in 1949 when the three above-mentioned organizations entered into a period of negotiation. A plan of union was formulated and approved in 1954 by the general assemblies of the three organizations. The plan was submitted to the presbyteries for their approval or rejection. The presbyteries of the United Presbyterian Church and of the Presbyterian Church in the U.S.A. approved the plan; but an opposition element in the Presbyterian Church in the U.S. was able to have enough presbyteries vote against the plan to thwart the constitutional requirement for approval. Consequently this plan for a three-way union was defeated. In June 1955 the general assembly of the United Presbyterian Church created a permanent committee on interchurch relations to negotiate with a like committee of the Presbyterian Church in the U.S.A. "on a union of the two fellowships."

For co-operative purposes on a more extensive scale the reorganized Alliance of Reformed Churches Throughout the World Holding the Presbyterian Order (World Presbyterian alliance) met in its 17th general council at Princeton, N.J., July 27-Aug. 5, 1954. This council represented 42 nations with a church membership of more than 40,000,000. The alliance for functional purposes is divided according to areas rather than sections as formerly: namely, North America, Latin America, Europe, South Africa, Asia and Australasia. The North American Area council representing ten member churches in North America held its first meeting under the reorganization in Ottawa, Ont., Feb. 15-17, 1955. The member churches are: Associate Reformed Presbyterian, Evangelical and Reformed, Free Magyar Reformed, Presbyterian of Jamaica, Presbyterian in Canada, Presbyterian in the United States, Presbyterian in the United States of America, Reformed in America, United Church of Canada and United Presbyterian of North America. At the Ottawa meeting the intent was voiced of moving from a period of fellowship and discussion to one of "study and action" in the interest of "service around the world, the promotion and defense of religious and civil liberty, and a united witness."

Within the bounds of the United States the Presbyterian churches were confronted with a growing demand for new church buildings created by the rapid growth of population in both urban and rural districts. Through contributions of members, funds were secured to purchase land and to construct places of worship. The Presbyterian Church in the U.S.A. made building aid appropriations during 1954 to the amount of \$2,355,984. Outstanding loans exceeded \$6,000,000 and mortgage grants surpassed \$9,000,000. A survey throughout this branch of the church estimated a need for 204 new churches before 1958 involving building aid to the extent of \$5,500,000.

(See also CHRISTIAN UNITY; CHURCH MEMBERSHIP.)

(G. S. K.)

Presidents, Sovereigns and Rulers.

The following is a list of the names of those holding chief positions in their countries as of Dec. 31, 1955:

Country	Name and Office	Accession
Afghanistan	Mohammed Zahir Shah, King	1933
	Mohammed Daud Khan, Prime Minister	1953
Albania	Haxhi Leshi, Chairman of the Presidium of the People's Assembly	1953
	Col.-Gen. Mehmet Shehu, Chairman of the Council of Ministers	1954
Anglo-Egyptian Sudan	Sir Knox Helm, Governor General	1953
	Ismail el-Azhari, Prime Minister	1954
Argentina	Gen. Pedro Aramburu, Acting President	1953
Australia	Field Marshal Sir William Slim, Governor General	1953
	Robert Gordon Menzies, Prime Minister	1949
Austria	Theodor Kröner, President	1955
	Julius Raab, Chancellor	1953
Belgium	Baudouin I, King	1951
	Achille van Acker, Prime Minister	1955
Bolivia	Victor Paz Estenssoro, President	1955
Brazil	Nereu Ramos, Acting President	1955

Country	Name and Office	Accession	Country	Name and Office	Accession
Bulgaria	Georgi Damianov, Chairman of the Presidium	1950	Poland	Aleksander Zawadzki, Chairman of the Council of State	1952
Burma	Vulko Chervenkov, Chairman of the Council of Ministers	1950		Josef Cyrankiewicz, Chairman of the Council of Ministers	1954
	Ba U, President	1952	Portugal	Gen. Francisco Higino Craveiro Lopes, President	1951
	Nu, Prime Minister	1948		Antonio de Oliveira Salazar, President, Council of Ministers	1932
Cambodia	Naradom Suramarit, King	1955		(Prime Minister)	
	Naradom Sihanouk, Premier	1955	Rhodesia and Nyasaland, Federation of	Lord Llewellyn, Governor General	1953
Canada	Vincent Massey, Governor General	1952		Viscount Malvern, Prime Minister	1953
	Louis Stephen St. Laurent, Prime Minister	1948	Rumania	Petru Groza, Chairman of the Presidium of the Grand National Assembly	1952
Ceylon	Sir Oliver Goonetilleke, Governor General	1954		Chivu Stoica, Chairman of the Council of Ministers	1955
	Sir John Kotelawala, Prime Minister	1953	Salvador, El	Lieut. Col. Oscar Osorio, President	1950
Chile	Gen. Carlos Ibañez del Campo, President	1952	Saudi Arabia	Sa'd ibn Abd ul-Aziz al Saud, King	1953
China	Chiang Kai-shek, President of the National Government	1943		Amir Faisal, Prime Minister	1934
	O. K. Yui, Prime Minister	1954	South Africa	Ernest George Jansen, Governor General	1951
China, People's Republic of	Mao Tse-tung, Chairman of the Central People's Government Council	1949		J. G. Strijdom, Prime Minister	1954
	Chou En-lai, Chairman of the State Administrative Council	1949	Spain	Gen. Francisco Franco Bahamonde, Chief of State	
Colombia	Lieut. Gen. Gustavo Rojas Pinilla, President	1953		(President of the Council of Ministers)	1939
Costa Rica	José Figueres, President	1953	Sweden	Gustav VI Adolf, King	1950
Cuba	Gen. Fulgencio Batista, President	1952		Tage Erlander, Prime Minister	1946
Czechoslovakia	Antonín Zapotocký, President	1953	Switzerland	Markus Feldman, President of the Confederation	1955
	Vilem Široký, Chairman of the Council of Ministers	1953		Hans Streuli, Vice President of the Federal Council	1955
Denmark	Fredrick IX, King	1947	Syria	Shukri el-Kuwatli, President	1955
	Hans Christian Swane Hansen, Prime Minister	1955		Said el-Ghazzi, Prime Minister	1955
Dominican Rep.	Gen. Héctor Trujillo y Molina, President	1952	Thailand	Phumiphon Adunet, King	1946
Ecuador	José María Velasco Ibarra, President	1952		Field Marshal Luang Pibul Songgram, Prime Minister	1948
Egypt	Lieut. Col. Gamal Abdel Nasser, President	1954	Tunisia	Sidi Mohammed el-Amin, Bey	1943
Ethiopia	Haile Selassie I, Emperor	1930		Tahar ben Ammar, Prime Minister	1954
	Bitwoded Makonnen Endalkatchou, Prime Minister	1944	Turkey	Roger Seydoux, French High Commissioner	1955
Finland	Juho K. Paasikivi, President	1946		Celal Bayar, President	1950
	Urho Kaleva Kekkonen, Prime Minister	1954		Adnan Menderes, Prime Minister	1950
France	René Coty, President	1954	Union of Soviet Socialist Republics	K. E. Voroshilov, Chairman of the Presidium of the Supreme Soviet	1953
	Edgar Faure, Premier	1955		N. A. Bulganin, Chairman of the Council of Ministers	1955
Germany (East)	Wilhelm Pieck, President	1949	United States	Dwight D. Eisenhower, President	1953
German Democratic Rep.	Otto Grotewohl, Minister-President (Premier)	1949	Uruguay	Luis Battle Berres, Chairman of the Governing Council	1955
	Thedor Heuss, President	1949	Vatican City	Pius XII, Pope	1959
(West) Federal Rep. of Germany	Konrad Adenauer, Chancellor	1949	Venezuela	Marcos Pérez Jiménez, President	1953
	Elizabeth II, Queen	1952	Vietnam	National Republic Ngo Dinh Diem, President	1955
Great Britain	Sir Anthony Eden, Prime Minister	1955		Democratic Republic	
	Paul I, King	1947		Ho Chi-minh, President	1954
Greece	Konstantinos Karamanlis, Prime Minister	1955	Yemen	Ahmed ibn Yehya Hamid ed-Din, King	1948
	Col. Carlos Castillo Armas, President	1954		Marshal Tito (Josip Broz), President of the Republic and Chairman of the Federal Executive Council	1953
Guatemala	Paul E. Magloire, President	1950			
Haiti	Julio Lozano Díaz, President	1954			
Honduras	Istvan Dobi, Chairman of the Presidium of the National Assembly	1952			
Hungary	Andras Hegedus, Chairman of the Council of Ministers	1955			
	Asgeir Asgeirsson, President	1952			
Iceland	Olafur Thors, Prime Minister	1953			
	Rajendra Prasad, President	1950			
India, Rep. of	Jawaharlal Nehru, Prime Minister	1947			
	Achmed Sukarno, President	1949			
Indonesia	Burhanuddin Harahap, Premier	1955			
	Mohammed Riza Pahlavi, Shahanshah	1941			
Iran	Hussein Ala, Prime Minister	1955			
	Feisal II, King	1939			
Iraq	Nuri es-Said, Premier	1954			
	Sean T. O'Kelly, President	1945			
Ireland, Rep. of	John A. Costello, Prime Minister	1954			
Israel	Isaac Ben-Zvi, President	1952			
	David Ben-Gurion, Premier	1955			
Italy	Giovanni Gronchi, President	1955			
	Antonio Segni, Prime Minister	1955			
Japan	Hirohito, Emperor	1926			
	Ichiro Hatoyama, Prime Minister	1954			
Jordan	Hussein I, King	1952			
	Ibrahim Hashem, Prime Minister	1955			
Korea (South)	Syngman Rhee, President	1948			
Rep. of Korea (North) Democratic People's Rep. of Korea	Kim Du Bon, Chairman of the Presidium of the Supreme People's Assembly	1948			
	Kim Il Sung, Chairman of the Council of Ministers	1948			
Kosovo	Sisavang Vong, King	1945			
	Katay Sasorith, Premier	1954			
Lebanon	Camille Shamun, President	1952			
	Rashid Karamah, Prime Minister	1955			
Liberia	William V. S. Tubman, President	1944			
Libya	Idris I, King	1951			
	Mustafa ben Halim, Prime Minister	1954			
Liechtenstein	Franz Josef II, Sovereign Prince	1938			
	Alexander Frick, Minister-President	1945			
Luxembourg	Charlotte, Grand Duchess	1919			
	Joseph Bech, Premier	1953			
Mexico	Adolfo Ruiz Cortines, President	1952			
Monaco	Rainier III, Sovereign Prince	1949			
	Henri Saum, Minister of State	1953			
Congolian People's Republic	Zh. Sambu, Chairman of the presidium of the Great Khural	1954			
	Yumzhagiyn Tsendenbal, Chairman of the Council of Ministers	1952			
Morocco	Mohammed V Ben Yussef, Sultan	1955			
	M'Barek ben Mustafa el-Bekai, Prime Minister	1955			
	André Dubois French Resident General	1955			
	Lieut. Gen. Rafael García Valiño y Marcón, Spanish High Commissioner	1951			
Nepal	Mahendra Bir Bikram, King	1955			
Netherlands	Juliana, Queen	1948			
	Willem Drees, Prime Minister	1948			
New Zealand	Lieut. Gen. Sir Willoughby Norrie, Governor General	1952			
	Sidney George Holland, Prime Minister	1949			
Nicaragua	Gen. Anastasio Somoza, President	1950			
Norway	Haakon VII, King	1905			
	Einar Gerhardsen, Prime Minister	1955			
Oman (Muscat)	Said bin Taimur, Sultan	1932			
Pakistan	Maj. Gen. Iskander Mirza, Governor General	1955			
	Chaudry Mohammed Ali, Prime Minister	1955			
Panamá	Ricardo Arias Espinosa, President	1955			
Paraguay	Gen. Alfredo Stroessner, President	1954			
Peru	Gen. Manuel A. Odría, President	1950			
Philippines, Rep. of the	Ramón Magsaysay, President	1953			

Prices. The United States in 1955 experienced the same stability of prices which characterized the four previous years. Both wholesale and consumer prices fluctuated within extremely narrow limits as the nation enjoyed one of the most prosperous years in its history. National income tended to run \$15,000,000,000, or approximately 5%, above that of 1954; compensation of employees also was roughly \$9,000,000,000 in excess of the preceding year; and corporate profits before taxes reached in the second quarter of 1955 a level approximately a third higher than the low point in 1954. With this increase in the main factors determining the demand for consumers' and investment goods was associated a corresponding increase in production, so that prices for the year, as a whole, showed a remarkable degree of stability.

This continued stability of prices is illustrated in Table I. On the basis of the index 1947-49=100, wholesale prices declined from 1951 to 1953 by a little more than 4%, and fluctuated within the following two years within a small fraction of 1%. Consumers' prices showed a steady rise after 1951, but the curve was flattening out and by the middle of 1954 had begun to level off.

Although the monthly average of consumer prices in the first nine months of 1955 was slightly below the average for 1954, the chart (on page 567) shows that this result was achieved by a decline of the index in the second half of 1954. In the winter and spring of 1955 the consumers' price index reached its lowest

Table I.—Wholesale and Consumers' Price Indexes, United States, Selected Years
(1947-49=100)

Year	Wholesale prices	Consumers' prices	Year	Wholesale prices	Consumers' prices
1929	61.9	73.3	1948	104.4	102.8
1933	42.8	55.3	1949	99.2	101.8
1939	50.1	59.4	1950	103.1	102.8
1941	56.8	62.9	1951	114.8	111.0
1943	67.0	74.0	1952	111.6	113.5
1945	68.8	76.9	1953	110.1	114.4
1946	78.7	83.4	1954	110.3	114.8
1947	96.4	95.5	1955 (Jan.-Sept.)	110.5	114.4

Source: U.S. Department of Labor, Bureau of Labor Statistics.

PRICES

Table II.—Consumers' Price Index, United States Average, All Items and Commodity Groups

(Bureau of Labor Statistics index for city wage earner and clerical-worker families; 1947-49=100)

Year and month	All items	Foods	Total	Rent	Gas and electricity	Housing	House furnishings	Household operation	Apparel	Transportation	Medical care	Personal care	Reading and recreation	Other goods and services
						Solid fuels and fuel oil								
1954—August	115.0	113.9	119.2	128.6	107.8	121.9	105.4	117.3	103.7	126.6	125.5	113.4	106.6	120.2
September	114.7	112.4	119.5	128.8	107.9	122.4	106.0	117.4	104.3	126.4	125.7	113.5	106.5	120.1
October	114.5	111.8	119.5	129.0	108.5	123.8	105.6	117.6	104.6	125.0	125.9	113.4	106.9	120.1
November	114.6	111.1	119.5	129.2	108.7	124.2	105.4	117.8	104.6	127.6	126.1	113.8	106.8	120.0
December	114.3	110.4	119.7	129.4	109.1	125.5	105.4	117.7	104.3	127.3	126.3	113.6	106.6	119.9
1955—January	114.3	110.6	119.6	129.5	109.4	126.1	104.6	117.7	103.3	127.6	126.5	113.7	106.9	119.9
February	114.3	110.8	119.6	129.7	109.9	126.2	104.8	117.7	103.4	127.4	126.8	113.5	106.4	119.8
March	114.3	110.8	119.6	130.0	110.3	126.2	104.6	117.9	103.2	127.3	127.0	113.5	106.6	119.8
April	114.2	111.2	119.5	129.9	110.3	125.7	104.5	118.1	103.1	125.3	127.3	113.7	106.6	119.8
May	114.2	111.1	119.4	130.3	110.9	122.5	103.7	119.0	103.3	125.5	127.5	113.9	106.5	119.9
June	114.4	111.3	119.7	130.4	110.7	122.7	103.8	119.2	103.2	125.8	127.6	114.7	106.2	119.9
July	114.7	112.1	119.9	130.4	110.8	123.2	103.6	119.4	103.2	125.4	127.9	115.5	106.3	120.3
August	114.5	111.2	120.0	130.5	110.8	123.8	103.2	119.5	103.4	125.4	128.0	115.8	106.3	120.4
September	114.9	111.6	120.4	130.5	n.a.	n.a.	n.a.	n.a.	104.6	125.3	128.2	116.6	106.7	120.6

Source: U.S. Department of Labor, Bureau of Labor Statistics.

level, and in the late spring and summer of 1955 it began to rise again. Though the price increase was not sharp, it continued steadily, and some concern was expressed over potentially inflationary tendencies in the United States economy.

In spite of the sizable increase in disposable personal income (*i.e.*, income of households and single individuals after withholdings of direct taxes) personal savings did not increase. Whereas, for example, in the second quarter of 1954 disposable personal income amounted to \$253,900,000,000, annual rate, and personal savings to \$18,800,000,000, annual rate, the corresponding figures for the second quarter of 1955 were \$267,100,000,000 and \$16,600,000,000. In other words, whereas disposable personal income on an annual rate increased by \$13,200,000,000, personal savings decreased by \$2,200,000,000. This means that a total of \$15,400,000,000 more spendable funds appeared on the market in 1955 than in 1954.

Another sign of the inflationary potential in the U.S. economy was the large increase in consumer credit. Whereas in Aug. 1954 the total of outstanding consumer credit amounted to \$28,700,000,000, it amounted in Aug. 1955 to \$33,600,000,000, an increase of almost \$5,000,000,000 or approximately 17%. Most of this increase was in automobile loans, but other forms of consumer credit were included. (*See also* CONSUMER CREDIT.)

The sustained level of purchases of consumer durables and the increase in instalment credit during 1955 provoked a series of measures designed to keep in check any inflationary tendencies that might develop. One such measure was an increase in discount rates in Aug. and Sept. 1955 from 2% to 2½% in most Federal Reserve districts and again in November to 2¾%. This action was followed by an increase in commercial bank rates and the rates charged by most major finance companies. In Oct. 1955 the large New York banks raised their rates for prime

paper to 3½%, the highest rate in 25 years. All these measures contributed to some extent to the maintenance of stable consumers' prices, in spite of the large increase of spendable funds. (*See also* FEDERAL RESERVE SYSTEM.)

But although measures of credit restriction were partly successful in maintaining stable prices, two other factors must be cited which counteracted the pressure on prices exerted by the high level of expenditures on consumers' durables. One was the restraint of the federal government, which curtailed its expenditures as much as possible, and the other was the continued decline in agricultural prices and the resulting low level of food prices. Table II shows that the retail price index of food, which in Aug. 1954 had stood at almost 114, dropped by Jan. 1955 to 110.6 and maintained itself around 111 for the remainder of the year. Table III shows that wholesale prices of farm products, and consequently wholesale prices of processed foods, declined steadily and almost without a break from the middle of 1954 throughout 1955.

Whereas during the second half of 1954 and the first half of 1955 the over-all wholesale price index fluctuated somewhat erratically around a level congruent with that reached and maintained in the previous two years, it showed a rising trend beginning with June 1955. Wholesale prices in Sept. 1955 were higher than during any other month since Sept. 1952 and an examination of the price trends of certain industrial classes showed that they evinced signs of reaching and perhaps even surpassing the peaks of 1951.

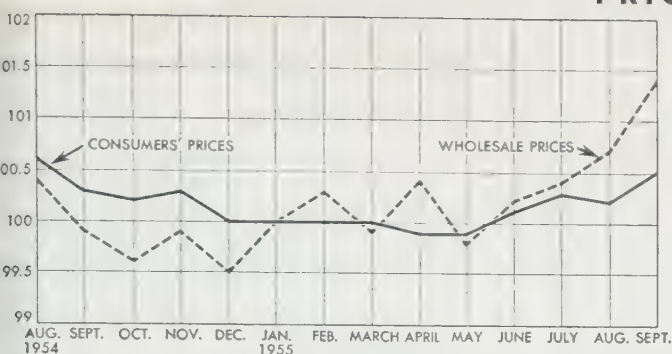
In fact, the trend of industrial wholesale prices was strongly upward in 1955, and the index was maintained at a relatively stable level only because of the decline in prices of farm products and commodities directly processed from farm products, such as foods, hides and skins, and the commodities in the mis-

Table III.—Wholesale Prices, by Groups of Commodities, United States

(Index numbers of the Bureau of Labor Statistics; 1947-49=100)

Year and month	All commodities	Farm products	Processed foods	Total	Textile products and apparel	Hides, skins and leather products	Fuel, power and lighting materials	Other commodities									
								Chemicals and allied products	Rubber and products	Lumber and wood products	Pulp, paper and allied products	Metals and metal products	Machinery and motive products	Furniture and other household durables	Non-metallic minerals—structural	Tobacco mfrs. and bottled beverages	Miscellaneous
1954																	
August	110.5	95.8	106.4	114.4	95.3	94.0	106.9	106.8	126.4	119.1	116.3	128.6	124.3	115.3	120.5	121.5	102.2
September	110.0	93.6	105.5	114.4	95.3	93.0	106.9	106.8	126.9	119.3	116.3	129.1	124.4	115.3	121.7	121.5	99.7
October	109.7	93.1	103.7	114.5	95.4	92.4	106.9	106.9	128.5	119.8	116.3	129.7	124.3	115.6	121.9	121.5	96.3
November	110.0	93.2	103.8	114.8	95.2	92.8	107.4	107.0	131.4	119.9	116.0	129.9	125.3	115.6	121.8	121.4	97.4
December	109.5	89.9	103.5	114.9	95.2	91.8	107.5	107.0	132.0	120.0	115.9	129.8	125.7	115.7	121.8	121.4	98.1
1955																	
January	110.1	92.5	103.8	115.2	95.2	91.9	108.5	107.1	136.8	120.3	116.3	130.1	125.8	115.5	122.0	121.4	97.7
February	110.4	93.1	103.2	115.7	95.2	92.3	108.7	107.1	140.6	121.2	116.6	131.5	126.1	115.4	121.8	121.6	97.7
March	110.0	92.1	101.6	115.6	95.3	92.2	108.5	106.8	138.0	121.4	116.8	131.9	126.1	115.1	121.9	121.6	95.5
April	110.5	94.2	102.5	115.7	95.0	93.2	107.4	107.1	138.3	122.4	117.4	132.9	126.3	115.1	122.3	121.6	94.1
May	109.9	91.2	102.1	115.5	95.0	92.9	107.0	106.8	138.0	123.5	117.7	132.5	126.7	115.1	123.2	121.6	91.9
June	110.3	91.8	103.9	115.6	95.2	92.9	106.8	106.8	140.3	123.7	118.3	132.6	127.1	115.2	123.7	121.6	89.1
July	110.5	89.5	103.1	116.5	95.3	93.7	106.4	106.0	143.4	124.1	119.0	136.7	127.5	115.5	125.3	121.6	90.0
August	110.8	88.1	101.9	117.4	95.3	93.8	107.3	105.9	148.5	125.0	119.9	139.3	128.3	116.2	126.1	121.7	89.0
September	111.6	89.3	101.4	118.4	95.5	94.0	108.3	105.9	151.6	125.6	120.3	141.8	129.7	116.4	126.3	121.7	90.0

Source: U.S. Department of Labor, Bureau of Labor Statistics.



WHOLESALE AND CONSUMERS' PRICES in the United States, Aug. 1954–Sept. 1955 (Jan. 1955=100). Source: U.S. department of labour, bureau of labour statistics

cellaneous column (which consist in large part of animal feeds). Wholesale prices of textile products, chemicals, tobacco manufactures and bottled beverages, as well as fuel, power and lighting materials, remained fairly stable throughout 1954 and 1955. Lumber, wood products, pulp, paper and furniture—all products made of timber—showed a moderate price increase which, however, was large enough to bring the prices of these commodities to a level matching the highest postwar level ever reached. Metal and metal products industries, as well as rubber and its products, showed sharp price rises throughout 1955.

If a comparison is made of the wholesale price indexes for Sept. 1955 in the various commodity groups with the month representing the highest index ever reached in the postwar period, it is found that in 7 out of 15 commodity groups wholesale prices were lower than those reached in the peak month (usually in 1951 or 1952), and that in 8 groups—rubber, lumber, pulp and paper, metals, machinery, furniture, nonmetallic minerals and tobacco and beverages—wholesale prices were higher than ever before. In some commodity groups, notably in the rubber, minerals, metals and metal products classes, prices were rising rapidly in 1955. Wholesale prices of rubber, for example, rose by 19.5% in the period from Sept. 1954 to Sept. 1955, and wholesale prices of metals by 10.6% in the same period.

As against the sharply rising wholesale prices of some industrial commodities, farm prices remained stable and even fell in the same period. This means that the "parity ratio" (*i.e.*, the ratio between prices received by farmers to prices paid by them for goods and services, the latter including interest, taxes and wage rates) continued to decline in 1955. Whereas in 1951 the monthly average of the parity ratio had been 107, it had declined by 1952 to 100, and fell further in 1953 to 92, in 1954 to 89 and in the first nine months of 1955 to 86. This decline in farm prices was one of the chief reasons for the fall in farm incomes in 1955 as compared with previous years. The problem of farm prices, farm price maintenance and farm incomes thus became one of the acute economic problems of the year.

The decline of farm prices and of farm incomes might have had more serious effects if the number of farm operators had remained constant. But with the fall in farm prices and the simultaneous increase in agricultural output was associated a decline in the farm population. Hence average production per person engaged in agriculture was in 1955 about one-third larger than in the 1947–49 period; and although aggregate farm income had declined by about 16% since the peak year of 1951, farmers' incomes on a per capita basis dropped in the same period by less than 10%. On the whole, the decline in the number of farm operators and improvement of agricultural productivity, partly as a result of greater use of power machinery and equipment and partly as a result of more rational choice of crops, prevented a more drastic decline in the income of the average farm family,

in spite of sharply falling prices of agricultural products.

Prices of farm real estate remained strong throughout 1955, however, despite the steady decline in farm commodity prices and farm incomes in the last four years. Average value per acre of farm land had been increasing since 1953, and the value of farm land and buildings in mid-1955 was close to the peak reached in 1952. At the same time farm debt outstanding had risen by about 10% since 1954. These were signs that farmers had tended to adjust to the new price relations between farm and nonfarm commodities by extending their land holdings (resulting in a rise of real-estate values) and by increasing their short-term and mortgage indebtedness to counteract, to some degree, the decline in real income, which was felt by many to be only temporary. Although these trends tended to make farmers more vulnerable, the maintenance of a prosperous economy and the improvement of export markets for U.S. farm products were felt to be the best insurance against the farm situation's developing in a catastrophic direction. (B. F. H.)

Great Britain.—The fortunes of the sterling area depending a great deal on the prices of a few basic commodities, experience in 1955 was rather mixed. Tin prices were generally steady or rising within the range £700–£750 a ton, and rubber prices rose rapidly to a peak of 3s. 6d. a pound in September (double the price at the same month in the previous year) but fell back toward the end of the year.

Against this, wool and cocoa prices fell off during the year and their effect was more serious. Crossbred types of wool, largely from New Zealand, were firm in price in 1954 and fell relatively little in 1955. The main price declines were in the better (merino) qualities from Australia. At the new season's auctions late in 1954 merino wool prices were 15% or more below those of the previous season, and another similar fall occurred in the auctions late in 1955. Two successive falls of this amount had

Table IV.—World Prices; British Commodity Prices*

	1954		1955		
	Aug.	Nov.	Feb.	May	Aug.
World prices					
All items	108	110	112	101	104
Food	121½	119½	113½	93	94
Fibres	98	94½	103	96	93
Metals	107	117½	126	123	130
Other	92	100	107	100	113
British commodity prices					
Copper, electro	101	121	149	140	157
Lead, soft	104	119	111	111	113
Zinc, g.o.b.	106½	117	128	128	128
Tin, cash (buyers)	119	118	116	117	123
Cotton, mid-American	104	102	103	103	102
Wool, tops, 64's	94	78	80	80	75
Rubber, R.S.S., spot	108	136	165	152	213
Cocoa, London terminal	177	138	128	101	86
Tea, Ceylon, London auction	125	169½	179	119	120

*All prices at mid-month; world price index based on 17 price series (6 food, 4 fibres, 4 metals, 3 others).

Source: The Economist.

Table V.—Import, Export and Wholesale Prices, U.K.

	1954		1955		
	Aug.	Nov.	Feb.	May	Aug.
Import and export prices*					
Imports, all items	114	114	118	116	115
Food, beverages, tobacco	120	122	126	121	116
Basic materials	112	112	114	115	117
Fuels	100	100	101	102	102
Manufactures	114	116	123	122	125
Exports, all items	120	118	120	120	121
Terms of trade	95	96	99	97	95
Wholesale prices†, nonfood manu-					
facturing					
Basic materials	113	114	120	118	124
All products	119	120	121	122	123
Iron and steel	142	142	143	144	151
Chemical products	127	128	128	128½	129
Clothing and footwear	111	111	110	110	110
Other textile products	105½	104	104	102½	102
Furniture	105	105	106	106	106
Domestic holloware	139	140	143	146	147
Electrical appliances	110	111	112	112	112
Retail prices and wages‡					
Retail prices, all items	144	145	146	147	149
Wage rates, men	141	142	147	151	151

*Average values, computed from annual data, extrapolated into 1955 by use of index numbers of import and export prices. Terms of trade: ratio of average values of imports to average values of exports; a rise indicates an unfavourable movement.

†New series (June 1949 base) of board of trade; averages for month.

‡Ministry of labour series; mid-month for retail prices, end-month for wage rates.

Source: Board of Trade Journal and Ministry of Labour Gazette.

serious repercussions on the Australian economy. Australian spending on imported goods in 1954-55 was related more to the higher prices of wool of the previous year than to the lower receipts from current and prospective wool sales. Import cuts were imposed late in 1955, but before this Australian outgoings of dollars and other currencies were at a high rate. This was a factor influencing the loss of gold and dollar reserves of the sterling area, and the weakness of the sterling exchange rate, which developed by the middle of 1955.

British wholesale prices were rising slowly but steadily during 1955; this was true of import prices, of prices of industrial materials and of prices of industrial products both for the domestic market and for export. In the middle of the year there were increases of 7½% in rail freights, of 18% in pit head prices of coal and of about 5% in steel prices, all being reflected in firmer prices of industrial products by the end of the year. There was a temporary and sharp rise in the price of imports at the beginning of 1955 (because of high tea, cocoa and coffee prices) and an equally temporary worsening in the terms of trade. Apart from this, levels of import prices and of export prices were alike 2%-3% higher in 1955 than in 1954 and the terms of trade were almost unchanged.

Retail prices in 1955 were generally about 4% above the levels of the previous year. The rises were concentrated on the prices of foods, fuels and service items; retail prices of manufactured goods were still absorbing increases in costs, though there were signs that this was not likely to continue.

Other Countries.—The general level of wholesale prices was little changed from 1953-54 to 1955 in Canada and Switzerland and only slightly higher in Belgium. The more usual experience, however, was that prices over a wide range of goods at wholesale were rather higher in 1955. This was so not only in Great Britain but in the German Federal Republic, the Netherlands, Sweden and other industrial countries. These increases were attributable not so much to higher costs of materials as to the common tendency for wages to rise more than productivity and for consequent increases in fuel prices and freight rates.

Table VI.—Wholesale Prices, U.K., U.S. and Certain European and Commonwealth Countries
(Average 1948=100)

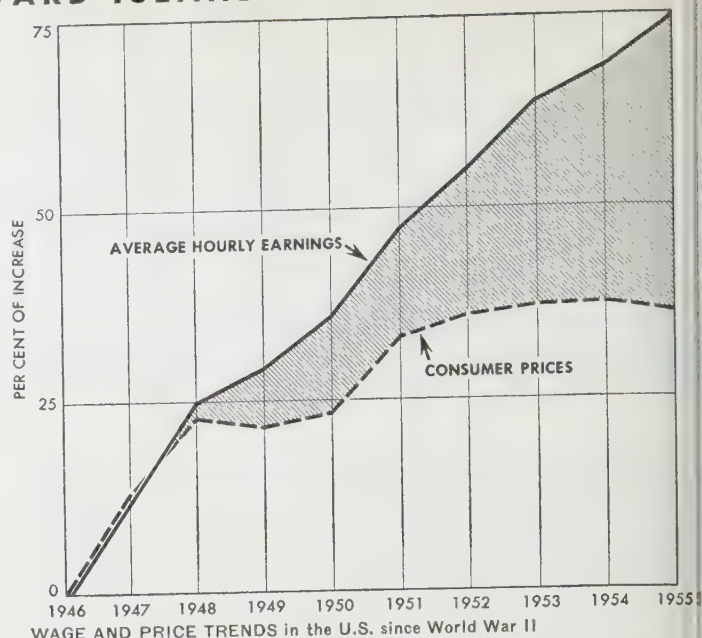
	1954			1955	
	June	Sept.	Dec.	March	June
United Kingdom	152	150	153	153	153
United States	105	105	105	105	106
Europe					
Belgium	106	105	106	107	108
Denmark	135	134	136	138	137
France*	135	135	135	135	133
German Federal Republic†	109	110	110	112	112
Italy	97	97	98	98	96
Netherlands	137	134	136	136	136
Norway	155	156	155	153	154
Sweden	139	138	140	142	144
Switzerland	99	99	100	99	99
Commonwealth					
Australia‡	212	211	209	217	220
Canada	113	111	111	112	113
India	104	105	100	96	93
New Zealand	138	138	139	139	139
South Africa	150	151	151	154	154

*1949=100. †Industrial products only (July-Dec. 1948=100). ‡Domestic products only.
Source: United Nations Monthly Bulletin of Statistics.

Table VII.—Prices of Manufactures in Certain Countries
(Average 1950=100)

Country and manufacture	Average,			1955	
	1952	1953	1954	March	June
U.K.					
Manufactures*	120	117	118	120	121
Exports of manufactures	125	122	119	120	121
German Federal Republic					
Industrial products†	121	118	116	118	119
Exports of finished products	126	125	121	122	123
Netherlands, manufactured products	116	114	116	119	119
Sweden, manufactured products	133	127	125	126	127
U.S.					
Industrial products‡	108	109	109	110	110
Exports of finished products	112	112	112	112	112
Canada, manufactured products	109	108	106	106	106

*All manufactures other than fuel, food and tobacco. †All commodities other than farm and food products.
Source: O.E.E.C. Statistical Bulletins and UN Monthly Bulletin of Statistics.



The question was much discussed in 1955 whether increasing costs were reducing the power of Great Britain to compete in export markets relative to the German Federal Republic and other European countries, and whether all European industrial exporters were losing ground relative to the United States. The test lay in the levels at which prices of manufactured goods could be sold, shown in Table VII. The general inference from the different index numbers, though by no means perfectly comparable, was that, at least for most of 1955, the leading industrial countries were able to absorb increased costs equally well. Export prices rose more in Great Britain and Germany than in the United States in the period 1950-52. Following the devaluation of 1949, British and western German exporters had a price advantage over their competitors in North America; they used up this advantage in raising their prices during the Korean war boom. After 1953 export prices in both countries were rather lower and rising quite slowly. However, it was still uncertain late in 1955 whether British export prices could absorb the large wage increases of the early months of the year, increases which were on a larger scale than those in the German Federal Republic or the United States. (See also AGRICULTURE; BANKING; BUILDING AND CONSTRUCTION INDUSTRY; BUSINESS REVIEW; INCOME AND PRODUCT, U.S.; STOCKS AND BONDS; WAGES AND HOURS.) (R. G. D. A.)

Prince Edward Island. Smallest province of Canada (2,184 sq.mi.), Prince Edward Island lies in the Gulf of St. Lawrence. It joined the confederation in 1873. Pop.: (1951) 98,429, (official June 1, 1954, est.) 105,000. Capital: Charlottetown, pop. (1951) 15,689.

History.—After four stormy years, the provincial potato marketing board became a major issue in the summer of 1954, but a special plebiscite among the potato growers extended its life indefinitely. The board continued during 1955 as the selling agency and licensed dealers were relegated to an assembling and shipping role. The fisheries division of the provincial department of industry and natural resources continued measures to modernize the fishing industry and lead it away from too-full dependence on the lobster market. The provincial government's industrial loan policy continued to attract new industries (evaporated milk, potato chip, fish filleting, vegetable canning), and assist the tourist trade, farming and rural electrification.

The leader of the Liberal party and premier of the province during 1955 was A. W. Matheson.

Education.—Latest available statistics for provincially controlled primary and secondary schools were for the 1953-54 school year, when 766 teachers taught 19,933 pupils who had an average attendance of 16,905. Revenues for such schools totalled \$2,126,974.06.

Public Health and Welfare.—For the year ending March 31, 1954, the federal government paid out \$2,591,882 in family allowances on behalf of 35,812 children; \$3,264,400 in old-age security pensions to 6,804 pensioners; \$199,452,018 in old-age assistance payments to 612 recipients and \$41,081,050 in pensions to 95 blind persons. Mothers' allowances and families assisted as of March 31, 1955, totalled 237; children aided 611. Total benefits for year were \$73,250,000.

Transportation and Communications.—On March 31, 1955, there were 12,551 passenger cars using the 3,180 mi. of provincial roads of which 350 mi. were paved and 1,450 mi. standardized. On March 31, 1955, there were seven airports. During 1955 there were 13,790 telephones in use. On March 31, 1955 there were 22,000 radios in use.

Banking and Finance.—On Jan. 1, 1955, there were 24 branches of chartered banks doing business. Gross fund of debt was \$18,600,000 less sinking funds. Gross funds of debt \$3,740,426; net fund of debt \$24,859,574; unfund of debt \$2,974,147. Outstanding liabilities amounted to \$17,833,720 for the year ending March 31, 1955. There were 57 credit unions at the end of March 1954; loans made totalled \$870,052,088; assets \$1,187,656.

Agriculture.—During 1954 farm cash income averaged \$5,000,000 per quarter. Revised statistics did not go beyond 1951, when the wheat crop was valued at \$146,150; oat crop at \$3,425,400; barley \$153,400; potatoes \$11,011,200; hay \$4,776,000. In 1954 the island farms had 120,000 cattle; 77,000 swine; 39,400 sheep and lambs; 980,000 domestic fowl. Value of mixed grains was \$3,305,450.

Fisheries, Furs and Forestry.—During 1954 fisheries statistics showed 3,827,400 lb. of fish landed worth to the fisherman \$2,870,210, and with marketed value \$3,641,040. Irish moss; number of pounds gathered 11,528,200; value \$140,890; marketed value \$273,188. Island trappers brought in 6,000 pelts worth \$10,050.

Manufacturing.—Latest available statistics were for 1954, when 1,798 employees in 224 plants earned \$22,954 in salaries and wages. Finished products were as follows: butter and cheese \$3,793,000, fish processing \$3,220,589, prepared stock and poultry food \$1,238,344. (G. V. F.)

Principe: see PORTUGUESE OVERSEAS TERRITORIES.

Printing. Most of the developments announced for the graphic arts industry during 1955 consisted of refinements of elements used either in actual printing operations or in fabricating the elements making up the printing plates. Automation as such, compared with general industry, made little progress during the year. A new fluorescent light-sensitive paper was announced. Through use of the specially prepared paper, staging and correcting colour plates for newspaper use were eliminated and separation prints of greater brilliance were secured. It is a plastic base paper with fluorescent coating over which is laid the silver emulsion and gelatin protective coating. The emulsion is developed and fixed in normal manner. For the fluorescent exposure, the camera screen is raised and special Kemart lights are used in place of regular arc lamps. This exposure varies from $2\frac{1}{2}$ to 3 min., which affects only the very light tones. (Harvey Holsapple, Kemart Corp., Minneapolis, Minn.)

One of the major problems of the converting section of the industry has been the restoring of moisture to the film or paper web after the web has passed through ink drying chambers in the printing press at speeds up to 500 f.p.m. A firm announced a steam conditioner cabinet at the end of the press or other processing equipment whereby moisture in correct amount is restored to the film or paper stock by means of steam jets which attack the web at all angles under pressure of 3 to 5 lb. per square inch. Automatic controls shut off the steam when the press is stopped and vice versa. Temperature within the steam unit is maintained at 190° F. (Worth Wade, American Viscose Corp., Philadelphia, Pa.)

Equipment and a method for photographing type lines or made-up page forms, or both, containing type matter, photoengravings and rules was developed. The equipment consists of a fixed focus camera with special frontal lighting equipment, spray booth, make-up table and complementary photographic developing equipment and materials. The first step is to spray the form with lampblack suspended in a solvent which evaporates immediately. The coating is wiped off the image or printing surface with a smooth rubber block and a specially sanded

rubber block to diffuse reflection from the printing surface. The form is then placed in vertical position on the copyboard. The light source, approximately four feet in diameter, consists of a number of Mazda light bulbs which, in rotating, produce an evenly distributed specular light on the form. The maximum photographed area is a 22-in. diameter circle. When the form is photographed the image is always positive. The camera is provided with two focal planes. The vertical position is used for black and white prints and positives used in making albenum process negatives. A plane mirror is used to laterally reverse the image. Positives made in horizontal position are used for deep-etch and rotogravure work. With these two positions the image can read right or wrong according to the process used. (Ludlow Typograph Co., Chicago, Ill.)

A letterpress cylinder printing press make-ready system was announced. After the form has been put on the press, a proof is taken on a plastic coated sheet. The freshly inked sheet is then taken to a special cabinet. During rotation the sheet passes under a bank of infrared lamps. Rays from the lamps penetrate through the still moist black ink and cause the image components to raise. The white plastic nonprinting areas do not accept the rays and consequently do not raise. The inked areas, however, do raise under the action of the infrared rays. The printed areas rise in the solids as much as 0.004 in. In the middletone and highlight areas, the images rise from zero to 0.003 in. After being treated, the now made-ready sheet is returned to the printing press cylinder and fastened in the cylinder packing. Thus the printing areas in the form receive greater or less pressure in printing. The solid areas, of course, in letterpress printing, require more printing pressure than the lighter areas. (Minnesota Mining & Mfg. Co., St. Paul, Minn.)

The matching of colour in the printing industry, especially with respect to reproduction of original art work, has always been a problem. A solution in the handling of the same reproduction by the different people involved was claimed by the introduction of a specially constructed lamp outfit. The equipment is used for examining, checking and matching colours through emittance of the various light rays necessary to produce an approximation of blue sky sunlight. This is done by using specially processed fluorescent-type lamps, each of which produces intrinsically one of the colours, except red, that compose the daylight spectrum. Red of adequate quality is supplied by special incandescent lamps in combination with the fluorescent-type lamps. Luminous efficiency of the unit is said to be high since it contains no filters and the heat factor is correspondingly low. (L. Court Butler, White Plains, N.Y.)

Other minor but important developments were announced. One of these was a dimensionally stable material, called Wellite, for mounting photoengravings in place of the usual wood base, which is unstable material. Its development was credited to Battelle Memorial institute, a Columbus, O., research organization. The blocking consists of asbestos with inorganic binders moulded into sheet form under pressure. It is further treated by grinding for uniform thickness and surface smoothness. A thermoplastic resin coating for bonding engraving to base is applied to one surface of the base. (Wells Mfg. Co., South Bend, Ind.)

A lightweight curved printing plate was announced. It consists of a perforated aluminum saddle, a layer of Vinyl plastic and a thin electrotpe. The light weight of the plate greatly reduces the effect of centrifugal force during the printing operation. While being treated, the sandwich is compressed approximately 0.006 in. to permit the plastic to enter the perforations in the saddle while the plastic and the electrotpe are bonded to produce, in effect, a one-piece curved printing plate. (Printing Plate Supply Co., Chicago, Ill.) (M. St.)

Prisons. The year 1955 was one of continued crises in the nation's prisons. Between January and September, 20 riots occurred in ten state prisons and reformatories, one state hospital for the criminally insane and two county jails. Besides the considerable property damage resulting from these disturbances, many guards were held hostage, several prisoners seriously injured and, in one of the jail riots, one prisoner was killed.

Within a period of several months, six riots occurred in the Nebraska penal system. Two riots, five weeks apart, broke out behind the walls of the Washington State prison. Rebellions erupted also in the Massachusetts State prison, the Texas State prison, the Ionia State reformatory in Michigan, the Wyoming State prison, the Nevada State prison, the Great Meadow Correctional institution in New York, the Rhode Island State prison, the Rusk State Hospital for the Criminally Insane in Texas, the State Prison camp in Greenville, N.C., the Nassau County jail on Long Island, and the Bexar County jail in Texas. In practically all instances, the usual investigations by citizen committees or legislative commissions followed, but without concrete results except a tightening of security measures and a good deal of acrimonious political debate.

Professional penologists and serious students of correctional administration had long recognized and pointed out the deep-seated and varied causes which underlie these destructive disturbances. The conditions which make these flare-ups of mass violence possible continued to be: overcrowding; untrained personnel; lack of classification of inmates; political meddling in prison administrations; inadequate parole systems; harsh and unfair treatment; idleness; and in most cases an almost total lack of rehabilitative programs.

Another problem which characterized the prison situation during the year was the accelerated increase in prison population. At the end of 1954, there were 182,051 persons serving sentences in state and federal prisons and reformatories for adult offenders, or an increase of 9,322 over those in prison at the close of 1953. Prisoners in state institutions numbered 162,048 at the end of 1954, an increase of 8,682 over the previous year. In federal institutions the year-end population rose to 20,003, an increase of 640. At the same time, the number of persons committed by the courts to both state and federal institutions

Sentenced Prisoners in U.S. Prisons and Reformatories
(Dec. 31 of each year)

Year	Federal institutions	State institutions	Total	Rate per 100,000 Population
1954	20,003	162,048	182,051	114.4
1953	19,363	153,366	172,729	110.6
1952	18,014	149,360	167,374	109.2
1951	17,395	147,501	164,896	109.1
1950	17,134	148,662	165,796	110.4
1949	16,868	146,474	163,342	110.7
1948	16,328	138,764	155,092	106.8
1947	17,146	133,719	150,865	105.8
1946	17,622	121,813	139,435	100.8
1945	18,638	114,581	133,219	104.4
1944	18,139	113,835	131,974	104.2

increased even more sharply. A total of 79,946 persons were sent to prison in 1954, as compared with 73,299 in 1953, an increase of more than 9%.

In the face of persistent prison riots and an evergrowing prison population, little significant legislation or concerted action was taken during the year toward the improvement of basic conditions or expansion of facilities.

The federal prison system too was not immune from the problem of overcrowding or the need for expanded facilities. Federal institutions were located in 19 states and the District of Columbia. These comprised 28 institutions, including 6 penitentiaries, 5 reformatories, 6 correctional institutions, 6 camps, a medical centre, a detention or jail facility, a youth centre for adolescent offenders, a training school and a forestry camp for juvenile delinquents. Designed for a normal capacity of 18,990, the federal prison system as of Sept. 8, 1955, had to cope with a total population of 19,913.

The rehabilitation program in the federal system included classification, casework services, medical and psychiatric treatment, education and vocational training, religious counselling, and an extensive program of employment and industrial production. The latter program was operated by Federal Prison Industries, Inc., a government-owned corporation, but administered as an integral part of the federal bureau of prisons. During the fiscal year, this industrial production program employed about 20% of the prison population and produced goods for sale to other government agencies valued at \$20,362,250. Out of the earnings, the corporation financed entirely the costs of the vocational training program, and during the fiscal year paid out to inmates employed in the shops \$1,185,978 in wages, which were sent to dependents or kept for the inmates in anti-

GUARDS RUSHING PRISONERS during a riot and fire at the Nebraska Men's reformatory, Lincoln, Sept. 9, 1955



pation of their release. In addition, the corporation had returned to the U.S. treasury over the past nine years in excess of \$28,500,000, in itself a substantial return to the taxpayer for the cost of operating the federal prisons. (See also CRIME.)

(J. V. BE.)

Prizes and Awards of 1955: see LITERARY PRIZES; NOBEL PRIZES; PULITZER PRIZES. See also AMERICAN LIBRARY ASSOCIATION; ANTHROPOLOGY; ART EXHIBITIONS; GEOGRAPHY; LIBRARIES; MATHEMATICS; MINERALOGY; MOTION PICTURES; RADIO AND TELEVISION; ROMAN CATHOLIC CHURCH; SOCIETIES AND ASSOCIATIONS, U.S.; THEATRE; etc.

Production, Industrial: see BUSINESS REVIEW.

Profits, Company: see BUSINESS REVIEW.

Protestant Episcopal Church. Statistics given by the *Episcopal Church Annual* at the beginning of 1955 showed moderate gains under all headings except parishes and postulants for the ministry. The total number of baptized members was 2,907,321, an increase of 116,386 over the previous year. The number of communicants, 1,816,611, represented an increase of 38,980. The decline in the number of parishes (a decrease of 87 to a total of 7,912) probably resulted from the closing of city churches in consequence of population shifts. There were 7,367 ordained clergy at the beginning of 1955, an increase of 134 over the previous year. The number of lay readers was 8,626, an increase of 876. The church schools had 678,935 pupils, an increase of 60,933, and 75,861 teachers, an increase of 4,765. Total receipts came to \$125,532,521.67, an increase of \$22,116,881.20.

There was an encouraging reversal of the previous decline in the number of baptisms. A total of 98,255 infants were baptized, an increase of 19,148. Adult baptisms came to 19,044, an increase of 4,092. The number of confirmations was 104,014, an increase of 9,414. The ratio of clergy to communicants was the same, in round numbers 1 to 246, but if fractions were taken into account, there was a slight decline. A total of 418 persons were ordained to the diaconate, an increase of 15, and 388 to the priesthood, an increase of 21. There were 666 candidates for the ministry, an increase of 9. The number of postulants (those preparing to become candidates) was 1,195, a decrease of 9.

The general convention met in Honolulu, T.H., in September, convening outside the continental United States for the first time in history. It voted a record budget of \$6,807,947 for the general church program and rejected a recurrent proposal to omit the adjective "Protestant" from the name of the church. It received reports on the organization of theological seminaries in the dioceses of Long Island and Kentucky. The Long Island institution was designed to specialize in the training of older men, coming to the ministry from other callings. Plans were announced for the removal, in 1956, of the church archives, in the custody of the Church Historical society, from Philadelphia, Pa., to Austin, Tex., where space was to be provided for them in the library of the Episcopal Theological Seminary of the Southwest.

(See also CHURCH MEMBERSHIP.)

(W. W. Ms.)

Prunes: see FRUIT.

Psychiatry. The steadily increasing population of mental hospitals in the United States and the high incidence of neurotic and character disturbances led the president's commission for the study of the nation's health to declare in 1955 that emotional disabilities represented the nation's foremost health problem.

Estimates of the extent of mental illness in its milder, less

incapacitating forms varied because of the difficulty in drawing a sharp line between mental health and the milder forms of emotional disturbance. Hospital statistics, however, showed that in 1955 a total of between 700,000 and 750,000 hospital beds, or one of every two in the United States, were filled by mental patients, and although 16,000 new patients were being admitted each year, many mental hospitals had long waiting lists. In the last 50 years, as the nation's population had doubled, the mental hospital population had quadrupled.

The relative increase in mental illness was less attributable to increased tensions of modern life than might at first appear. At least part of the increase in numbers of patients resulted from the relative increase in numbers of elderly and consequently more vulnerable people, and part from the greater understanding and acceptance of emotional illness by the public and the consequent greater acceptance of the advisability of hospitalizing relatives when it becomes necessary. Furthermore, sociological changes in family structure and mobility had complicated the problem of keeping mentally ill patients at home. In many areas, however, as patient loads had increased modern treatment methods had not been applied, usually as a result of inadequate hospital staffing which in turn was a product of limited budgets and limited trained personnel. Funds and professional staff were often not available for intensive application of occupational, physical and the so-called physiological therapies, for the development of a therapeutic milieu within the hospital geared to the specific needs of the individual patient or for careful professional planning for rehabilitation, particularly in the transitional period immediately following discharge from the hospital. These methods require an initial increase in expense, and additional money was hard to obtain.

However, in areas where human and financial resources had been mobilized to carry out modern treatment and rehabilitation methods, the results were gratifying, and although initially more expensive, in the long run they represented financial as well as human economy.

A more spectacular approach to the problem of treatment resulted from the use of new medications. Chlorpromazine, reserpine and several newer drugs were tested on a wide scale during the year. Although many reports in the medical and public press continued to be enthusiastic about their value, and although some of these drugs possess a definite tranquillizing effect, most observers continued to be conservative in their expectations and concerned about complications, particularly with the synthetic compounds. There is sufficient variation among individual patients in response to these drugs to make their use inadvisable except under careful medical observation.

During the year, studies of individual differences of reaction to narcotic and other drugs gave promise of leading to a better understanding of susceptibility to drug addiction and perhaps to alcoholism. It was believed that these investigations might help psychiatrists to predict the effects of treatment more accurately and consequently to prescribe more specifically.

In other areas, co-ordinated psychological and physiological studies sought to establish a more comprehensive background for the study of psychiatry. Refined techniques of investigation of the electrical activity of the brain made possible more thorough evaluation of brain function in mental illnesses. With these techniques the effects of psychological stimuli on brain physiology could be more clearly demonstrated. To some extent the improvements in technical methods had resulted in increased interest in the temporal lobe of the brain, whereas previous investigations of psychological function were more concerned with the frontal lobe. Seizure patterns originating in the temporal lobe were implicated as contributing to the cause of some varieties of impulsive antisocial behaviour.

The cause, treatment and legal status of homosexuality continued to be subjects of major concern to psychiatry. Although the evidence in favour of psychological rather than endocrine causative factors continued to accumulate, treatment methods were still prolonged, cumbersome and generally unsatisfactory. Psychiatrists continued to search for better treatment methods, and at the same time sought to clarify and find better solutions for the somewhat chaotic laws affecting sexual deviants.

Finally, a few overdue words were spoken during the year in recognition of adolescents as individuals with personality strength and potentialities for positive development. The apprehension about rising delinquency rates had led to the categorization of all adolescents as potential delinquents who require restraint, without discriminating between those whose backgrounds predispose them to delinquency and those whose struggles to establish their own independent identities may be safely permitted latitude. Since children tend to respond to the expectations of their parents, the general expectation of delinquent behaviour in adolescents may in itself be a factor in its production. (See also CHEMOTHERAPY; PSYCHOLOGY; PSYCHOSOMATIC MEDICINE.) (C. K. A.)

Psychology. Psychology can be viewed as a pure science concerned with investigations of the behaviour and experience of organisms, especially the human organism, but, as do almost all other sciences, psychology has its applied or technological aspects concerned with application of scientific findings to practical human problems in industry, the school, the clinic, etc. During 1955 problems of professionalization and of maintaining standards of competence among persons offering psychological services to the public continued to preoccupy many psychologists and psychological organizations. On the other hand, basic technological research productivity continued to expand, a trend that had been especially marked since the end of World War II. In the course of the year, the *Psychological Abstracts* listed more than 8,000 titles of papers in technical journals and books on psychological topics published throughout the world. Some of the significant directions and trends of progress in basic principles and applications will be noted.

The study of perception, of how the individual becomes aware of the world around him through his senses, is a problem that has long interested psychologists. In recent years there has been much interest in the influence of motivation, *i.e.*, of interests and needs, of a person on his perceptions. Some studies seemed to imply that basic sensory capacities are modified by the motivations of the observer while other studies found them to have little effect on perception. On the basis of researches during 1955, it appeared that motivations are important in selective aspects of perception. From an array of potential stimulus objects that are in the environment, the individual is most likely to "see" (to respond to) those items that are relevant to his motivational state. Also, wishes often determine what the person "sees" when the stimuli are unclear or are inadequately presented to the sense organs. The evidence shows that motivation has little if any effect on fundamental sensory capacities when the latter are measured adequately.

The capacity of organisms to modify their behaviour in terms of consequences of that behaviour, the capacity to acquire new knowledge, in short, to learn, is a phenomenon of central psychological interest. Studies on learning are particularly concerned with testing a number of competing and conflicting theories regarding the fundamental nature of learning. A very considerable amount of research results during the year failed to show definitive support for any one of the various theories. Careful logical analysis of some of the theories of learning was

beginning to indicate that in the final analysis differences among learning theories might turn out to be more apparent than real. Psychologists had a body of solid empirical knowledge regarding simpler forms of learning, particularly of lower animals, but as yet they had not achieved an adequate theoretical formulation of the phenomena of learning.

Many would consider the topic of personality, its development and dynamics, to comprise the central problem of psychology. Because of its great complexity, the human personality is very difficult to grasp scientifically. There are many theoretical approaches to its study. A glance at articles in scientific journals and books published during the year showed that European (continental) psychologists on the whole took a more phenomenological, philosophic and speculative approach to the study of personality while the majority of psychological studies from England and America were more likely to be empirical, objective and concerned with statistical treatment of data, including factor analysis. An important development in the field of personality study was the publication and subsequent influence of W. Stephenson's book, *The Study of Behavior*. The book sets forth Q-technique, as it is called by Stephenson, which is a procedure of factor analysis of correlations between persons rather than between tests, which is the more traditional approach. It becomes possible to do objective and quantitative statistical analysis of interrelations and patterns of traits, even of a single person. An important application of Q-technique appeared in the publication by the staff of the counselling centre at The University of Chicago of their long-term study of personality changes of persons undergoing client-centred psychotherapy. Their work was pioneering in its attempt to study objectively and scientifically the influence of psychotherapy on personality.

Psychological testing consists of trying to assess or evaluate major aspects of behaviour such as abilities, aptitudes or personality characteristics on the basis of a small sample of behaviour obtained in a more or less standardized fashion; *i.e.*, with a test. In order to develop valid tests, psychologists must first have some estimate of the psychological characteristics they wish to measure against which to check the validity of their tests. This is called the criterion. For measures of basic abilities and skills, the criterion problem was easily solved and psychological testing is most effective in those areas. But the criterion problem is extremely difficult to solve when one attempts to measure personality traits and the complex personal characteristics which must be evaluated in order to make tests, for example, to select salesmen or business executives or to measure ability for leadership. Much research and many tests of these complex personality attributes which are used in industry and the clinic are in great need of improvement by means of checks against more adequate criterion behaviour. An important trend in 1955 was a growing awareness of the need for serious concern for the criterion problem in work on assessment of human characteristics. Some systematic investigations of the criterion problem were reported. More studies were needed.

Physiological mechanisms underlying psychological and behavioural phenomena represent an important problem investigated not only by psychologists but by related disciplines such as neurophysiology. A significant event of the year was the Wisconsin symposium on "Interdisciplinary Research in the Behavioral, Biological and Biochemical Sciences" at which scientists from the several disciplines reported and discussed research findings on problems of the biological basis of behaviour. Among many significant topics discussed at the symposium was the behaviour correlated with functions of a region of the brain called the rhinencephalon. This area of the brain was so named

(the nose brain) because it was formerly believed to mediate olfactory sensations. In recent years evidence had been accumulating which suggested that parts of this phylogenetically ancient region of the brain function primarily as centres for emotional behaviour. Reports at the symposium confirmed and enlarged this interpretation of the function of the rhinencephalic structures.

Comparative or animal psychology continued to be an active field of research, likewise largely of interdisciplinary nature. Theoretical views of some of the German students of animal behaviour (ethologists) had stimulated much interest and several research projects in laboratories in England and America as well as in some continental laboratories. A phenomenon called "imprinting" (*Prägung*), which was described by the German ethologists, was carefully and quantitatively investigated. In some species of birds (mallard ducks were used) the first living thing, or even animated object, that the duckling sees during a critical period shortly after hatching becomes his parent in the eyes of the duckling. He follows the pseudoparent and in other ways behaves toward it as ducklings usually behave toward the mother duck on which, in the natural state, they are almost inevitably "imprinted." Whether or not such a behavioural mechanism, or phylogenetic vestigial remnants of it left behind in evolution, can be found in mammals, especially higher mammals, is an interesting problem which was being investigated. (See also PSYCHIATRY; PSYCHOSOMATIC MEDICINE.) (G. J. Ts.)

Psychosomatic Medicine. Psychosomatic medicine is a development in the practice of diagnosis and treatment which takes into account the composition of the human being as both a mind and a body and which relates various physical conditions to emotional backgrounds, thus recognizing both the mental and physical components. Psychosomatic medicine therefore emphasizes the interdependence of mental processes and physical or bodily functions.

During 1955 an outstanding study was presented by George L. Engel and Franz Reichsman demonstrating the relationship between feelings, relationships between people and gastric secretions. For many years it had been known that the behaviour of the stomach was related to feelings, and this in turn to relationships between people. Numerous theories had been developed regarding these relationships, and increasingly specific hypotheses had been formulated. Although it was known and physicians had based their treatment of patients on the fact that removal from tension and stress is beneficial to those suffering from disturbances of the stomach, it had not helped to achieve a sharper understanding of what brings about abnormal stomach activity.

The investigators reporting this work used a technique of investigation which made possible the observation of the function of the stomach in a living child from moment to moment and hour to hour during the daily life of this patient while in the hospital. This observation differed from many other types of investigative work that had been performed in that the changes that took place in the stomach were correlated with changes in the feelings of the child and the relationship it demonstrated to people in the natural course of events. This was in sharp contrast with many types of investigations in which attempts were made to bring the stomach to a base line and then to watch the change that took place when something was changed either in the patient or in his surroundings. Obviously, to bring the stomach to a base line may involve producing artificial situations which are not lifelike.

The patient studied was an infant who was born with a closure of the tube leading from the mouth to the stomach, which required, immediately after birth, the construction of an opening into the stomach through which the child could be fed. The

baby did not do well, and she was admitted to the hospital at the age of 16 months in a severely weakened and underweight condition. At this time investigations were begun. An experimental procedure was developed in which one of the physicians was thereafter in frequent attendance upon this little girl patient. He talked to her, fed her through the tube, took samples of juices from her stomach and became quite obviously, to anyone who would observe the reaction between the two, her "good friend." Thus it was possible for the "good friend" doctor to observe the child directly and to observe her reactions to others in the environment or to other medical procedures which were required.

At the same time, the second investigator was in an enclosed room from which he had complete vision of the child and the "good friend" doctor. He could hear everything that went on and yet could not be seen by the patient or her doctor, and thus was able to observe the total situation. After certain preliminary planning it was possible for these doctors to set up a series of criteria and to give names and values both to the various feelings that the child exhibited and to her relationships with other people, as well as a number of other behavioural characteristics. It was possible for them to define a number of different feelings that the child was experiencing, such as contentment, joy, irritation, rage and depression in terms of the posture, the movement, the facial expression and the vocalization of the child. Likewise, it was possible to define the degree of interest shown by the child in people or things, from one extreme of little or no interest to the other extreme of primary attention or vigorous participation. Having established these criteria, which were recognizable by others and therefore were similar to any accurate measuring scale, such as a ruler, they could relate this to the activity of the hydrochloric acid in the stomach and to other measures.

Since observations could be made on the activity of the stomach at the same time that records could be made of the feelings the child was exhibiting and the degree of its relationships with people, these could be correlated in a statistical manner. The results revealed that the correlations between these three different measures were intimately related one to the other. Since the stomach activity and the behaviour of the child were observed from moment to moment and hour to hour during the daily routine of the child, minimum disturbance was introduced into the situation. Observations could be made upon the child while it was sleeping, while it was being fed and while it was playing, and its reactions to "strangers" and to people who performed necessary cleansing and medical functions could be observed.

Several striking and important observations were recorded which verified and confirmed work done in other fields. The secretion of the hydrochloric acid in the stomach was intimately integrated into the total behaviour activity of this infant. Feeling states which were expressive of social communication, whether they were ones which were pleasurable or ones which were aggressive, were associated with rising rates of secretion of hydrochloric acid. If the child showed a feeling of depression, which was related also to a relative reduction in the degree and the rate of communication with things and people around the child, this was associated with a decrease or even a cessation of gastric secretion. The more active were the interactions of the child with the things and people around her, the more active was the rate of the secretion of hydrochloric acid in the stomach.

A particularly striking discovery was the finding that the injection of histamine—a powerful stimulant of secretion in the stomach—produced a completely different result depending upon who gave it to the child. When the histamine was injected into

the child (a standard laboratory process) by the "good friend" doctor, a copious flow of gastric juice resulted, actually giving the highest amounts recorded at any time. When the same dose of histamine was injected into the child by the "stranger" doctor (some physician that the child did not know but who might look very much like the "good friend" doctor), little or no secretion occurred. Actually, some of the amounts secreted were lower than the lowest amounts occurring during everyday events related to the depressive state.

This work was outstanding in its method and in its verification of many of the theories about people's inner feelings, their relationships with other people and the operations of the various organs. The results of these studies confirmed in many aspects hypotheses that had been derived from the study of the stomach alone by physiologists, from the study of adults by psychoanalysts and physiologists and from the observations of infants by pediatricians and by people interested in the importance of the early feeding relationship of the child and its mother.

The findings of this technique marked an important milestone in the search for more accurate and detailed understanding of the total operation of man. The study was an example of excellent psychosomatic research. (See also PSYCHIATRY.) (G. C. H.)

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Public Assistance: see CHILD WELFARE; SOCIAL SECURITY.

Public Health Engineering.

An important advance in organized air pollution activities was signified during 1955 by the enactment of federal legislation directed to the support of research and to the encouragement of co-operative state action in pollution abatement. The problem of ultimate disposal of highly radioactive wastes resulting from nuclear power plant operation assumed greater significance with the realization that general use of this power source might well depend upon the development of feasible waste disposal methods. Recommendations on national policy for the best use of the nation's water resources were prepared by several special federal commissions. The year was further marked by an aggravation of public health engineering problems in municipal fringe areas.

Community Air Pollution.—In response to the increasing nation-wide concern over air pollution, congress enacted the Air Pollution Control act, P.L. 159. This legislation focused support mainly on research by government and private agencies to develop knowledge which would be useful in abatement programs.

Research and control efforts in the field of air pollution were the subject of several scientific meetings sponsored by state governments, professional societies and the federal government. Research on the photochemistry of hydrocarbons furnished the basis for a "smog alert" system tried by local agencies in some areas. A national air sampling network, operated co-operatively by federal, state and local agencies in 30 representative U.S. cities, completed 18 months of sampling intended partly to obtain data on so-called "background" levels of air pollution. The average total particulate content of local atmosphere was found to be related to the size of the local population.

Radiological Health.—Public health problems introduced by nuclear power plant operations were emphasized following changes in the Atomic Energy Commission Enabling act to facilitate nonfederal operations in reactor development. Of overwhelming significance was the need for a practicable method for disposal of long-lived radioactive wastes. Among the methods

under study were disposal at sea and permanent storage underground or at protected sites in uninhabited areas. The Oak Ridge National laboratory reported satisfactory disposal of liquid waste containing approximately 0.003 curies of radioactivity per gallon by discharge to pits located in Conosauga shale. Realization that spent reactor fuel elements should be processed at specially selected sites rather than at the individual plant brought to the fore the problem of transportation of such materials.

Sewage and Waste Disposal.—The increased diversity of industrial wastes discharged to surface waters continued to be a major problem for water pollution control agencies. This problem was aggravated by the difficulties of fixing water quality requirements for important water uses. The principles underlying successful operation of sewage lagoons were the subject of joint studies by the public health service and the states of North and South Dakota. Growing interest in anaerobic processes for waste treatment followed their successful application to packing house wastes. Another event of widespread interest was the successful treatment of Kraft pulp and paper mill wastes by the activated sludge process. Problems of designing and financing sewage treatment plants for new housing subdivisions in outlying areas were studied by agencies concerned with future incorporation of such plants in metropolitan sewerage systems.

Water Supply.—Increased practice of supplemental irrigation in the eastern United States drew attention to the possibility that a major change was occurring in surface water use. A number of states were considering legislation establishing state control of allocation of water to specific users to replace the traditional doctrine of riparian rights. Provision of water service to new housing developments in outlying areas continued to be a major administrative problem for municipalities. Recognition of the value of the membrane filter technique for bacteriological examination of drinking water led to inclusion of this technique as a tentative method in the tenth edition of *Standard Methods for the Examination of Water, Sewage and Industrial Wastes*. The usefulness of the membrane filter was increased by the development of a delayed incubation procedure permitting transportation of the filter without affecting coliform organism count.

Milk and Food.—Research on the use of ionizing radiations in food preservation indicated that commercial application of this procedure was close at hand. In response to a need for improved sanitation in the poultry-processing industry, the public health service with the assistance of the states developed a poultry ordinance recommended for adoption by states and communities. Continued expansion in the use of automatic vending machines for perishable foods emphasized the need for a code of sanitary control that would effectively reach the machine operator as a food handler. Similarly, the increasing popularity of partially prepared and precooked frozen foods pointed to the need for more rigid sanitary controls in handling these food products.

Refuse Disposal.—Application of incinerator design practice to prevent air pollution was evident in Philadelphia, Pa., and in Washington, D.C., where equipment for effectively controlling fly ash was incorporated in large municipal installations. Small communities increasingly favoured the sanitary land fill as an economical and acceptable method of refuse disposal. Although interest in composting of refuse continued to be widespread, the need for improved mechanical techniques and the uncertain marketability of the product discouraged adoption of this disposal method.

Vector Control.—Resistance of insects to chlorinated hydrocarbon insecticides continued to be the most significant problem

encountered in vector control, despite the increased use of organophosphorus compounds in fly and mosquito abatement programs. Reports suggested the occurrence of resistance to DDT in eight species of *Anopheles* found in certain areas in Asia, Europe and South America. Resistance of *Anopheles quadrimaculatus*, the principal vector of malaria in the United States, to several chlorinated hydrocarbons was found for the first time in the U.S. in Bolivar county, Miss. Increased propagation of houseflies in privies following application of chlorinated hydrocarbons indicated that this practice should be discontinued until the factors responsible were clarified.

Industrial Hygiene.—Interest in noise control increased in proportion to the number of workmen's compensation claims involving alleged loss of hearing. Epidemiological studies were undertaken on the effects of various noise levels. Effective instrumentation for measuring impact noise was developed. The anticipated development of nuclear power reactors for civilian use confronted industrial hygienists with new problems of radiological safety. Research on the effects of microwaves on health was directed to radar detection devices, radar cooking devices and diathermy equipment. (See also ACCIDENTS; EPIDEMIOLOGY; PUBLIC HEALTH SERVICE, U.S.; WORLD HEALTH ORGANIZATION.) (B. B. BR.)

Public Health Service, U.S. The principal federal health agency, the public health service of the U.S. department of health, education and welfare, continued during 1955 its program of research, medical care for specially designated groups and technical assistance to state and local health agencies.

During the year the public health service played a major role in the testing and release of a new vaccine against paralytic poliomyelitis and in the development of a nation-wide voluntary program of distribution. A poliomyelitis surveillance unit was established to investigate all cases of the disease and to gather information relating to the safety and effectiveness of the vaccine. (See POLIOMYELITIS.)

The Nation's Health Record.—The general death rate in the United States in 1954 was 9.2 per 1,000 population. This was the seventh consecutive year that the death rate had been below 10 per 1,000.

The infant death rate was 26.6 per 1,000 live births, and the maternal death rate 5.3 per 10,000. The tuberculosis death rate dropped from 12.6 per 100,000 population in 1953 to 10.5 in 1954. The principal diseases of childhood, scarlet fever and streptococcal sore throat, diphtheria, whooping cough and measles, which caused about 15 deaths per 100,000 population in 1944, were responsible for about 2 deaths per 100,000 population in 1954.

Major cardiovascular diseases accounted for 53% of deaths in 1954, and malignant neoplasms for 16%.

Increases were reported in the number of cases of infectious encephalitis, infectious hepatitis, measles, poliomyelitis, scarlet fever and streptococcal sore throat, whooping cough and psittacosis. There was a marked reduction in cases of malaria.

There were an estimated 4,021,000 births and 1,476,000 marriages in 1954. (See also BIRTH STATISTICS; DEATH STATISTICS; INFANT MORTALITY.)

Research.—Research activities during the year included clinical trials of the antirheumatic drugs prednisone and prednisolone, which were found to be four times as potent and in some respects less hazardous than cortisone. The cancer chemotherapy program was accelerated and the pilot program for detection of cancer of the cervix, in Memphis, Tenn., completed its third year.

New evidence that diet can influence the development of den-

tal caries was discovered and further investigations of fluorides in drinking water showed that they have no effect on growth or calcium metabolism in the bones of young rats. Heart disease research was carried out on the use of the tranquillizing drug, reserpine, in hypertension and the effect of injections of heparin on the fat-clearing factor in the blood. A method for establishing blood flow rates to different parts of the brain was developed, and it was demonstrated that 12 amino acids, the building blocks of proteins, are essential to growth of cells in tissue culture.

An experimental vaccine for the adenoidal-pharyngeal-conjunctival viruses was developed and clinical trials on human volunteers begun. The deficiency of glutamic acid in the brain of epileptic patients was clearly demonstrated.

Medical Services.—The public health service continued to supply medical services to merchant seamen and other federal beneficiaries, and to assist other federal agencies in providing needed medical care. The service maintained 16 hospitals, including 2 for treatment of narcotic addiction, 1 for tuberculosis and 1 for the treatment of leprosy; 25 outpatient clinics and 96 outpatient offices. Added to the service's activities was complete responsibility for health services to American Indians.

The hospital survey and construction program was expanded to provide federal funds for construction of nursing homes, chronic disease hospitals, diagnostic and treatment centres and rehabilitation centres. By the end of the fiscal year, June 30, 1955, 28 state plans for construction of these facilities had been approved.

Under the original hospital construction program 2,514 projects had been approved by the end of the fiscal year, and when all were completed, 118,814 hospital beds, 547 health centres and 18 state health department laboratories would be added to the nation's health resources.

Services to the States.—Federal appropriations for grants-in-aid for state and local health services totalled \$21,263,000, a decrease of about 7% from the 1954 appropriation. Consultative and technical assistance was given to states and communities in health education, public health nursing, disease control and collection of vital statistics. During the year, congress authorized a \$500,000 fund for research and investigation in problems of air pollution.

Programs of interstate carrier sanitation and vessel inspection were continued. A model poultry ordinance was developed, and the first national conference on shellfish sanitation was held. Comprehensive water pollution control programs for river basins in half of the nation's area were developed.

Experimental studies proved that in guinea pigs tuberculosis can be completely prevented by giving isoniazid at the time of infection. A national study to involve ultimately 1,000 children was initiated to determine whether isoniazid would prevent tuberculosis meningitis and other complications.

Assistance was given 34 states, the District of Columbia, Alaska, the Virgin Islands and Puerto Rico in venereal disease case finding. A diabetes case-finding program was begun in Oxford, Mass., and a study made of 11 representative home-care programs.

The epidemic intelligence service aided 15 states in 18 epidemic situations and investigated 170 other outbreaks of disease.

In its international health activities, the service staffed health programs in 42 countries and aided 771 persons from 68 countries who came to the U.S. for additional training in 111 fields of health study. (See also EPIDEMIOLOGY; INDUSTRIAL HEALTH.)

(L. SCH.)

Public Libraries: see AMERICAN LIBRARY ASSOCIATION; LIBRARIES.

Public Utilities.

With the continued levelling off in the applicable level of wages and prices in the United States there was a falling off in the number of rate increase cases before both state and federal commissions during 1955. This was true in particular of rates for water, electric and telephone service. However, the pressure for increases in the rates for natural gas service continued, reflecting in part increases in the price of natural gas at the producer end of pipelines transmitting such gas in interstate commerce.

Since the enactment of the Natural Gas act in 1938 and beginning with the Columbian Fuel corporation case of June 29, 1940, the Federal Power commission had uniformly held that it had been the intent of congress to restrict the jurisdiction of the commission to the transmission of gas at wholesale in interstate commerce and to prohibit the exercise of jurisdiction over the production and gathering of natural gas, as well as over the sale of such gas as incident thereto. In 1951 this question was presented to the commission once more in the Phillips Petroleum company case (10 F.P.C. 246). The commission again decided that the Phillips company was an independent producer of natural gas, that the sales involved were sales in interstate commerce for resale for ultimate public consumption but that such sales, though made after the completion of production and gathering, were incidental to such production and gathering and that, therefore, they were excluded from its jurisdiction under the Natural Gas act.

The states of Michigan and Wisconsin challenged this interpretation because the Michigan-Wisconsin Pipe Line company which serves retailing utilities in these states draws its supplies exclusively from the reserves available to Phillips Petroleum company. Upon final review of the commission's decision by the United States supreme court on June 7, 1954, in *Phillips Petroleum Company v. State of Wisconsin, et al.* (347 U.S. 672), that court held that the Federal Power commission must exercise jurisdiction over independent natural gas producers and gatherers such as the Phillips company. Pursuant to this mandate the commission issued orders prescribing regulations as to the filing of rate schedules and as to applications for certificates of convenience and necessity by producers and gatherers who sell gas in interstate commerce for resale. This order affected thousands of independent suppliers not hitherto subject to the act and gave rise to many suits at law challenging the validity of the order.

In the case of producing and gathering facilities owned by the pipeline companies themselves, the commission in its historic rate-making processes had included these facilities along with its other properties as a part of the net investment rate base upon which a reasonable return was allowed. Natural gas acquired for transportation from nonaffiliated independents had been included in the cost of service at higher contractual costs considered as "fair field prices" and presumably fixed at competitive levels. The Federal Power commission departed from this historic policy in deciding a case, *In the Matter of Panhandle Eastern Pipe Line Company* (3 P.U.R. 3d 396), on April 15, 1954. In pointing out that the use of the historic policy resulted in "indefensible discrimination" between the pipeline company and independent producers, the commission for the first time used the "fair field price" standard also upon the company's own production. This action was justified by the commission, in light of the decline in Panhandle's own production from 52.4% of sales in 1942 to 22.6% in 1952, by explaining that it was in the public interest that pipeline systems retain a substantial production of their own. This decision was in 1955 on appeal in a lower court.

These two distinct but related decisions raised the question of what was the proper fuel policy for the country to follow.

The commission was suggesting such a policy by supporting the Harris bill, favourably reported in the house, and the Fulbright bill to come before the senate in the next session of the congress. These bills, if enacted into law, would clear up the uncertainties through amendment of the Natural Gas act by making certain that the production of natural gas would not be subject to federal regulation as a public utility and that the pricing of natural gas supplies would take its cue from some "fair field price" obtaining in competitive fuel markets. Opposition to the proposed legislation was certain to be sectional and vigorous.

A significant change affecting the use of fissionable materials by public utilities was made by congress in a 1954 amendment of the Atomic Energy act of 1946. At the time of the earlier legislation it was deemed important to preserve the protection afforded by making such facilities and technological knowledge the property and monopoly respectively of the federal government. Private contractors had been used under a strict security system to assist in development of a weapons program. When the utilization of atomic power was no longer secret and the hope of securing complete international control faded, the question was raised whether maximum progress could be made under the government monopoly system.

In the belief that greater progress can be made through widespread participation in the development of atomic energy for peaceful purposes, congress decided that the strict controls of monopoly and of public ownership might be relaxed. The primary objective should be to reduce costs and thus make atomic energy economically feasible. Under the new dispensation private industry could own and operate production facilities such as the various types of reactors, but the government would continue to own what were termed "special nuclear materials." The Atomic Energy commission, however, was authorized to distribute the use of such materials to licensees, charging for the same to commercial users or distributing it free to those engaged in research and development. Under the 1946 act the government owned both fissionable materials and facilities.

Scientific and economic data remained restricted except that regulations provided for the freer flow of information, consistent with national security, in order to further industrial and scientific progress. By late 1955, 19 applications had been received by the Atomic Energy commission for the use of nuclear materials, of which applications by groups of utilities headed by Consolidated Edison company of New York, Commonwealth Edison company of Chicago, Detroit Edison company and Yankee Atomic Electric Power company were the most important. The Atomic Energy commission could also produce electric power at experimental facilities and was authorized to dispose of its surplus to public agencies, co-operatives and private utilities in high-cost power areas. The greatest barrier to private investment thus far stemmed from the nonavailability of insurance coverage.

(M. G. G.)

Canada.—The largest current project in 1955, the building of 2,500-mi. \$350,000,000 natural gas pipeline from the oil fields of Alberta to the consumer markets of eastern Canada, was bogged down by difficulties in raising the required capital. A solution seemed to be imminent whereby the federal government and the province of Ontario would advance the cost of building the large unprofitable link through the uninhabited parts from Manitoba to central Ontario. Meanwhile, however, Trans-Canada Pipe Lines had undertaken to build the 335-mi. line from Toronto to Montreal, with a spur to Ottawa, which, pending the arrival of gas from western Canada, would serve those territories with gas imported from the U.S.

Nine hundred miles were added in 1954 to the network of oil pipelines and 209,000,000 bbl. were shipped through against 160,000,000 bbl. in 1953. In the first eight months of 1955

throughput of 134,000,000 bbl. was again 20% ahead of the same 1954 period.

Canadian railways carried less freight and fewer passengers in 1954 than in the preceding year, and the two large companies experienced a drop in operating revenues—Canadian Pacific railway to \$461,000,000 against \$509,000,000 and Canadian National railways to \$641,000,000 from \$697,000,000. The trend was sharply reversed in 1955 when car loadings for the first ten months came to 3,396,000, up more than 11% from the previous year.

The power production of central electric stations rose from an average monthly rate of 5,457,000,000 kw. in 1953 to 5,761,000,000 kw. in 1954 and exceeded this rate by more than 11% during the first eight months of 1955.

The largest telephone utility, the Bell Telephone Company of Canada, added 167,000 telephones to its operation during 1954, bringing the total to 2,294,000. During 1955 the company was installing 39 relay stations as part of a transcontinental microwave radio relay system for coast-to-coast television service.

Canada's public utilities were planning to spend \$1,077,000,000 on capital account during 1955 as compared with \$1,114,000,000 in 1954.

(R. RR.)

Publishing: see BOOK PUBLISHING AND BOOK SALES; NEWSPAPERS AND MAGAZINES.

Puerto Rico. A self-governing commonwealth in the West Indies voluntarily associated with the United States, Puerto Rico is the smallest and easternmost island of the four Greater Antilles, which together with the Lesser Antilles form a chain of about 200 islands beginning south of the tip of Florida and extending to the northeastern coast of Venezuela. Puerto Rico has an area of 3,435 sq.mi. Population (1950 census) 2,210,703; (July 1, 1955, estimate) 2,264,000. Chief cities (1950 census): San Juan, the capital, 224,767 (including Río Piedras, annexed in 1951, 357,205); Ponce, 99,492; Mayagüez, 58,944; Caguas, 33,759; and Arecibo, 28,659. Language: Spanish; English also taught in the schools.

History.—During the fiscal year 1954-55 two new important acts were enacted by the legislative assembly. One provided for the establishment of the Institute of Puerto Rico Culture and the other established the right of every person who is head of a family to possess and enjoy as a homestead a property of not more than \$1,500 in value. This act states that the right of homestead is unrenounceable and that no sale shall be made under a judgment or execution of any property when the same is claimed or occupied as a homestead.

In the same year a total of 781 trainees and visitors came to Puerto Rico through the Office of Technical Cooperation of the commonwealth department of state. Under this program, 2,374 trainees, visitors and observers came to Puerto Rico, from May 1950 to Aug. 1955, from 88 countries of the free world to make studies in different fields of interest, such as housing, community development, fiscal programs, public administration, budgeting, planning, personnel administration, hydroelectric development, health education and agricultural and industrial development.

The chief commonwealth officers for 1955 were: governor, Luis Muñoz Marín; secretary of state, Roberto Sánchez Vilella; secretary of justice, José Trias Monge; secretary of the treasury, Rafael Picó; secretary of education, Mariano Villaronga; secretary of labour, Fernando Sierra Berdecia; secretary of public works, Roberto Sánchez Vilella; secretary of health, Juan A. Pons; secretary of agriculture and commerce, Luis Rivera Santos; comptroller, Rafael de J. Cordero; head of the Institute of Cooperative Development, Ramón Colón Torres; chief justice

of the supreme court, A. Cecil Snyder; president of the senate, Samuel R. Quiñones; and speaker of the house of representatives, Ernesto Ramos Antonini.

Education.—Enrolment for the school year 1954-55 in public and private, day and night schools totalled 652,375, made up as follows: elementary, 467,814; secondary, 153,421; vocational, 1,579; and special classes for adults, 29,561. Of the total population 6-18 years of age, 73.4% was enrolled. Public and private day schools enrolled 571,029, while 81,346 were enrolled in night and vocational schools. The number of public school teachers was 11,537.

Resources available for public elementary and secondary schools, vocational education and rehabilitation and related services during 1954-55 were estimated as follows: from commonwealth sources, \$44,505,000; from federal sources, \$5,830,000; total, \$50,335,000.

The University of Puerto Rico enrolled more than 13,000 students. Other institutions of higher learning were: Polytechnic institute at San Germán, College of the Sacred Heart at Santurce, Catholic university at Ponce and Puerto Rico Junior college at Río Piedras.

Banking and Finance.—On June 30, 1955, the 13 banks and the various branches reported assets of \$414,325,000; total deposits, \$314,025,466; total bank loans, \$217,015,510; and bank debits, \$417,851,383.

The commonwealth government revenues related to central government purposes during the fiscal year 1954-55 totalled \$161,161,773, of which \$131,303,380 was received into the general fund; the balance went to special funds.

Total appropriations for central government purposes, from all funds, amounted to \$181,494,990, of which \$151,952,498 was general fund appropriations. The commonwealth government net debt as of June 30, 1955, was estimated at \$39,115,764. The net income of the Puerto Rican economy during fiscal year 1953-54 was estimated at \$961,400,000.

Trade.—During the year ended June 30, 1955, the value of all merchandise exported amounted to \$352,940,580, of which \$342,577,772 comprised shipments to the United States. The value of all merchandise imported amounted to \$574,539,870, of which \$524,282,343 represented shipments from the United States.

Communications.—As of June 30, 1955, a total of 105,413 motor vehicles was registered. Passable by motor vehicles, the urban mileage of streets was 834.7, and the rural mileage of roads was estimated at 3,654.1. The passenger movement totalled 599,800 persons, made up of 315,491 departures and 284,309 arrivals. There were 52,166 telephones in service and 29 broadcasting stations, including two television stations. A total of 2,741 vessels with a net registered tonnage of 13,072,438 entered the 11 ports of the island.

Agriculture.—Yields of the various agricultural products for the crop year 1955 were estimated as follows: sugar cane, 9,872,967 short tons; tobacco, 340,100 cwt.; pineapples, 30,170 short tons; coffee, 193,000 cwt.

Manufacturing.—Production of the most important items during fiscal year 1954-55 were: raw sugar, 1,164,902 short tons; refined sugar, 210,430 short tons; blackstrap molasses, 56,278,713 gal.; distilled spirits, 4,141,588 proof gal.; beer, 14,720,845 gal.; rum, 4,172,194 wine gal.; portland cement, 4,060,519 bbl. of 376 lb. each; cigars, 141,235,000 units. The total value of building permits granted was \$54,757,069. Electric power generated totalled 963,060,022 kw.hr., of which 252,878,510 kw.hr. was generated by water power.

(J. R. N.)

Mineral Production of Puerto Rico

(In short tons, except as noted)

Mineral	1952		1953	
	Quantity	Value	Quantity	Value
Cement (bbl.)	3,994,000	\$10,518,000	3,641,000	\$ 9,335,000
Iron ore	155,000	797,000	..	..
Lime	9,000	195,000	7,000	157,000
Salt	13,000	122,000	13,000	131,000
Sand and gravel	123,000	164,000	227,000	250,000
Stone	689,000	1,807,000	648,000	1,237,000
Other Minerals . . . . .	..	7,000	..	20,000
Total . . . . .	..	\$13,610,000	..	\$11,130,000

Mineral Production.—The accompanying table shows the tonnage and value of those mineral commodities produced in Puerto Rico in 1952 and 1953 (preliminary) whose value exceeded \$100,000.

Pulitzer Prizes. The annual Pulitzer prizes in journalism, letters and music, first awarded in 1917, were established at Columbia university by the will of Joseph Pulitzer. The five prizes in letters, of \$500 each, were awarded in 1955 as follows: fiction, to William Faulkner for *A Fable* (Random House); biography, to William S. White for *The Taft Story* (Harper); history, to Paul Horgan for *Great River, the Rio Grande in North American History* (Rinehart); poetry, to Wallace Stevens for his *Collected Poems* (Knopf); and drama, to Tennessee Williams for *Cat on a Hot Tin Roof* (New Directions). This was Williams' second Pulitzer award, he having received the drama prize in 1947 for *A Streetcar Named Desire*.

Journalism prizes (\$1,000 each, except for the award for disinterested and meritorious public service which is a gold medal) were awarded as follows: for disinterested and meritorious pub-



BURL IVES AND BARBARA BEL GEDDES in a scene from "Cat On a Hot Tin Roof," 1955 Pulitzer prize-winning play by Tennessee Williams

lic service rendered by a U.S. newspaper, to the *Columbus Ledger* and *Sunday Ledger-Enquirer* (Ga.) for an editorial attack which helped to destroy the corrupt city government in Phenix City, Ala.; for distinguished editorial writing, to the *Detroit Free Press* (Mich.) for an editorial by Royce Howes entitled "The Cause of a Strike," which analyzed the responsibilities of labour and management in the unauthorized Chrysler strike of July 1954; for a distinguished example of local reporting under pressure of edition time, to Mrs. Caro Brown, of the *Alice Daily Echo* (Tex.), who uncovered a one-man political rule in Duval county; for a distinguished example of local reporting not under pressure of edition time, to Roland Kenneth Towery, of the *Cuero Record* (Tex.), who exposed a scandal in the administration of the Veterans Land program in his state; for a distinguished example of reporting on national affairs, to Anthony Lewis, of the *Washington Daily News* (D.C.), for a series of articles considered to be responsible for clearing a navy department employee unjustly dismissed as a security risk; for a distinguished example of reporting on international affairs, to Harrison E. Salisbury, of the *New York Times*, for a series of articles, "Russia Re-Viewed"; for a distinguished cartoon, to Daniel R. Fitzpatrick, of the *St. Louis Post-Dispatch*, for his cartoon, "How Would Another Mistake Help?" commenting on possible U.S. intervention in Indochina. The award also recognized this cartoonist's work throughout 1954 and his entire career, he having previously won the Pulitzer prize in 1926.

The prize for the outstanding example of news photography went to John L. Gaunt, Jr., of the *Los Angeles Times*, for a picture captioned "Tragedy in the Surf," showing at the ocean's edge young parents whose child had been drowned.

The prize in music was awarded to Gian-Carlo Menotti for "The Saint of Bleecker Street." Menotti also won the Pulitzer prize in music in 1950 for "The Consul." The \$1,500 scholarship in art was awarded to Jack W. Henderson, a student at the Art Students League of New York. (A. J. RR.)

Pulp Industry: see PAPER AND PULP INDUSTRY.

Pyrite: see MINERAL AND METAL PRODUCTION AND PRICES.

Qatar: see ARABIA.

Quakers: see FRIENDS, RELIGIOUS SOCIETY OF.

Quarles, Donald A(burey) (1894—), U.S. secretary of the air force was born at Van Buren, Ark., on July 30, and took his bachelor's degree at Yale university in 1916, specializing in mathematics. He then enlisted in the U.S. army and saw service as an artillery officer in France during World War I. Mustered out in 1919, he joined the engineering division of Western Electric company—later the Bell Telephone laboratories—of which he became vice-president in 1948. In 1952 he was named vice-president of Western Electric and president of Sandia corporation, a subsidiary of Western Electric. In 1946-47 he was the Republican mayor of Englewood, N.J. In 1952-53 he was president of the American Institute of Electrical Engineers. On July 28, 1953, he was appointed U.S. assistant secretary of defense for research and development, in which office he supervised the development of new weapons, especially intercontinental and other types of guided missiles. He also was a key figure in the plans for the earth-circling artificial satellite scheduled for launching in 1957-58.

Quarles was named by Pres. Dwight D. Eisenhower Aug. 11, 1955, as secretary of the air force to succeed Harold E. Talbott.

Quebec. Largest province in Canada, Quebec has an area of 594,860 sq.mi. and extends westward from the Gulf of St. Lawrence, along the lower St. Lawrence river. Pop.: (1951) 4,055,681; (official June 1, 1954, est.) 4,391,050. Pop.: French language 82%, British origin 12.1%, others 5.9%. Capital: Quebec city, pop. (official est. 1954) 279,378. Largest city: Montreal, pop. (metropolitan area, official est. 1954) 1,563,363.

History.—Economic development rather than political affairs caught the Quebec headlines in 1955. Premier Maurice Duplessis attended opening ceremonies of a new \$20,000,000 asbestos ore-treating mill at Asbestos, Que., and then announced the construction of a \$6,000,000 smelter plant for copper-nickel concentrates at Chicoutimi in the Saguenay river-Lac St. Jean area. In the nearby Chibougamau mining field, Opemiska copper mine started ore production, while in northeastern Quebec the Aconic titaniferous iron ore interests concluded contracts to ship iron ore to west Germany and to United States steel mills.

Premier Duplessis and his government extended rent controls for another year. The Union National administration also made an upward revision of benefits under the Workmen's Compensation act. In 1955 the new Quebec personal income tax of 15% of the federal tax less a 5% deduction went into effect. The Quebec stand on taxation provoked a conference of all the provinces with the federal government to review tax rental agreements under which all provinces except Quebec yield income tax rights in exchange for grants. Construction of the Quebec portion of the international St. Lawrence Seaway project commenced in the port of Montreal and immediately west with construction of dikes for the deep water channel.

Education.—Primary school figures for 1952 (latest available in 1955) showed 734,102 pupils and 31,785 teachers. There were 6,431 students in normal schools, 16,124 students in secondary classical colleges and 40,228 students in universities. The government budgeted \$60,000,000 for educational purposes in 1955-56.

Health and Welfare.—The meal tax of 5% on restaurant meals priced 60 cents or more in 1953 raised \$4,165,683 toward support of general hospitals and other institutions. Liquor taxes contributed \$1,000,000, and other sources included amusement tax, theatre and dance hall admissions, race tracks and pari-mutuels. Nevertheless, the province made up a deficit of \$24,869,590 out of general revenues. The province's 50% share of old-age pensions in 1952 totalled \$5,893,084; its 25% share of blind pensions was \$369,000. In March 1954 there were 1,562,685 children in 585,050 families receiving monthly allowances ranging from \$5 to \$8.

Transportation and Communication.—Quebec reported 41,757 mi. of public roads as of March 31, 1953, exclusive of the large cities, with 68.8% classified as improved roads. Latest figures (1953) showed motor vehicle registrations at 617,855. In 1952 there were 850,528 telephones. Railway track mileage was 5,108.39 in 1952.

Banking and Finance.—The provincial budget for 1954-55 for the period ended March 31, 1955, reported revenues of \$327,325,000, ordinary expenditures of \$262,045,000, capital expenditures of \$64,596,000 and public debt charges of \$26,701,000. Surplus on ordinary account was \$38,799,000, and deficit after capital expenditures was \$26,017,000. Capital expenditures for the year included \$3,088,000 for development of hydraulic resources, \$43,910,000 for roads, \$10,895,000 for public works. Ordinary expenditures included \$27,298,000 for youth and social welfare, \$10,173,000 for land settlement, \$40,818,000 for education, \$60,408,000 for health, \$11,560,000 for public works and \$29,897,000 for roads. Savings deposited in provincial co-operative people's savings banks totalled \$286,883,023 in 1953.

Agriculture.—Gross value of agricultural production was \$491,000,000 in 1954, which was four times the average value for the 1935-39 period. Farm cash income in 1954 was \$408,000,000, nearly 4% above 1953. Cash income (1954) included: dairy products, \$154,000,000; livestock, \$112,000,000; poultry and eggs, \$51,000,000; forest products, \$45,000,000; fruits and vegetables, \$20,000,000; field crops, \$8,000,000; miscellaneous products, \$18,000,000.

Fisheries, Furs and Forests.—In 1954 lobsters for the second consecutive year displaced cod as top producer for the fisheries industry with a total value of \$823,569. Cod caught was worth \$766,714, about half the traditional average. Total value of pelts of fur-bearing animals taken in 1953 in Quebec was \$2,157,388. Mink led with \$910,128, then beaver with \$373,300, muskrat with \$308,515. Silver-blue mink totalled an extra \$147,077 and mutation mink \$144,928. In the lumbering industry, gross value of Quebec production reached \$89,401,801 in 1951, an increase of 21.5% over 1950.

Manufacturing.—Quebec is Canada's second greatest manufacturing province, with 12,024 manufacturing establishments reported in 1952. Six leading industries are pulp and paper, nonferrous metals, petroleum processing, meat packing, cotton fabrics and clothing. Value of manufactured products in 1953 was \$5,370,000,000 or 30% of all Canadian manufacture. Employees totalled 439,667 with earnings totalling \$1,216,894,000.

Mining.—Value of mineral production reached a new peak in 1954 at \$275,600,000, an increase of 9.2% over 1953 and 2% over the previous peak of 1952. Production included: metals, \$126,200,000; industrial minerals, \$95,000,000; building minerals, \$54,400,000; asbestos, \$79,300,000; copper, \$48,200,000; gold, \$37,300,000; zinc, \$25,300,000.

(W. WD.)

Racial Segregation: see EDUCATION; LAW.

Racing and Races: see AIR RACES AND RECORDS; AUTOMOBILE RACING; HORSE RACING; MOTOR-BOAT RACING; TRACK AND FIELD SPORTS; YACHTING.

Radar: see ELECTRONICS; TELEPHONE.

Radford, Arthur William (1896-), U.S. naval officer, was born at Chicago, Ill., on Feb. 27; graduating from the U.S. Naval academy at Annapolis, Md., in 1916, he was commissioned ensign that year and subsequently advanced through the ranks to full admiral in 1949. An early navy flier, he was trained at Pensacola, Fla., air station in 1920 and was assigned to the naval bureau of aeronautics in Washington, D.C. (1921-23). Later he was assigned to air units of various ships at sea and was commander of the naval air station at Seattle, Wash. (1937-40). During the early part of World War II, Radford was in charge of aviation training at the naval bureau of aeronautics; in Jan. 1943 he was ordered to duty in the Pacific as commander of a task force preparing the way for and supporting U.S. landings on Tarawa, Makar and Makin Islands. In Nov. 1944 he became commander of an aircraft carrier division in the Pacific, participating in the two Jima and Okinawa campaigns and in air strikes against the Japanese homeland. After the war he was assistant deputy chief of naval air operations in Washington, then commander of an Atlantic task fleet. He became vice-chief of naval operations in Jan. 1948, and the following year was appointed commander in chief of the U.S. Pacific fleet and high commissioner of U.S. trust territories in the Pacific.

On May 12, 1953, Radford was nominated by Pres. Dwight D. Eisenhower to succeed Gen. Omar N. Bradley as chairman of the U.S. joint chiefs of staff—first navy man to hold this post.

During a tour of the far east early in 1955, Radford de-

clared that the U.S. would use its nuclear weapons if necessary in meeting any new communist attack on South Korea. Later he suggested the possibility of a blockade of Red China. In April he returned to Formosa for secret talks with Chiang Kai-shek. On May 25, 1955, he was appointed to his second term as chairman of the joint chiefs of staff.

Radio and Television. The number of radio stations in operation or under construction throughout the world in Oct. 1955 was estimated at about 8,200. This number, which reflected little change from the estimate of 8,000 in Oct. 1954, included amplitude modulation (AM) and frequency modulation (FM) broadcasting stations and also boosters or relay stations which are used for broadcasting purposes in some parts of the world. In television, according to compilations made by *Broadcasting-Telecasting* magazine for its 1955-56 *Telecasting Yearbook*, about 700 to 750 stations were either on the air or in process of construction. This number also was approximately the same as in Oct. 1954.

Throughout the world, there were 225,000,000 to 250,000,000 radio receiving sets in use as against 210,000,000 to 220,000,000 a year earlier. In addition, about 33,500,000 television sets were in use in the U.S., and *Broadcasting-Telecasting's* compilations showed another 7,000,000 to 10,000,000 in other parts of the world. The estimated world total of 40,500,000 to 43,500,000 television sets may be compared with 36,800,000 sets in Oct. 1954.

U.S. Manufacturing.—Production of radio sets in the U.S. in 1954, latest year for which official figures were available in 1955, totalled 10,400,530. This figure, from records kept by the Radio-Electronics-Television Manufacturers association, compared with 13,368,556 turned out in 1953 when production was the highest since 1950. Television-set production in 1954 continued to climb, reaching a total of 7,346,715 as compared with 7,214,827 in 1953 and the high of 7,463,800 in 1950. In reporting the 1954 output, the trade association pointed out that 21,500 colour television sets and 1,383,486 receivers capable of receiving the new ultrahigh-frequency (UHF) transmissions were included in the total. The 1954 radio total consisted of the following: 3,067,644 home sets; 1,333,518 portables; 4,124,460 automobile radios; and 1,874,908 clock radios.

During the first eight months of 1955 radio-set production picked up sharply, and television-set output also continued to gain. Reports of the manufacturers' trade association showed 8,725,012 radio sets manufactured during this period, a gain of 43% over the same period of 1954, while television-receiver output totalled 4,820,991 for a 27% increase. Automobile sets accounted for 4,469,179 of the radios turned out during the first eight months; home sets totalled 1,792,142; portables 1,355,895; and clock radios 1,107,796.

Sets in Use.—The total number of radio sets in working order in the U.S. in Sept. 1955 was estimated by the Radio Advertising bureau, a trade organization, at 121,000,000. This number included 80,000,000 in homes, 31,000,000 in automobiles and 10,000,000 in other locations outside the home. These estimates reflected a 16-month growth of 5,260,000 home and 4,820,000 automobile sets as compared with the findings of a special study conducted by Alfred Politz Research Inc., independent research firm, which showed 74,740,000 home and 26,180,000 automobile radios in May 1954. The Politz firm did not estimate out-of-home sets other than those in cars.

The number of television receivers in working order in the U.S. in early Oct. 1955 was estimated unofficially as about 33,500,000. The U.S. census bureau reported that a total of 32,000,000 homes had one or more television sets as of June 1955.

U.S. Stations and Networks.—The total number of AM, FM and TV commercial stations on the air or under construction in the U.S. at the start of Oct. 1955 was 4,056 as compared with 3,887 a year earlier, according to figures compiled by *Broadcasting-Telecasting* from official records of the Federal Communications commission. Of the Oct. 1955 total, 3,739 were on the air as against 3,585 a year earlier. Not counted in these totals were 33 TV and a half-dozen FM stations which had been authorized to operate, noncommercially, in the educational field.

Commercial AM radio stations numbered 2,917 in Oct. 1955, a 12-month gain of 183. The number of these actually on the air stood at 2,764, compared with 2,611 in Oct. 1954. Commercially operated FM stations meanwhile continued to decline in number. The Oct. 1955 total was 559, compared with 575 in Oct. 1954 and 592 a year earlier. Of the 559 authorized, 540 were on the air in Oct. 1955, a drop of 21 during the 12-month period and 31 less than the Oct. 1953 operating total.

In television, 580 commercial stations had been authorized as of Oct. 1955, and 435 of these were in operation. These represented a net gain of two authorizations since Oct. 1954 and an increase of 22 operating outlets. Meanwhile, however, holders of 56 station authorizations had voluntarily given them up during the same 12-month period, raising to 153 the number of such permits relinquished since the FCC lifted its "freeze" on construction in mid-1952. Of the 153 permits thus abandoned, 30 were for stations assigned to operate in the established very-high-frequency (VHF) band of the spectrum and 123 were for stations in the newer ultrahigh-frequency (UHF) region.

In addition to the commercial television authorizations, 33 noncommercial educational permits brought the number of TV stations operating or authorized to a total of 613. The number of noncommercial outlets actually in operation more than doubled, totalling 16 in Oct. 1955 as compared with 7 in Oct. 1954.

U.S. Networks.—There was one casualty among the nationwide television networks in 1955. The Du Mont TV network was discontinued in September after months of steadily dwindling income. In Oct. 1955 its parent corporation, Allen B. Du Mont laboratories, of which Paramount Pictures Inc. was an important stockholder, approved a stock spin-off in which an entirely new Du Mont Broadcasting corporation was formed to concentrate on the two television stations already owned by the network, WABD in New York city and WTTG in Washington, D.C., and to acquire additional stations and operate them more or less independently rather than as part of a separate network.

The other three national television networks continued to grow. They were operated by American Broadcasting company, Columbia Broadcasting system and National Broadcasting company.

All four nation-wide radio networks continued operations. Three of these were operated by the three remaining television network companies, ABC, CBS and NBC. The fourth was the Mutual Broadcasting system.

Subscription Television.—A controversy which split the broadcasting industry and aroused much public debate took form in 1955 in a movement to legalize subscription or pay-as-you-see television.

There were many techniques by which subscription television could be conducted. The essential principle was that television programs offered under any such system could not be seen by a set owner unless he paid to see them. The principal advocates of the pay-TV theory maintained that programs of a quality and scope too expensive for standard television broadcasters—Broadway musical shows, operas, great sports events, etc.—should be made available, via subscription TV, to viewers willing to pay for them. The probable fees for such shows were

generally estimated at around \$1 per program. Owners whose sets were equipped to receive such programs would be allowed to pick and choose those which they wanted, paying only for those they tuned in.

Major segments of the broadcasting industry condemned the toll television idea wholeheartedly. They contended it was contrary to the fundamental theory of free broadcasting in the U.S., that it was unfair to make the public pay for the privilege of viewing and that in the long run pay television would destroy the present system of commercial TV broadcasting altogether. They claimed—and proponents of the pay system denied—that pay-television operators would outbid broadcasters for rights to outstanding programs and events such as are now provided free, with the result that free television's programming would suffer and the public eventually would have little or no programming available to it except that for which it was willing to pay.

U.S. Commercial Broadcasting.—Total revenues of the radio broadcasting industry (AM and FM, networks and stations) in 1953, latest year for which official radio figures were available by Oct. 1955, edged 1.1% above the preceding year's record total to a new peak of \$475,300,000, according to reports compiled by the Federal Communications commission from data supplied by networks and stations. The much younger television industry also reached a new high in 1953, gaining 33% for a total of \$432,700,000. Thus, FCC pointed out, the radio and television broadcasting industry's grand total revenues—that is, money received from the sale of time, talent and program material to advertisers—reached \$908,000,000 in 1953 for the highest total on record. (See Table I.)

In 1954 TV networks and stations continued their strong climb, recording \$593,000,000 in revenues for a gain of 37% over the 1953 television total. The comparable report for the radio industry in 1954 had not been completed by FCC by Oct. 1955.

Radio.—While the latest report available from FCC showed that total AM-FM broadcasting revenues had gained in 1953, the share recorded by the networks and their owned stations declined slightly. The four nation-wide networks, three regional networks and 22 network-owned stations reported 1953 revenues aggregating \$97,300,000, or 3.3% less than in 1952. With operating costs amounting to \$86,900,000, the networks and their owned stations were left with \$10,400,000 in profits, a drop of 7.1% below the preceding year's total. A total of 2,457 other radio stations reported total revenues of \$378,000,000, a 2.4% gain, but expenses totalling \$333,400,000 cut their aggregate profits to \$44,600,000 before payment of federal income taxes, or 8.8% less than the profit total in 1952. For the broadcasting industry as a whole (all networks and stations) profits were down 8.4% from the 1952 level, amounting to \$55,000,000. (See Table II.)

Radio time sales, the backbone of revenues, aggregated \$477,206,000 in 1953 for a slight gain (0.9%) over 1952. Continuing the trend that had been in effect for several years, time sales by networks showed a drop, falling 10.4% to a total of \$98,057,000. Nonnetwork time sales to national and regional advertisers, however, increased 4.8% to a total of \$129,605,000 and time sales to local advertisers went up by almost as great a proportion, 4.1% to \$249,544,000. These figures did not include 45 FM stations that were independently operated. Nor did FCC make a separate report on FM finances in 1953 as it had done on occasion in the past. However, because of the comparatively small number of FM stations in operation and because many of these did not attempt to sell time but rather were operated as a "bonus" to advertisers buying time on affiliated AM stations, FM's share of the AM-FM totals was known to be minor.

Estimated Radio Net Time Sales for 1954.—Although the FCC report on the radio industry's 1954 finances had not been

issued by Oct. 1955, *Broadcasting-Telecasting* estimated 1954 net time sales would approximate \$453,385,000, broken down as follows: national network \$76,219,000; regional and miscellaneous network \$4,666,000; national and regional nonnetwork sales \$121,935,000; and local time sales \$250,565,000.

Television.—Total broadcasting revenues of the television industry—networks and stations—went from \$324,200,000 in 1952 to \$432,700,000 in 1953 to \$593,000,000 in 1954, according to the FCC reports. Broadcast income, revenues less expenses but before federal income tax, rose from \$55,500,000 to \$68,000,000 to \$90,300,000 in the same period.

For all networks and stations, time sales in 1953 totalled

Table I.—Broadcast Revenues, Expenses and Income of Networks and Stations of AM, FM and Television Broadcast Services

Item	1953 (in 000,000)	1952	Per cent increase or decrease in 1953
Broadcast revenues			
Radio	\$475.3	\$469.7	1.1
Television	432.7	324.2	33.5
Industry total	\$908.0	\$793.9	14.3
Broadcast expenses			
Radio	\$420.3	\$409.6	2.6
Television	364.7	268.7	35.7
Industry total	\$785.0	\$678.3	15.7
Broadcast income (before federal income tax)			
Radio	\$ 55.0	\$ 60.1	—8.4
Television	68.0	55.5	22.5
Industry total	\$123.0	\$115.6	6.4

Note: 1953 radio data cover the operations of four nation-wide networks and three regional networks, 2,434 AM and AM-FM and 45 independent FM stations. 1952 data are for the same networks and 2,324 AM and AM-FM and 56 independent FM stations. 1953 TV data cover the operations of four networks and 334 stations; 1952 data are for the same networks and 122 stations.

Table II.—Broadcast Revenues, Expenses and Income of Radio Broadcast Services

Item	1953 (in 000,000)	1952	Per cent increase or decrease in 1953
Broadcast revenues			
4 nation-wide networks and 3 regional networks (including owned and operated stations)*	\$ 97.3	\$100.6	—3.3
Other radio stations†	378.0	369.1	2.4
Total	\$475.3	\$469.7	1.2
Broadcast expenses			
4 nation-wide networks and 3 regional networks (including owned and operated stations)*	\$ 86.9	\$ 89.4	—2.8
Other radio stations†	333.4	320.2	4.1
Total	\$420.3	\$409.6	2.6
Broadcast income (before federal income tax)			
4 nation-wide networks and 3 regional networks (including owned and operated stations)*	\$ 10.4	\$ 11.2	—7.1
Other radio stations†	44.6	48.9	—8.8
Total	\$ 55.0	\$ 60.1	—8.4

*Includes the operations of 25 network-owned stations in 1952 and 22 network-owned stations in 1953. †Includes 2,355 AM, AM-FM or independent FM stations in 1952 and 2,457 in 1953.

Table III.—Broadcast Revenues, Expenses and Income of 4 Television Networks and 410 Television Stations

Item	1954	1953* (in 000,000)	1952†
Broadcast revenues			
4 networks (including 16 owned and operated stations)	\$306.7	\$231.7	\$180.2
92 prefreeze TV stations	200.9	174.5	143.4
Subtotal	\$507.6	\$406.2	\$323.6
Postfreeze TV stations			
177 VHF stations	\$ 60.0	\$ 16.1	{ \$ 0.6
125 UHF stations	25.4	10.4	
Industry total	\$593.0	\$432.7	\$324.2
Broadcast expenses			
4 networks (including 16 owned and operated stations)	\$270.2	\$213.7	\$170.3
92 prefreeze TV stations	133.3	114.0	97.6
Subtotal	\$403.5	\$327.7	\$267.9
Postfreeze TV stations			
177 VHF stations	\$ 63.8	\$ 20.3	{ \$ 0.8
125 UHF stations	35.4	16.7	
Industry total	\$502.7	\$364.7	\$268.7
Broadcast income (before federal income tax)			
4 networks (including 16 owned and operated stations)	\$ 36.5	\$ 18.0	\$ 9.9
92 prefreeze TV stations	67.6	60.5	45.8
Subtotal	\$104.1	\$ 78.5	\$ 55.7
Postfreeze TV stations			
177 VHF stations	—\$ 3.8	—\$ 4.2	{ —\$ 0.2
125 UHF stations	— 10.0	— 6.3	
Industry total	\$ 90.3	\$ 68.0	\$ 55.5

*1953 data cover 4 networks and 16 owned stations; 92 prefreeze and 226 postfreeze stations (114 VHF and 112 UHF). †1952 data cover 4 networks and 15 owned stations; 93 prefreeze and 14 postfreeze stations.



MARY MARTIN AS PETER PAN in a 1955 colour television production of the J. M. Barrie play

\$384,692,000 or 36% more than in 1952. Network time sales were up 25% to \$171,900,000; nonnetwork time sales to regional advertisers gained 55% to reach \$124,318,000; and local time sales rose 36% to \$88,474,000. Sales of talent and program material to advertisers added \$109,546,000 or 25% more than in the preceding year.

U.S. Programs.—Big shows, such as the 90-minute, specially prepared "colour spectaculars" which the major networks launched in 1954, became regular television fare in 1955. NBC-TV, which created the "spectacular," continued this series and initiated others, including one called "Wide Wide World" which, using live cameras, took viewers to outstanding events, historic sites and scenic spots not only in the U.S. but occasionally in Canada and Mexico as well. NBC-TV also presented, among other features, a colourcast of a Broadway production of James M. Barrie's classic *Peter Pan* which was produced by an estimated 65,000,000 viewers. CBS-TV produced a film version of Charles Dickens' *A Christmas Carol* at Christmastime and, among other extravaganzas on its schedule, presented playwright-actor Noel Coward with musical comedy star Mary Martin (who also had starred in *Peter Pan*) in a special 90-minute production opening a new CBS-TV series in Oct. 1955. ABC-TV, although not yet telecasting in colour, introduced a number of major series. One of its most popular was a series of hour-long weekly programs by Walt Disney, creator of the Disney motion-picture cartoons, which, called "Disneyland," quickly became the top-rated television series for children. Another, launched in the fall of 1955, presented similar programming for an hour a day, Monday through Friday, under the name "Mickey Mouse Club."

The volume of colour television broadcasting increased greatly in 1955. NBC-TV's schedule for the fall season called for almost five times as many hours of colour programming as

that network presented in the 1954 fall season. In Oct. 1955, for instance, NBC-TV was ready to present 37 hours of live studio programming in colour as compared with 7 hours in Oct. 1954, and the 37 hours did not include World Series baseball, football games and other outside events which NBC-TV telecast in colour. CBS-TV planned a colour increase of approximately the same magnitude although full details of its plans had not been announced by Oct. 1955.

The summer and fall of 1955 also produced a boom in the popularity of big jack-pot quiz shows. CBS-TV started the trend when it launched "The \$64,000 Question," which offered prizes up to \$64,000 in cash to contestants. This show's immediate rise to the top of the audience ratings led other networks to launch new giveaway programs of their own, such as "The Big Surprise," which offered up to \$100,000 on NBC-TV, or to add new features to prize programs already on the air, such as "Stop the Music" on ABC-TV.

Radio network programming also underwent far-reaching changes in 1955. In the most radical departure, NBC launched its week-end "Monitor" series, a 40-hour, round-the-clock program of news, features, music, interviews, sports, vignettes, etc., with pickups from points around the world as well as in the U.S. After an extended tryout of "Monitor" as a week-end service, NBC planned to extend the same concept of programming into daytime hours each day of the week, starting in November.

ABC radio also introduced, in Oct. 1955, a new type of radio programming designed for "personalized listening." Inserted at first into ABC radio's evening schedule but slated for later expansion into additional hours, the new format encompassed short segments of such diverse fare as advice on marriage, family and career problems, inspirational messages, on-the-spot visits to people and places in the U.S. and Europe, accounts of unusual events, classical readings and humorous features.

Mutual also put more and more stress on what it called "companionate" radio programming, starting in mid-1955. CBS radio strengthened its evening line-up of programs featuring "name" talent, such as Bing Crosby and "Amos 'n' Andy," but did not follow the other networks' lead in departing from the traditional pattern of presenting regular programs of the usual lengths, 15 minutes, half-hour or full hour, at the same times week in and week out.

Both radio and television continued to devote substantial periods of time to the coverage of outstanding public events. One notable innovation for television occurred Oct. 25, 1954, when Pres. Dwight D. Eisenhower permitted a cabinet meeting to be televised for the first time in history. On Jan. 19, 1955, television and newsreel cameramen were allowed to cover a presidential news conference for the first time. The telecast was not live, but the films were edited quickly by the White House and carried on the networks the same day. This became regular procedure thereafter and the public gained an insight into national and international affairs that never before had been available to it.

In the field of entertainment programming, top-rated network programs—radio and television separately—are shown in the accompanying tables as they ranked at two different periods of 1955 (August and January).

Awards.—The 12th annual awards of the Alfred I. du Pont Awards foundation were presented in March to WHAS, Louisville, Ky., station owned by the *Louisville Times and Courier-Journal*, for "programming which consistently shows a lively sense of public responsibility and an awareness of public and community interests"; to KGAK in Gallup, N.M., for "initiative shown in establishing and maintaining radio service to the Navajo and Zuni Indians in their own languages, thereby bring-

ing radio communication for the first time to these Indian peoples"; to Eric Sevareid, CBS commentator, for "thoughtful and lucid analysis of the current scene, for penetrating knowledge of men and events combined with tolerance, reasonable-

Table IV.—Top-Rated Evening Network Radio Programs in the U.S.—
Winter Listening

Program	Rank		Homes reached*
	Jan. 1955	Jan. 1954	
"Lux Radio Theatre"	1	4	3,302,000
"Jack Benny Show"	2	2	3,118,000
"Dragnet"	3	—	2,843,000
"People Are Funny"†	4	3	2,752,000
"Our Miss Brooks"†	5	6	2,660,000
"People Are Funny"†	6	3	2,660,000
"Our Miss Brooks"†	7	6	2,614,000
"You Bet Your Life"	8	10	2,522,000
"FBI in Peace and War"	9	—	2,247,000
"My Little Margie"	10	5	2,110,000

*Homes reached during all or any part of the program, except for homes listening only one to five minutes. †"People Are Funny" and "Our Miss Brooks" in Jan. 1955 each had one to five minutes. ‡Measured in separate segments. Each listing above is for a different segment. Source: A. C. Nielsen Co., Chicago.

Table V.—Top-Rated Weekday Network Radio Programs in the U.S.—
Winter Listening

Program	Rank		Homes reached*
	Jan. 1955	Jan. 1954	
"Ma Perkins"	1	—	2,614,000
"Guiding Light"	2	3	2,568,000
"Our Gal Sunday"	3	1	2,522,000
"Young Dr. Malone"	4	—	2,522,000
"This Is Nora Drake"	5	8	2,522,000
"Young Widder Brown"†	6	—	2,522,000
"Young Widder Brown"†	7	—	2,522,000
"Perry Mason"	8	—	2,476,000
"Helen Trent"	9	2	2,476,000
"Road of Life"	10	—	2,476,000

*Homes reached during all or any part of the program, except for homes listening only one to five minutes. †Measured in separate segments. Each listing above is for a different segment. Source: A. C. Nielsen Co., Chicago.

Table VI.—Top-Rated Evening Network Radio Programs in the U.S.—
Summer Listening

Program	Rank		Homes reached*
	Aug. 1955	Aug. 1954	
"Dragnet"	1	2	1,341,000
"People Are Funny"†	2	5	1,202,000
"People Are Funny"†	3	5	1,156,000
"Godfrey's Talent Scouts"†	4	—	1,156,000
"Best of Groucho"	5	9	1,110,000
"All-Star Football Game"	6	—	1,110,000
"Our Land and Mine"	7	—	1,017,000
"Gene Autry Show"	8	8	971,000
"Godfrey's Talent Scouts"†	9	—	925,000
"Treasury Agent"	10	—	879,000

*Homes reached during all or any part of the program, except for homes listening only one to five minutes. †"People Are Funny" and "Godfrey's Talent Scouts" in Aug. 1955 each had more than one sponsor whose segments were measured separately. Each listing above is for a different segment. Source: A. C. Nielsen Co., Chicago.

Table VII.—Top-Rated Weekday Network Radio Programs in the U.S.—
Summer Listening

Program	Rank		Homes reached*
	Aug. 1955	Aug. 1954	
"Ma Perkins"	1	3	2,035,000
"Road of Life"	2	5	1,988,000
"Guiding Light"	3	2	1,988,000
"Our Gal Sunday"	4	6	1,942,000
"Helen Trent"†	5	7-4	1,896,000
"This Is Nora Drake"	6	—	1,896,000
"Perry Mason"	7	—	1,804,000
"House Party"	8	—	1,804,000
"Helen Trent"†	9	7-4	1,757,000
"Young Dr. Malone"	10	1	1,711,000

*Homes reached during all or any part of the program, except for homes listening only one to five minutes. †"Helen Trent" had more than one sponsor and their respective segments were measured separately. Each listing above is for a different segment. For the same reason, in Aug. 1954 one segment of "Helen Trent" was rated fourth and another was rated seventh. Source: A. C. Nielsen Co., Chicago.

Table VIII.—Top-Rated Network Television Programs in the U.S.—
Winter Viewing

(For two weeks ended Jan. 22, 1955, and Jan. 23, 1954)

Program	Rank		Homes reached	
	Jan. 1955	Jan. 1954	Jan. 1955	Jan. 1954
"I Love Lucy"	1	1	16,792,000	17,329,000
"I Love Lucy"	2	1	15,896,000	17,329,000
"Jackie Gleason Show"	3	6	15,602,000	12,260,000
"You Bet Your Life"	4	3	15,037,000	13,960,000
"Dragnet"	5	2	14,955,000	15,910,000
"Disneyland"	6	—	14,890,000	—
"Milton Berle Show"	7	5	14,678,000	13,708,000
"Martha Raye Show"	8	—	14,079,000	—
"Colgate Comedy Hour"	9	4	13,725,000	13,809,000
"Toast of the Town"	10	—	13,692,000	—

*"I Love Lucy" had two sponsors in Jan. 1955 and each of their segments was measured separately. Source: A. C. Nielsen Co., Chicago.

Table IX.—Top-Rated Network Television Programs in the U.S.—
Summer Viewing

Program	Rank		Homes Reached	
	Sept. 1955	Sept. 1954	Sept. 1955	Sept. 1954
"\$64,000 Question"	1	—	17,766,000	—
"Toast of the Town"	2	4	12,360,000	10,188,000
"Dragnet"	3	1	10,336,000	13,955,000
"Climax"	4	—	10,292,000	—
"Miss America Pageant"	5	—	10,246,000	—
"Lux Theatre"	6	—	9,801,000	—
"Two for the Money"	7	—	9,701,000	—
"Gunsmoke"	8	—	9,692,000	—
"Disneyland"	9	—	9,678,000	—
"Undercurrent"	10	—	9,482,000	—

Source: A. C. Nielsen Co., Chicago.

ness, and a leavening of friendly or caustic humor." Additionally, the foundation presented special commendations to WCBS-TV, New York city station owned by CBS, for shows of "unusual educational and spiritual value," and to KMJ-TV in Fresno, Calif., for "unusually comprehensive programming in the fields of agriculture and education."

The 15th annual George Foster Peabody awards for distinguished achievement in radio and television, administered by the Henry W. Grady school of journalism of the University of Georgia, Athens, with the national Peabody advisory board, were presented in April to George Gobel, NBC comic, in the field of television entertainment; John Daly of ABC in the field of radio-television news; the "Adventure" program on CBS-TV in television education; "Disneyland" on ABC-TV for youth and children's television programs; "Industry on Parade," a film by the National Association of Manufacturers, for television national public service; WJAR-TV, Providence, R.I., for its presentation on Hurricane "Carol" in the field of television regional public service; "Conversation" program on NBC for radio entertainment; "Man's Right to Knowledge" on CBS for radio education; "Pauline Frederick at the UN" on NBC for radio contribution to international understanding; KGAK, Gallup, N.M., for its "Navajo Hour" for radio local public service. The judges also issued special awards in television to "Omnibus" and "The Search," both CBS-TV programs, and a citation to Boris Goldovsky (Metropolitan Opera, ABC) for radio music. (See also ADVERTISING; FEDERAL COMMUNICATIONS

ANNOUNCERS AND COMMENTATORS of "Monitor," a network radio program introduced in 1955. The show acted as a co-ordinator of all week-end shows of the National Broadcasting company

COMMISSION; HUMOUR OF 1955; MOTION PICTURES.)

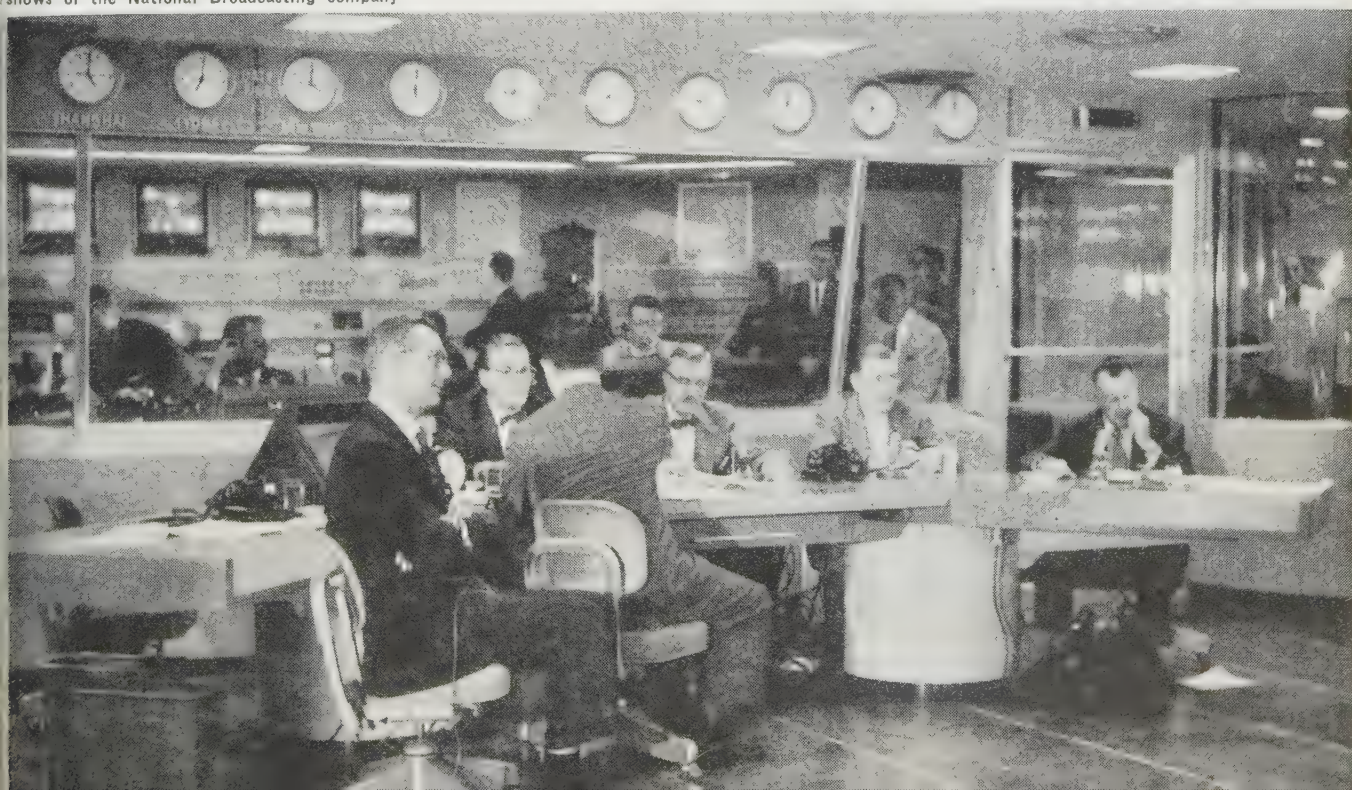
(S. T.F.; R. W. CR.)

Technical Developments.—The expansion of colour television as a nation-wide service continued during 1955, encouraged by the increasing production and sale of large-screen home receivers and a substantial rise in the total of hours devoted by the major television networks to programs in colour. Other significant developments included a growing trend toward simplification and miniaturization of electronic communications equipment, the development of promising new techniques for the long-distance transmission of VHF (very-high-frequency) and UHF (ultrahigh-frequency) radio signals and the broadening application of television to industrial, educational and medical uses.

Colour Television.—The growth of colour television was given impetus during 1955 by the introduction of a simplified 21-in. home colour receiver by the Radio Corporation of America and by major advances in standardizing and speeding production of the 21-in. colour picture tube. The new receiver, which entered production in early summer, incorporated 26 electron tubes in its circuits, compared with 36 employed in previous 21-in. colour sets. In manufacture of the picture tube for the television-set industry, RCA introduced a special optical lens to achieve the precise location of more than 1,000,000 tiny colour phosphor dots on the tube face by means of a projection process, thus simplifying substantially the task of achieving uniformity at an important stage in production.

In the field of studio colour equipment, several manufacturers completed and introduced new systems for telecasting colour film and slides and for further improving colour transmission. A simplified system for the live pickup of colour in studios was announced in July by Du Mont laboratories. This system, called Vitascan, employed a special lighting system in combination with a special camera.

Network colour broadcast facilities were further expanded with the opening of new studios on the west coast and the re-engineering of cross-country communications routes by the American Telephone and Telegraph company to accommodate colour programs. By the early part of 1955 these routes had been extended to carry colour to 139 broadcasting stations in



101 cities.

New types of transmission equipment also were put into limited use by A. T. & T., including a new microwave antenna system that was expected to permit the handling of up to 30 television programs or 20,000 telephone conversations simultaneously.

Closed-Circuit Television.—The development of new or improved closed-circuit equipment encouraged further application of television to a variety of medical, scientific, educational and industrial uses. In medicine, demonstrations were conducted to show the value of colour television in transmitting medical information from the operating room and the laboratory to medical students and medical conventions. Such demonstrations held on the east coast in January and September involved the telecasting of a surgical operation and an intercity consultation of pathologists concerning diagnosis of a diseased tissue. In Sept. 1955 the first installation of compatible colour television for hospital use was announced by the Walter Reed Army Medical centre, Washington, D.C., and RCA. Intended for use in instruction and consultation, the system was to include three complete colour chains installed at the Walter Reed hospital, the Army's Graduate Medical school and the Armed Forces Institute of Pathology. The systems would operate either independently or as an integrated system, with camera installations in operating rooms and laboratories and colour television receivers located at various points for convenient viewing. An innovation in the system was the newly developed RCA Vidicon colour television camera designed specifically for operating room use. The camera, approximately the same size and weight as standard black-and-white studio TV cameras, was developed in conjunction with separately packaged camera control, monitoring and power supply units to form a portable system weighing about 300 lb.

Several installations of closed-circuit television were completed during the year in educational institutions for group

instruction and demonstrations. Among them was an installation at New York university, New York city, for instruction of approximately 500 students. The most comprehensive of these systems was installed at Stephens college, Columbia, Mo., to include 50 classrooms, for use in an orientation course for first-year students.

Radio.—1955 brought a marked increase in the design and production of miniaturized radio broadcast receivers employing transistors rather than electron tubes. Pocket-size, personal radio sets were placed on the market by several manufacturers, most of them designed for many hours of operation on batteries of the type used in flashlights. Transistorized automobile radios also were introduced during the year. One experimental model was designed to operate directly from a 12-v. car battery, employing less than one-tenth of the power required for operation of a standard car radio equipped with electron tubes.

The use of microwave radio relay equipment for communications in industries and public service activities continued to expand. Among the important new installations announced during the year was a complete system for the Ohio turnpike, involving two-way communication between highway patrol stations and official vehicles.

Military Radio and Television.—The trend toward miniaturized communications equipment was most evident in military applications. A typical example was a two-way FM radio, or transceiver, capable of receiving or transmitting over a range of a quarter of a mile. Designed for use with small tactical units in the field, the transistorized device weighed only 15 oz. and was about the size of a small tobacco tin. In early Oct. 1955 the U.S. army signal corps announced development of an even more compact experimental radio transmitter powered by the human voice, in which sound waves were converted to electrical energy sufficient to operate the transistorized device over a range of several hundred feet.

An electronic innovation at sea was a comprehensive television system installed aboard the navy's new supercarrier "Forrestal." The navy disclosed that the giant vessel is equipped with a closed-circuit chain which allows the commander to maintain visual contact with key areas aboard the ship, and includes underwater television camera units.

Research Developments.—Research in forward scatter propagation of high-frequency wireless signals pointed toward a possible future means of transoceanic microwave and television communications. Based on the use of powerful transmitters and extremely sensitive receivers at points well beyond the horizon, scatter propagation already was in use during the year for transmission in these frequencies, sending VHF signals up to 1,000 mi. and UHF signals beyond 200 mi. without intermediate relay stations. The range of transmission in these frequencies previously had been limited largely to the line of sight, with relay facilities required for destinations beyond the horizon. Research indicated that radio communications employing scatter propagation techniques might permit long-distance point-to-point radio systems even less subject to interruption or failure than cable or wire facilities. Experiments with long-distance transmission of UHF television signals was undertaken during the year with successful reception at ranges of 150 to 200 mi.

Magnetic tape recording of television signals was carried closer to commercial application in field tests of the RCA system by the National Broadcasting company. In May 1955 the first long-distance transmission of a colour television program previously recorded on the magnetic tape took place over the NBC network facilities in a closed-circuit telecast from New York city to St. Paul, Minn. Early in the year another tape-recording system for black-and-white and colour television was demonstrated by Bing Crosby Enterprises, and plans were an-



ENGINEER TESTING TRANSMISSION in a medium called "long distance waveguide," a system for transmitting television and telephone conversations along hollow metal tubes announced in 1955

nounced for its commercial introduction in about 18 months.

Other important research developments in television included an experimental flat picture tube only three inches in depth. Employing a radically new method of electronic scanning, the tube was developed at the west coast laboratories of the Willys Motors corporation. Progress also was reported by RCA in development of a single colour pickup tube for television cameras, incorporating within one tube the colour pickup functions performed by three tubes in present colour cameras. The developmental tube showed in tests the ability to televise colour film and limited area scenes in which high levels of lighting are required.

(C. B. J.)

Radio Amateur Stations.—As of 1955 there were more than 35,000 persons licensed as amateurs by the Federal Communications commission to conduct private two-way short-wave communication. In co-ordinated volunteer activity, amateur radio-men operated days without rest in the wakes of Hurricanes "Carol," "Edna" and "Hazel." Reporting conditions to municipal authorities, almost as they occurred, amateurs with mobile radio units in their own cars contributed materially to the restoration of normal conditions. In less spectacular fashion, amateur communications furnished a vital link in dozens of local emergencies in all parts of the United States. Operation "Alert," a nation-wide civil defense test emergency in June, relied heavily on amateur communications systems in lieu of regular lines knocked out by the fictitious nuclear attack. The Edison Radio Amateur award was bestowed on Benjamin S. Hamilton of San Diego, Calif., for his outstanding organization of local civil defense communications.

More than 9,000 amateurs throughout the country manned portable and mobile emergency communications units for the annual field day test of the American Radio Relay league. During the event, the first radio transmitter to use energy from the sun was successfully demonstrated; six selenium photoelectric cells furnished a maximum of 2.8 v. to power the equipment. Expanded interest in mobile operation and single side-band techniques prompted the league to publish two new technical manuals, *The Mobile Manual for Radio Amateurs* and *Single Sideband for the Radio Amateur*. The Division for the Blind, Library of Congress, produced a new talking book of code and theory instruction aimed at the novice class amateur licence.

More than 800 local radio clubs affiliated with the league administered the FCC-established program of licence examinations given by volunteer examiners. Novice and technician class amateur licensees were granted additional frequency privileges. The Conelrad system to provide radio security in the event of enemy attack was set up for the amateur service. A favourable trend of sunspot activity permitted longer-distance communications in most of the amateur high-frequency band assignments.

(L. Ak.)

Radio Developments in Great Britain and Europe.—On July 27, 1955, the postmaster general issued two directions to the B.B.C. (British Broadcasting corporation) on the subject of political broadcasts. The first directed the corporation to retain the rule in force since 1948, whereby the B.B.C. was not allowed to broadcast discussions or ex parte statements on matters about to be debated in either house of parliament for a period of a fortnight before such debates took place. The direction also required that members of parliament should not broadcast on the subject of any legislation which was before parliament. The second direction required the corporation to refrain from the transmission of party political broadcasts other than to the U.K. as a whole. In accordance with the government's decision of Dec. 1954, the B.B.C. continued to broadcast programs in 43 languages other than English.

At the invitation of the B.B.C., 17 European broadcasting



WINNER OF \$64,000, U.S. Marine Capt. Richard McCutchen, receiving the congratulations of his father, J. C. McCutchen, who helped his son to answer successfully a series of questions about cooking on a popular U.S. television quiz program in 1955. An assistant on the show, Lynn Dollar, is shown opening the door of the soundproof booth in which the questions were answered

organizations co-operated in the compilation of a series of programs entitled "Europe—Ten Years After" at the beginning of May 1955. These programs surveyed progress and development in all fields of human endeavour during the postwar years. The European Broadcasting union, which had a membership of 25 active and 11 associate countries, celebrated its fifth anniversary on Feb. 12, 1955. Under the presidency of Sir Ian Jacob, director general of the B.B.C., the general assembly, the administrative assembly and the various committees met in Rome for the sixth ordinary session in October.

In Austria the coming into force of the Austrian state treaty resulted in the dissolution of the American-operated radio station Rot-Weiss-Rot on July 12. On the same day, Austrian National Radio, Österreichischer Rundfunk, discontinued the broadcast of "Voice of America" and "Russian Hour" programs and the relay of B.B.C. Austrian service programs from London.

In Germany agreement was reached to separate the Nordwestdeutscher Rundfunk, which was set up as an institution under public law in 1948, into two organizations: the Westdeutscher Rundfunk, to cover the *Land* North Rhine-Westphalia; and the Norddeutscher Rundfunk, to cover the *Länder* Lower Saxony and Schleswig-Holstein and the free and Hanseatic city of Hamburg. It was anticipated that the reorganization would take effect from Jan. 1, 1956.

On July 1 Radio Trieste formally returned to the control of Radio Italiana after a separation lasting ten years. In Yugoslavia legislation was introduced during the autumn with a view to the enactment of a Broadcasting Stations act. (A. Ex.)

Television in Great Britain.—The year 1955 was sharply divided into the periods before and after the opening of commercial television on Sept. 26. During the first period B.B.C. programs continued without, initially, much marked change.

Probably the most consistently high standard was preserved

by "Animal, Vegetable and Mineral," the archaeological quiz program, with its derivative "Buried Treasure." Glyn Daniel, fellow of St. John's college, Cambridge, chairman of this program, was dubbed "TV personality of the year" by the Guild of Television Producers.

Other serious programs from the talks department often touched a comparable level. In the case of "Press Conference," success was dependent on the personality of the celebrity interviewed. Christopher Mayhew's series on "Co-Existence" roused interest but its instalments were erratic. The talks department was also responsible for one of the year's greatest triumphs, the virtually all-night transmission of the general election results. For his part in this, Richard Dimbleby was given the leading position in the magazine program, "Panorama," when it extended scope as well as time.

The drama department did not discover much original work, though live productions continued on a high level. Most distinguished perhaps was Harold Clayton's of *Romeo and Juliet*, largely through its rare emphasis on pictorial beauty. Virginia McKenna was named best actress of the year by the Guild of Television Producers for her Juliet, and Peter Cushing, for the second time, best actor. Best designer was found to be Bruce Angrave for his ingenious work for "People Like Us," an experimental series of sketches for four players by J. B. Priestley. Two unsubtle but popular series were "The Whiteoaks Chronicle," from the Mazo de la Roche novels, and "The Makepeace Story," a more original cycle on the rise of the cotton industry. "The Grove Family" and the "Appleyards" continued to flourish. But the Producers guild award for the best script and the best production went to Colin Morris and Gilchrist Calder for "The Unloved," a sympathetic and skilful documentary about a maladjusted child.

"Eurovision" remained a strong B.B.C. card whose most thrilling trick was the television of a live performance of *Tosca* from an Italian studio.

From the film department came the ambitious series, "War in the Air," a fair equivalent to the U.S. "Victory at Sea." Of the compilation films on the work of various film stars, much the most important and interesting was the one on Greta Garbo.

First symptom of impending commercial competition was a steady trickle of trained talent from B.B.C. television. Big names which went almost straight from one to the other included not only B.B.C. producers such as Bill Lyon Shaw and Kenneth Carter but such celebrities as Orson Welles, Billy Graham, announcer Leslie Mitchell and comedians Harry Secombe and Arthur Askey with many lesser names. Some important stars, however, stayed with the B.B.C. Wilfred Pickles, for example, had long forestalled the audience participation which was to be the new mode. I.T.A. (the Independent Television authority) had captured the popular animal collectors, Armand and Michaela Dennis. But the subtler naturalists, Peter Scott in his "Look" series and David Attenborough in his two "Zoo Quests" to Africa and British Guiana, stayed with the B.B.C., as had one of TV's funniest comedians, Bob Monkhouse. Edana Romney with her "Is This Your Problem?" program and Jeanne Heal with her varied and accomplished interviews found no peers among I.T.A. hostesses. And in "Off the Record" Jack Payne had devised a formula for using popular recording stars.

One of the first surprises was the almost clean sweep of panel games. I.T.A. had only one indifferent sample. The B.B.C., after multiplying panel games *ad absurdum*, withdrew all but "What's My Line?" Instead, interest and curiosity centred on the audience participation and giveaway programs. These ranged from the sadistic crudity of "People Are Funny" to "Double Your Money" with its prizes for genuine knowledge. The first big win on the latter was by a university history graduate who had the

restraint to content himself with £512 instead of gambling for the £1,000.

Next to the giveaways, the principal attractions were variety programs, notably "Sunday Night at the Palladium." With such top liners as Gracie Fields, Johnnie Ray and Lena Horne and with the popular American comedy series, "I Love Lucy," following in the schedule, I.T.A. offered a strong counterattraction to the B.B.C.'s Sunday evening.

A feature of independent television was the more rigid timetable, cut into fixed slices of 15 or 30 minutes. The advertisements direct, the spot commercials, proved less startling than expected. Few were very imaginative, none offensive, most were innocuous and there were always the elegant Shell tours of Britain with John Betjeman. Drama, although presented under such titles as "Theatre Royal," "Four Star Theatre," "International Theatre," consisted almost entirely of chunks of film, more or less entertaining but seldom of high quality. Nevertheless numerous such famous names as Dame Edith Evans, Flora Robson, Wendy Hiller, Sir John Gielgud and Sir Ralph Richardson made obvious attractions. The "Granville Theatre Melodrama" also quickly won a place for itself with the viewing public.

The Independent Television News, with Chris Chataway the runner as first reader, was generally found more lively than B.B.C. news. Discussion programs, such as "Crossroads" or "Points of View," had the needed knack of informality.

By the end of the year independent television in Britain was only two months old and so far only covered a small southern stretch of England. The authority had shown itself perhaps too sensitive to the need for flexibility. It seemed likely that for some time the B.B.C. would lead in the more serious programs and lag behind I.T.A. in the big popular entertainments.

(F. B. Lr.)

Radiology: see X-RAY AND RADIOLOGY.

Railroad Accidents: see DISASTERS.

Railroads. Following a rather slow start, railway traffic and revenues in the United States developed an upward trend during 1955, so that the railroads* had a better year than in 1954, although not as good as in 1953. Total 1955 railway revenues were \$10,100,000,000, compared with \$9,400,000,000 in 1954 and \$10,700,000,000 in 1953. After paying operating expenses, taxes and capital charges (but before dividends), the railroads realized \$915,000,000 in 1955, compared with \$674,000,000 and \$903,000,000 in 1954 and 1953, respectively. Traffic in the last three months of the year was running heavier than in either of the two preceding years, encouraging hope for continued favourable results in 1956.

Cars of freight originated on railroads in 1955 totalled 37,600,000, the 1954 figure being 33,900,000 and 1953 showing 38,300,000. Tonnagewise, railway freight traffic in 1955 came to 1,375,000,000 tons, hauled for a total of 620,000,000,000 ton-miles (one ton moved one mile), for an average haul of 437 mi. Passenger traffic, measured in passenger-miles (one passenger travelling one mile), totalled 28,300,000,000, with an average trip per passenger of 71 mi. This traffic was handled at an average revenue of 1.4 cents per ton-mile and 2.6 cents per passenger-mile. In October the Interstate Commerce commission authorized the railroads to make permanent and incorporate in their basic rates the increases in freight rates granted in 1951-52.

The physical plant of the railroads at the end of 1955 comprised 212,000 mi. of first main track and 140,000 mi. of second

* Unless otherwise specified, railroads herein refer to those of class I, which account for approximately 95% of total railway figures.

and other main tracks, yard tracks and sidings, making a total of 352,000 mi. of trackage. Utilizing this mileage were 33,000 locomotives, made up of 24,550 diesel-electric, 7,800 steam and 650 electric and other types. Passenger-train cars of railroad ownership totalled 34,100, consisting of 18,500 passenger-carrying cars and 15,600 cars used for mail, baggage and express; in addition there were 4,900 cars owned by the Pullman company. Freight cars totalled 1,831,900 of railroad ownership and 193,100 of private and other ownership, in addition to 21,000 cabooses and 85,000 units of work equipment. During the year the railroads installed in service 1,000 new locomotives (all diesel-electrics except 10 electrics), 40,000 freight cars and 450 passenger-train cars.

Approximately 1,050,000 persons were employed on the railroads in 1955, with a total payroll of \$4,800,000,000, averaging \$4,600 annually per employee. No large-scale suspension of service through labour disturbances occurred, other than a strike on the Louisville & Nashville railroad and its affiliates which lasted 59 days and was attended by some violence. In the closing months of the year, wage settlements were made with various classes of employees involving present and potential increases in the wage bill which could run as high as \$320,000,000 on an annual basis. For the first time the number of freight cars in a train was made a factor in determining the pay of trainmen. It was also considered probable that some increases in rates would be necessary to aid the railroads in meeting the increased wage bill.

Of outstanding importance was the report of the Presidential Advisory Committee on Transport Policy and Organization. This committee, appointed by Pres. Dwight D. Eisenhower, was composed of the secretary of commerce as chairman, the secretary of defense and the director of the Office of Defense Mobilization, with the secretaries of the treasury and of agriculture, the postmaster general and the director of the bureau of the budget participating on matters affecting their respective responsibilities. Its report, sent to the president at the end of 1954 and made public April 18, 1955, contained 11 basic recommendations, most of them founded upon the following principles: (1) Stimulation of reliance on competitive forces in rate making. This would be accomplished by relaxing regulation of railroads to permit them to utilize their inherent advantages and to make rates within a zone of reasonability bounded by the out-of-pocket cost of the service and the fully distributed cost thereof. (2) Protection of common carrier transportation services of all kinds by closer definition of private and contract carriers and curtailment of abuses by these carriers in respect to unfair competition with common carriers.

Further shifts in financial control of important railroads were witnessed in 1955. Following a proxy contest, the Boston and Maine came under new management. Changes in directorates affected the Chicago and North Western and the Missouri-Kansas-Texas railroads. The Toledo, Peoria & Western, previously owned and operated independently, was jointly acquired by the Atchison, Topeka and Santa Fe and the Pennsylvania railroads. Sale of the Illinois Terminal Railroad company to a group of 11 major railroads was authorized by stockholders. The Nashville, Chattanooga & St. Louis, controlled by the Louisville & Nashville through stock ownership, was authorized by the Interstate Commerce commission to merge with the parent railroad. An interesting venture toward state ownership and operation of a railroad was a bill introduced into the 1955 session of the Illinois legislature to authorize purchase of the Chicago Aurora and Elgin railway, a 54-mi. electric railway in financial difficulties.

Several railroads took steps during the year to replace preferred stock with nonsecured debt obligations bearing interest only if and as earned. Since payments of interest are deductible

before income taxes, whereas dividends are payable from earnings after taxes, the substitution reduces income taxes and thus increases amounts available for dividends on common stock. Railroads concerned in this trend during 1955 included the New York, Chicago and St. Louis (Nickel Plate); Chicago, Milwaukee, St. Paul and Pacific; Chicago & Eastern Illinois; Chicago, Rock Island and Pacific; New York, New Haven and Hartford; Bangor and Aroostook; and the Boston and Maine.

A notable financial event of the year was successful completion by the Baltimore & Ohio railroad of what was said to be the largest debt-refinancing program ever undertaken by an American railroad, involving about \$350,000,000. A significant operating change was the transfer in October to the Chicago, Milwaukee, St. Paul and Pacific of de luxe Union Pacific-Southern Pacific passenger trains which since 1889 had been handled between Omaha and Chicago by the Chicago and North Western.

Developments during 1955 in the use and expansion of trailer-on-flatcar (piggyback) service were numerous. This service is of two principal types: (1) where it is confined to traffic of the railroad itself or of a railroad-owned trucking subsidiary; and (2) where the service is also made available to shippers and trucking operators, without restriction. One result claimed from piggyback service, in addition to development or recovery of traffic for the railroads, was a marked reduction in claims against railroads for freight loss or damage.

Several lightweight, low-slung, high-speed trains of radical design were ordered by railroads in 1955. They included so-called Talgo trains purchased by the New York Central, New York, New Haven and Hartford and Boston and Maine roads and a development of Train X purchased by the New York Central and the New York, New Haven and Hartford railroads. Another type, based upon automotive body design and construction, was to receive operating tests on the Pennsylvania and the New York Central. Still another new type train, of tubular design, was ordered by the Pennsylvania railroad, and the New Haven road ordered a streamline train based upon a modification of the RDC cars which were being used on several railroads. In trial runs, a Talgo-train prototype was operated at speeds up to 103 m.p.h. on straight track, with curves taken comfortably at 85 m.p.h. Ownership and use of high-level dome cars affording a panoramic view of the countryside also increased. Electronic systems for faster reservation and sale of passenger space received further impetus.

Utilization of electronics for faster, more efficient classification of cars in yards also progressed. New devices not only automatically select and set up proper routes for cars from the hump to the classification track but also "remember" and store routes for additional cars for future use. In one instance, an entire train was automatically switched with an experimental development of this memory device.

Accounting work was greatly expedited through use of electronic equipment, including huge machines of almost unbelievable capacity and versatility. Among railroads which had ordered or installed these were the Chesapeake and Ohio; Southern; Illinois Central; and New York, New Haven and Hartford. Utilization of such machines requires intensive study and a high degree of precise programming.

A recent innovation of considerable progress was a device for self-identification of trains by means of an inert coil which is activated as it passes over a charged coil in the track. Identification is provided by tuning the inert coil to various frequencies of response. It was envisioned that this might lead to the automatic lining up of switches, setting of signals, posting of bulletin boards and announcing of trains. Experiments continued in the use of television for railroad purposes, principally

for inspection and supervision in remote parts of switching yards.

Research on nuclear energy in the railroad industry was evidenced by a contract between a locomotive builder and the Denver & Rio Grande Western railroad for study of plans suitable for locomotive use. Actual experimentation in direct hydraulic transmission of power from diesel engines to locomotive wheels was another promising innovation. Individual and co-operative research activities by railroads and by their suppliers along these and many other lines were in sight for 1956. (See also INTERSTATE COMMERCE COMMISSION.) (L. J. K.)

Canada.—A new branch was planned in Labrador to connect with the recently opened Quebec, North Shore and Labrador railway. In Quebec the Canadian National railways were starting to construct a line from St. Félicien to Chibougamau; this would in turn link up at Chibougamau with a western section being built from Beattyville on the national transcontinental line, totalling 288 mi. In Ontario an important new 24-mi. branch was opened in July from Hillsport to the Geco mine. In British Columbia progress continued with the southward extension of the Pacific Great Eastern railway from Squamish to Vancouver in extremely difficult terrain. In the maritime provinces the Canadian National was operating trains over its new Canso causeway, joining the mainland to Prince Edward Island, thus eliminating ferry service.

Both large Canadian railways received "Trainmaster"-type 2,400-h.p. diesel-electric locomotives, built in Canada. The Canadian Pacific railway inaugurated dome-type cars on its new "Canadian" Montreal-Vancouver service. A single three-unit diesel-electric locomotive worked this train throughout, covering the 2,881 mi. in 71 hr. 10 min. The Canadian Pacific placed in service a new train ferry at Vancouver, and the Canadian National provided its staff with a mobile signal instruction car.

Europe.—The reorganization of the British Transport commission in Jan. 1955 provided for a general staff at headquarters, the setting up of area boards for the six railway regions and the establishment of separate divisions to manage the road freight services, the road passenger services, the docks, the inland waterways and the hotels and restaurant cars. London Transport remained a separate executive under commission control. The modernization plan published early in 1955 set forth a 15-year plan, envisaging the expenditure of about £1,200,000,000, but about one-third of this total was accounted for by renewals of track, rolling stock, etc., which would take place in any case. The replacement of steam traction by electrification and diesel units on a comprehensive scale was planned, together with the equipment of freight rolling stock with continuous brakes, new marshalling yards and many other modern improvements, such as carriage-cleaning facilities and rebuilt stations.

The "Elizabethan" nonstop ran in 6½ hours between London and Edinburgh, 393 mi., in the summer months, a world record in steam traction. Electric traction had so far produced no fast runs in Britain. During the summer service there were 58 steam runs daily at more than 60 m.p.h. and consistent improvement continued in regard to cross-country services.

Financial results of the British Transport commission for 1954 revealed a working surplus of £45,500,000 but a deficit after fixed charges of almost £12,000,000. Wage disputes culminated in a strike of locomotive crews at the end of May 1955 lasting approximately two weeks, unofficially estimated to have caused a loss of revenue between £10,000,000 and £12,000,000.

In Northern Ireland there was further curtailment of rail in favour of road services. Progress toward complete dieselization of railway operation continued apace in the Irish republic, where the first units were received of a large diesel locomotive order for nearly 100 units, being constructed in Manchester.

French National railways made history when trial runs on the electrified line between Bordeaux and Bayonne registered speeds of 205.6 m.p.h. Of test character with light trains, this speed was a world record for railways, but was not to be regarded as suitable for commercial services. By conversion of the Maçon-Bourg section, the 1,450-mi. route from Paris to Syracuse in Sicily became electrically operated—the longest continuous electrified main line in the world. French railways continued to produce large deficits, partly because of war damage repairs.

Italian State railways were electrifying the Messina-Palermo section and main lines in the Padua and Foggia areas. Swiss Federal railways widened several important trunk lines, such as

Railway Traffic, by Major Countries*					
(in 000,000 passenger-kilometres and freight net ton-kilometres; 1 km. equals 0.62137 mi.; tons used are metric tons equal to 2,204.6 lb.)					
Country	Passenger-km.		Net ton-km.		
	1952	1953 est.	1952	1953 est.	
Argentina	13,451	13,503	16,656	16,824	
Australia†	—	—	11,046	10,748	
Austria‡§	4,661	5,032	5,564	5,213	
Belgium‡§	7,435	7,528	6,067	5,721	
Brazil||	10,344	10,735	8,985	8,473¶	
Canada	5,071	4,801	99,906	94,901	
China (mainland)°	14,743§	13,200□	5,270§	4,500□	
Czechoslovakia°	18,160¶	18,600▲	12,690□	13,000▲	
France‡	28,580	25,880	44,050	40,340	
Germany (western)††	29,493	31,113	55,253	50,942	
India°	57,994	—	47,356	—	
Italy‡‡§§	21,300	21,911	12,025	12,083	
Japan‡§	81,282	83,554	38,724	40,418	
Mexico	3,338	3,061	10,756	9,590	
Netherlands§§	6,392	6,621	3,068	3,252	
Pakistan°	8,983	—	4,917	—	
Poland**	20,851▲	26,353††	29,800▲	32,009††	
South Africa, Union of°‡‡	—	—	21,251	21,574	
Spain‡§|||	7,854	7,977	7,621	7,574	
Sweden	6,333	6,234	9,633	9,017	
Switzerland°|||	6,878	—	2,476	—	
United Kingdom††§§§§	33,297	33,490	36,613	37,227	
United States	54,771	50,983	902,180	889,072	
Yugoslavia	4,815	5,981	8,383	8,817	

*Figures relate to both domestic and international railway traffic of each country indicated, excluding traffic of railways wholly within an urban unit. Plantation, industrial, mining, funicular and cable railways are also excluded. Figures relating to passenger-traffic exclude military, government or railway personnel when carried free; net ton-kilometre figures exclude service traffic, mail, baggage and nonrevenue governmental stores unless indicated. †Year ending June 30. ‡State railways. §Ton-kilometre figures cover carload lots only. ||Ton-kilometre figures include 13 railways only (90% of traffic including nonrevenue).

¶Excluding livestock. °Ton-kilometre figures exclude livestock. □1947 data. □1948 data. †Ton-kilometre figures include service traffic. ▲1949 data. †Occupation traffic included. ‡Year ending March 31. **Includes both standard- and broad-gauge lines. ‡†1950 data. ‡‡Includes data for South-West Africa and Rhodesia railway's Vryburg-Bulawayo line. ‡‡‡Passenger-kilometre figures exclude suburban traffic. |||Ton-kilometre figures include mail and passengers' baggage.

††Excluding Northern Ireland. §§Ton-kilometre figures include nonrevenue traffic. Source: Statistical Office of the United Nations, *Statistical Yearbook*, 1954.

Olten-Lausanne, while the use of trains to ferry motorcars through the St. Gotthard and Simplon tunnels, when roads are impassable, developed rapidly. West German railways inaugurated the diesel "Saphir" express between the Ruhr and Ostend, and articulated diesel units, known as the "Komet" and the "Senator," linked Hamburg with Frankfurt and Basle. These were the forerunners of the international diesel expresses to run between main western European cities. They would be known as Europexpresses; another recent service of this type was the Amsterdam-Brussels-Paris unit.

It was planned to change the three-class system to two classes of accommodation in western Europe in 1956. In Germany a rail-grinding train was inaugurated to reduce rail corrugations, and electrification was extended to the Freiburg-Basle and Bruchsal-Heidelberg sections. A new station at Heidelberg was completed. Better services operated to eastern Germany where many new "Pacific" (4-6-2)-type locomotives entered service. In Austria electric traction replaced steam between Vienna and Amstetten, Wels and Passau reaching Rosenbach on the Yugoslav frontier through the long Karawanken tunnel.

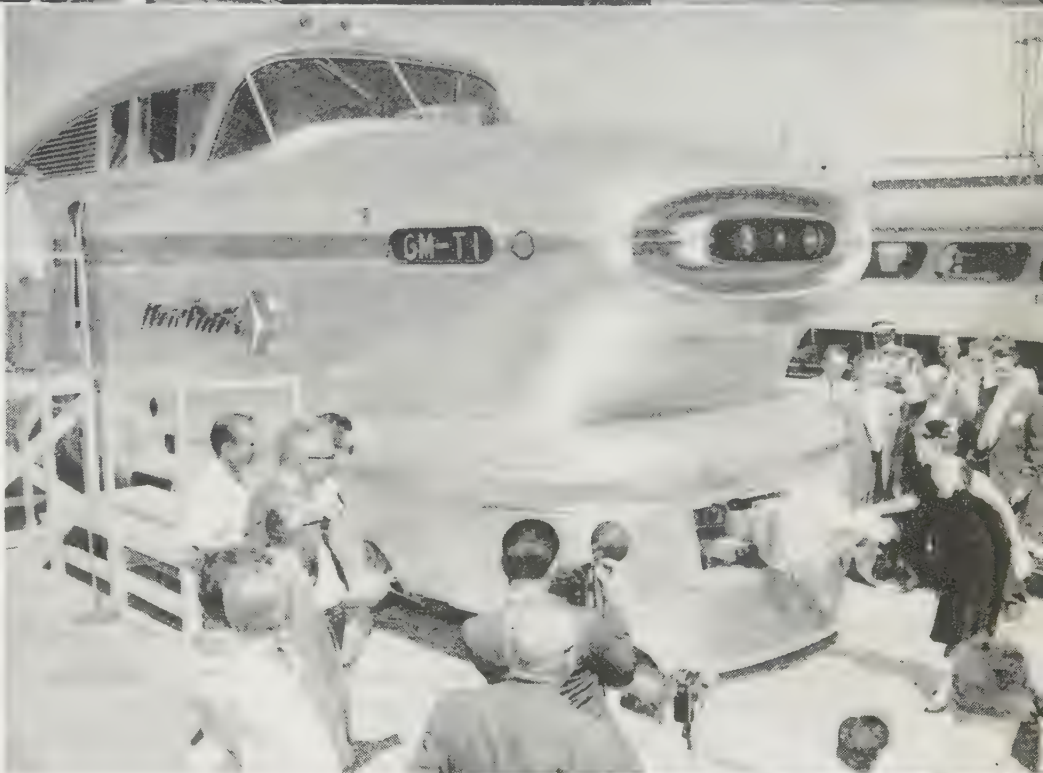
Belgian developments included the interesting direct rail-car link between Brussels Central station and Brussels airport at Melsbroek. In the Netherlands electric or diesel virtually replaced steam traction. With Switzerland, the Netherlands could claim to have one of the few European railways more than cov-



Above: GRAVITY SWITCHING YARD, permitting automatic sorting of freight cars, under construction by the Southern Pacific lines at Houston, Tex.



Above, right: "AUTOMATIC" machine placed in experimental operation by the New York Central railroad in Feb. 1955. Intended chiefly for use by suburban passengers, the machine, operated by coins, supplied tickets for about 60 stations



Right: CHRISTENING of lightweight "Aerotrain," built by General Motors Corp. in 1955. The train was to be given test runs by the New York Central and Pennsylvania lines in 1956

Right: "A HOG WILL RIDE But You Won't," was the protest of masked commuters on a New York Central suburban line which announced in 1955 its decision to abandon passenger, but not freight, service on the line

Below: "HI-LEVEL" chair car ordered in 1955 by the Santa Fe railroad in response to passenger requests for a better view of the scenery. Top level is for seating only, lower for lounge and luggage storage



ering interest charges on its capital. Danish State railways placed in service two new ferries, one on the Helsingor-Helsingborg route and the other on the Gedser-Grossenbrode service, which had developed very extensive traffic.

New lines were opened in Finland between Laaja and Suomussalmi and on the Suolahti-Haapajärvi line; widening was completed near Kouvola. Fast diesel services were operating from Helsinki. Polish railways electrified the Warsaw-Lodz artery and made progress with the Katowice line. Hungary completed the reconstructed Danube bridge at Komarom, linking it with Czechoslovakia, and converted many coal-burning locomotives to oil-firing. A new bridge over the Mur river between Murakeresztur and Kotoriba linked the Hungarian and Yugoslav railways.

U.S.S.R. railways completed a new station at Stalingrad. Greece received new Italian-built 2-10-2 steam locomotives weighing 195 tons. Spanish National railways extended electrification to the Ujo-Gijón (35 mi.) and the Busdongo-Leon (33 mi.) sections in Asturias. Steady progress continued with the new 280-mi. railway between Zamora, Orense and Santiago.

Asia.—India placed in service British-built 3,600-h.p. electric locomotives for the Bombay-Poona-Igatpuri sections of the Central railway, while electrification of the Eastern's Calcutta lines began, with extensions on the Southern railway at Madras Egmore and on the Western railway near Borivli. Large orders were placed for several hundred steam locomotives, and the first air-conditioned coaches entered service on Indian metre-gauge lines; about 300 metre-gauge coaches were under construction.

Of 855 mi. dismantled during World War II, about 500 mi. would be reopened by 1956; one such completed was the Madura line. New construction included the Chunar-Robertsganj line and a railway in Bihar. The new Charsadda line in Pakistan was the first to be built in the North-West Frontier province since 1918. Australian-built diesel locomotives entered service in Pakistan.

In Iran progress continued with the Shahrud-Meshed and Mianeh-Tabriz lines and new locomotives were imported from Britain. Malaya completed the reconstruction of its east coast railway and constructed a freight station in Kuala Lumpur.

Electrification of Japanese National railways covered 1,162 mi. Major construction continued on the links between the Chinese and U.S.S.R. railways, the new line passing through Ulan Bator.

Africa.—Additional "River" class 2-8-2-type steam locomotives arrived in Nigeria together with diesel-electric units. Gold Coast railways inaugurated their new passenger terminal at Takoradi harbour and placed in service new diesel-electric locomotives, as did the Sierra Leone railways. In French Cameroun an important bridge was opened in May across the Wouri river. Sudanese railways received 42 large oil-fired 4-8-2-type steam locomotives from Britain. In the Belgian Congo electrification was being extended to Elizabethville on the Bas Congo railway, and the construction of a link 276 mi. long was in hand between Kamina and Kabalo. The Western Uganda extension to Kasese neared completion. Rhodesian developments included all-electric signalling at Bulawayo and further centralized traffic control installations. South African railways planned widenings at Durban and on the Natal main line, additional electric locomotives and further electrification.

(C. E. R. S.)

Rainfall: see METEOROLOGY.

Raisins: see FRUIT.

Randall Commission: see TARIFFS.

Rapid Transit: see URBAN TRANSPORTATION, U.S.

Rates of Exchange: see EXCHANGE CONTROL AND EXCHANGE RATES.

Rayon and Other Synthetic Fibres: see TEXTILE INDUSTRY.

Reclamation: see FORESTS; IRRIGATION; SOIL CONSERVATION.

Red Cross. **United States.**—The year 1955 was an active one for the American Red Cross in services to the armed forces, disaster relief, the blood program, health and safety education, and other programs. Volunteers, nearly 2,000,000 of them, provided the majority of the services and the greater part of the leadership.

More than 40% of the organization's annual budget was expended in behalf of members of the armed forces, veterans and their families. Home service workers in the nationwide structure of 3,700 chapters, along with field directors in military hospitals and installations in the United States and overseas, assisted servicemen and their families in problems related to welfare and morale. A monthly average of 20,000 trained volunteers served in 128 military hospitals.

In the clubmobile program, Red Cross workers travelled about 16,000 mi. each month to bring recreation activities to 170,000 servicemen in isolated sections of Korea. The opening of a new recreation centre in France brought to four the number operating in Europe and North Africa. The purpose was to provide supplemental recreation activities and to increase the opportunity for friendly free-time contacts between U.S. forces overseas and the local population.

Red Cross chapters assisted about 42,000 veterans and their families each month and during the year provided \$800,000 in emergency financial assistance. Under volunteer direction, approximately 19,000 volunteers—Gray Ladies, nurse's aides, cadet workers and others—served each month in 172 Veterans administration hospitals.

Mass care assistance had been given to 124,100 persons in 1954 following disasters in 44 states, Alaska, Puerto Rico and Hawaii. Rehabilitation, which included the building and repair of houses, long-term medical and nursing care, basic maintenance, and assistance with household furnishings and occupational supplies, was given 13,200 families. Expenditures totalled \$3,714,000. The May 1955 tornadoes that struck in a four-state area devastated several Kansas and Oklahoma communities. Approximately 600 families were affected, and it was estimated that the cost of emergency care and rehabilitation would exceed \$1,000,000. Through the League of Red Cross societies, 17 other countries were also aided in recovering from disasters.

The Red Cross blood program, directed at all levels by physicians, by 1955 had 47 regional programs covering chapters in 40 states and the District of Columbia. Nearly 2,500,000 blood donations were received in 1954. Blood and blood products were distributed to 3,600 hospitals in 45 states and the District of Columbia. Volunteers gave more than 2,500,000 hours of service in this program. During the first six months of 1955, 1,072,000 donations were collected.

In the 1954 calendar year 800,700 certificates were issued in first aid; 1,054,000 in water safety; 191,850 in home nursing and 26,000 volunteers took special training for assignments in chapters, hospitals, institutions, and other agencies. By mid-1955 there were 45,100 volunteer nurses enrolled for work in disaster and in other Red Cross and community programs of service. There was a substantial growth in volunteer service for patients in civilian mental hospitals. Trained volunteers served 120 civilian mental hospitals, 2,650 other civilian hospitals and 1,500 agencies and organizations.

Through arrangements with the Chinese Red Cross the first shipment of American Red Cross food and comfort packages for Americans held prisoner in Communist China crossed the border at Hong Kong in June. Deliveries were thereafter to be

made twice a month. These packages would supplement those sent by prisoners' next of kin, which were being delivered by the Red Cross in about one-third of the time formerly required through commercial channels.

Students in more than 75,000 elementary and secondary schools were enrolled in the Junior Red Cross. In addition to their service activities locally, they filled 400,000 gift boxes for shipment to children of other lands.

(C. L. B.)

International.—Membership in the International Red Cross increased to 73 national Red Cross, Red Crescent and Red Lion and Sun societies in 1955 as the result of the acceptance by the League of Red Cross societies of the Afghan Red Crescent and the Red Cross society of the Democratic Republic of Germany. Total individual membership stood at 60,153,614 adults and 14,771,132 juniors.

International disaster relief actions included aid for victims of fires in Beirut, Lebanon, and Istanbul, Turk., floods in Egypt, France, Sumatra, Australia, the United States, India and Pakistan, a hurricane over the Maldive Islands and an earthquake in Greece. The total value of international assistance was approximately \$500,000. National societies of these and other countries afflicted by calamities spent an additional \$7,000,000.

International Red Cross assistance to refugees in South Korea, South Vietnam and the near east was valued at \$500,000.

Barriers were lowered in several countries to permit the regroupment of families under Red Cross auspices, particularly of Greeks from Rumania to Greece, Canada, Australia and the United States, from Hungary to Greece and Canada, from Czechoslovakia and Yugoslavia to Greece, and of Japanese from the Soviet Union and Communist China to Japan. The total number of people involved was approximately 2,000.

In the medico-social field group, studies were published by the League of Red Cross societies on hospital libraries, water safety, mountain first-aid and rescue, accident prevention among children, recruitment of blood donors, treatment of burns and toxic poisoning caused by unignited aviation fuel and casualty making. In Sept. 1955, an International Red Cross meeting was held at league headquarters in Geneva, Switz., to perfect plans for Red Cross participation in the protection of the civilian population in case of war. At the same time, there were meetings of the league's Nursing Advisory committee and the Junior Red Cross Advisory committee grouping specialists in nursing and education from more than 30 countries.

During the year special training camps for about 300 Junior Red Cross members from 35 countries were held in Yugoslavia, Ireland and Canada.

On Sept. 1, 1955, Leopold Boissier succeeded Paul Ruegger as president of the International Committee of the Red Cross.

(H. W. Dg.)

Reforestation: see FORESTS.

Reformed Church: see PRESBYTERIAN CHURCH.

Refugees. Organized efforts to resolve the problem of refugees remaining in Europe continued during 1955 under the auspices of the Office of the United Nations High Commissioner for Refugees, the United States Escapee program, the Intergovernmental Committee for European Migration and the voluntary agencies. The Office of the High Commissioner for Refugees was originally established by the United Nations in Dec. 1950 and was continued in 1953 for a period of five years. G. J. van Heuven Goedhart (Netherlands) was re-elected high commissioner for the same term. The functions of the office are to provide legal and political protection for refugees and to seek permanent solutions for the problem by assisting governments and voluntary agencies to facilitate the voluntary repatriation of refugees or their assimilation in new countries

of residence.

In Oct. 1955 the high commissioner reported to the United Nations that 15 governments had ratified the Convention Relating to the Status of Refugees promulgated by the diplomatic conference convened by the general assembly of the United Nations at Geneva, Switz., in 1951. The convention, which came into force on April 22, 1954, codifies the rights of refugees and gives them status in international law. Among the rights and privileges accorded to refugees under the convention are the right to work and to join labour unions, status in the courts, participation in social security systems, freedom to travel, travel documents and public education for children.

During the period from 1947 to 1953, international efforts had been focused largely on securing the emigration of refugees from Europe to overseas countries of immigration. The International Refugee organization (1947-52) had resettled more than 1,050,000 refugees overseas. In 1953 and 1954 it became increasingly apparent that many refugees in Europe would not qualify for admission to countries of immigration and would of necessity, if not from choice, be obliged to re-establish their lives in the countries of their present residence in Europe.

In response to this need and consistent with his mandate, the high commissioner proposed to the general assembly of the United Nations in Oct. 1954 that a fund of \$12,000,000 be established to assist the integration of refugees in the economies of the countries of initial and secondary asylum in Europe. This effort was to continue over a period of four years after which it was assumed that the countries of asylum would be in a position to absorb the remaining refugees on their own resources. The general assembly acted favourably on the high commissioner's proposal and the United Nations Refugee fund was established. At the meeting of the Economic and Social council in Geneva in May 1955, the high commissioner's advisory committee of 15 governments was reconstituted as the United Nations Refugee Fund Executive committee and its membership enlarged to 20 governments. The executive committee established a budget of \$4,200,000 to be expended during the year 1955. The integration projects to be undertaken under the auspices of the fund in Germany, Austria, Italy, Greece and the near east were the establishment of refugees in agriculture and in small trades, businesses and professions, the building of houses, loans and scholarships for students and assistance in vocational training.

The U.S. Escapee program, initiated in 1952, continued during 1955 to assist new refugees arriving in Germany, Austria, Italy and Greece. While the flow of such refugees from eastern Europe diminished to approximately 450 monthly during the year, their needs were nonetheless acute, taking into account the burdens already carried by the countries of asylum in caring for the refugees remaining in their territories since the war. In Oct. 1955 the Escapee program had about 30,000 such refugees under care and had already resettled overseas more than 23,000. The assistance in care and maintenance, medical care and vocational and language training provided by the program was supplemental to that supplied by the countries of asylum. Emphasis was placed on the emigration of escapees for whom transportation was supplied by the Intergovernmental Committee for European Migration. The Escapee program depended heavily on the collaboration of the voluntary agencies in carrying out specific projects aimed at the early re-establishment of the escapees in useful employment either in Europe or abroad. Similar services were provided in Hong Kong both for European refugees permitted to depart from Shanghai and to a limited extent for Chinese refugees from the communist mainland.

The Intergovernmental Committee for European Migration, organized in 1951 at Brussels, Belg., on the initiative of the

United States, moved 121,222 migrants out of Europe in 1954 and expected to move 119,000 in 1955. Approximately one-third of the persons moved by the committee during the four years of its operations were refugees of various categories. More than 75,000 were under the mandate of the United Nations high commissioner. New Zealand and the Federation of Rhodesia and Nyasaland joined the committee in 1955, bringing the membership to 26 governments, including those of countries of emigration in Europe and countries of immigration in the western hemisphere. The purpose of the committee is to facilitate the emigration of persons, including refugees who would not otherwise be moved, from the overpopulated areas of Germany, Austria, Italy, Greece and the Netherlands to countries overseas where opportunities for employment and a less crowded existence are available. During 1955 more than 40% of the persons moved went to Australia, while Italy supplied the largest number of emigrants from Europe.

In addition to supplying ocean transport, the committee in co-operation with its member governments provides many technical services in the processing and reception of migrants and vocational training in specific industrial skills required by the immigration countries.

The constitution of the committee which came into force in Nov. 1954 was accepted by 23 of the member governments and gave the committee more formal status as a temporary committee with an anticipated life span of five more years.

The committee's budget for 1955 totalled \$42,697,030, divided in two parts: \$2,619,010 for administrative expenditure and \$40,078,020 for operational expenditure. Contributions to the administrative expenditure are obligatory on member governments. Contributions to the operational expenditure are voluntary. To an increasing degree, the migrants assisted were contributing to the financial costs of their transport.

The rising level of economic activity in Germany in 1954 and 1955 greatly assisted the German Federal Republic in the further integration of the German minority groups which were expelled from eastern Europe after the war and the more than 1,500,000 German refugees from the eastern zone of Germany. These expellees and German refugees have the full rights of German citizenship. The flow of refugees from the east zone was at the rate of 6,500 monthly during the first quarter of 1955 and increased to more than 20,000 monthly in October.

No substantial developments toward the establishment on the land of the 875,000 Arab refugees in the near east resulting from the conflict in Palestine during 1948 took place during the year. The United Nations continued to house and feed the refugees.

The movement of refugees from the communist Vietminh area to the south in Indochina continued during the year. Estimates of the total movement since the end of hostilities in the area were nearly 1,000,000 persons. (See also IMMIGRATION, EMIGRATION AND NATURALIZATION.)

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Relay Racing: see TRACK AND FIELD SPORTS.

Relief: see COMMUNITY CHEST; RED CROSS; SOCIAL SECURITY. See also the articles on the various states of the United States and the provinces of Canada.

Religion. A feature of 1955 which was a continuation of the previous year was the revival in some of the religions of Asia. That in Buddhism, as in recent years, centred in Burma. What was known as the sixth Buddhist council went

on with its task of establishing definitive texts of the core of the Buddhist sacred writings, the Tripitaka. Four of the preceding councils, convened for a similar purpose, had been in India and Ceylon before the time of Christ. What was regarded as the fifth had met in Mandalay in 1871. The sixth and current council was an enterprise of the Hinayana branch of Buddhism. It was aided by a substantial grant from the Ford foundation for the construction and equipping of a library. At the end of 1954 there assembled, also in Burma, what was known as the third biennial conference of the World Fellowship of Buddhists. It continued into 1955. To it came not only representatives of Hinayana, the wing of Buddhism which prevailed in Ceylon, Burma and Thailand, but also some from Mahayana, the predominant form in Japan, China and Korea. For it the government of Burma provided physical facilities. Part of the equipment was a huge assembly hall erected to look like a cave. There was also a World Peace pagoda. Many Buddhists were saying that since the great wars of the 20th century had sprung from the occident, Christianity, as the presumed faith of that region, had failed to prevent them and that in Buddhism was the hope for world peace.

Some Moslems were making a similar claim for Islam. They too, asserted that Christianity had been proved incapable of bringing peace and declared that in Islam was the way to its achievement. Islam was making numerical and geographic gains. These were chiefly among animistic peoples in Africa south of the Sahara.

In Hinduism there was something of a revival. One phase of it was seen in Vinoba Bhave. A Hindu representing the Gandhian tradition, he travelled through India, as he had earlier, urging landowners to give up some of their land for redistribution among the landless. On the other hand, Bhimrao Ramji Ambedkar, an educated leader of the "outcastes," was trying to win them to Buddhism rather than have them assimilated to Hinduism.

Although the Communists were atheists, in China, to win favour with the Tibetans, they were refurbishing the Lama temple in Peking and in other ways were encouraging the form of Buddhism professed by the Tibetans.

As had been true since World War II, in Japan some of the Shinto sects flourished, especially those which stressed the healing of disease by faith.

It must be noted, however, that the revivals in the Asiatic religions were displayed only among minorities. Secularism which had entered with other currents from the occident, was very widespread. The decay of Buddhism and Taoism in China and of Buddhism in Korea, which had been in progress for cen-



CHURCH TRIAL COMMITTEE AND RECORDERS at heresy trial of Lutheran minister in Milwaukee, Wis., July 1955

juries, continued. In China and North Korea it was accelerated by the dominance of communism. In China and Korea Confucianism, once the faith of the educated, had been losing its grip through much of the 20th century, especially after the collapse of the monarchy in China in 1911-12. In China and North Korea communism was dealing it additional blows. Buddhism in Japan had not recovered from the losses in the endowments (largely in cultivated land) of its temples and monasteries, brought by the breakup of the large holdings by the occupation after World War II. It was also significant that in several countries the renewed loyalty to the hereditary religion was closely associated with heightened nationalism and was from patriotic as well as religious conviction. That was true, for example, of Islam in Egypt and of Buddhism in Ceylon and Burma.

The progressive weakening of animism among the peoples of Africa south of the Sahara should also be noted. This was the result of the rapid disintegration of the tribal and family life and the other inherited mores wrought by the impact of European civilization, the growth of cities and the recruiting of labour for work in the mines.

In Iran the persecution of Baha'i continued. It will be remembered that Baha'i had its origin in Iran as an outgrowth from Islam. For several years pressures had been brought against it in the land of its birth.

For Christianity the record of the year was somewhat mixed. On the whole was one of gain. On the negative side was an increasing tension in Spain between the Roman Catholic Church and the Falange. More spectacular was the conflict in Argentina between the Roman Catholic Church and Pres. Juan D. Perón. Perón, dominant in the government, denounced the church and threatened it with disestablishment. The church excommunicated Perón. (A revolt in Sept. 1955 forced him out of office.)

Sobering, too, was the action in Roman Catholic Belgium by an administration controlled by Socialists and liberals in reducing state subsidies to church schools and strengthening the public schools. On the other hand, in a Eucharistic congress held in Brazil, bishops in attendance from various parts of the world took steps to improve the condition of the Roman Catholic Church in South America by appealing for more priests from Europe. The church in South America had too few clergy to care for its constituency. Here was an effort to remedy the deficiency. In the U.S.S.R. the Kremlin, although in the hands of the officially atheistic Communist party, was less intransigent toward religion than formerly. It was showing more respect for the officials of the Orthodox Church and was permitting representatives from churches outside the "iron curtain" to send messages and visitors not only to the Orthodox Church but also to the Baptists. It allowed some of the latter to attend a meeting in London of the Baptist World alliance.

In the Netherlands the Dutch Reformed Church adopted a new confession of faith, the first since the 17th century. The U.S. evangelist, Billy Graham (*q.v.*), followed up the meetings which he had held in London in 1954 with a campaign in Scotland which attracted much attention. Addresses by him on the continent of Europe were given wide publicity.

In the United States the increase in church membership continued. The latest figures, those for 1954, showed a total of 177,482,611, more than the previous year by 2,639,766. Of the approximately 97,000,000 about 57,000,000 were Protestant, 22,000,000 Roman Catholic and 2,500,000 Jewish. This was 60.3% of the population, the first time that the proportion had risen above 60%.

In August the World's Young Men's Christian association celebrated in Paris the centennial of the formation of its World's Alliance. The World Council of Churches in association with the International Missionary council followed up the program



STAINED GLASS WINDOW AND ALTAR of prayer room in the capitol, Washington, D.C., opened in 1955 for the exclusive use of U.S. congressmen

adopted at Evanston, Ill., in 1954, and in the meeting of its central committee in Switzerland in the summer admitted additional churches to membership.

(See also CHRISTIAN UNITY; CHURCH MEMBERSHIP; MISSIONS, FOREIGN [RELIGIOUS]; also under separate denominations.)

(K. S. L.)

Religious Denominations: see CHURCH MEMBERSHIP.

Religious Education. Protestant and Orthodox.—A study conference on religious education took place in Indonesia in the early summer of 1955, when 70 delegates representing practically all of the Protestant churches in those islands came together at Sukabumi, near Djakarta, for three weeks under the auspices of the Theological Commission of the Indonesian Council of Churches and the World Council of Christian Education and Sunday School Association. The findings of this conference were to be published in the Indonesian language as a handbook on Christian education for the churches of that country.

Several thousand Protestant and Orthodox Sunday school teachers and workers from the United States and Canada gathered at the 23rd International Sunday School convention at Cleveland, O., in late July. Visiting delegates attended from the Philippines, West Pakistan, Egypt, Great Britain and Mexico.

The development of indigenous curriculum materials for use in the Christian education programs of the churches in the mission fields continued to be given major emphasis. Nationalist and independence movements in Africa and Asia were resulting in the transfer of day schools in many countries from church control to the control of the secular authorities. This had happened or was happening in some degree in Ceylon, India, the Gold Coast, Nigeria, South Africa, Southern Rhodesia and the Belgian Congo. It therefore became urgently necessary to build

strong Christian education programs in the local churches through Sunday schools and youth groups.

Protestant and Orthodox delegates from eight countries of the near east were invited to attend two official curriculum conferences in September and October in Egypt and the Lebanon, respectively.

Four preliminary conferences on curriculum development and leadership education for Christian education in Africa were planned for Dec. 1955 and the first three months of 1956. The conferences were to be held in east, west, central and southern Africa and 17 countries were involved.

An international team representing the Philippines and Canada planned to visit Nigeria in the latter part of 1955 and the first six months of 1956 to study Sunday school and youth programs in the local churches and to assist local leaders in Africa to give a training course to about 25 young Nigerians who were to be used to promote Sunday school and youth work in the churches of that country.

The Youth committees of the World Council of Christian Education and the World Council of Churches met at Princeton Theological seminary, Princeton, N.J., early in 1955 to consider requests from youth groups in 20 countries around the world for participation in international projects.

The World's alliance of the Y.M.C.A. celebrated its 100th anniversary at a conference in Paris in Aug. 1955. (N. CL.)

Roman Catholic.—In 1955 the 1,557 diocesan and parochial high schools in the United States reported 398,192 pupils; the 842 private secondary schools reported 241,418. Pupils in the 8,843 parish elementary schools numbered 3,253,608. Enrolment in the 542 private elementary schools reached 95,685. These figures represented a substantial increase over those of 1954: 23,093 for the first group, 13,518 for the second and 4,442 for the third. The number of children cared for in 328 protective institutions rose from 20,148 to 35,147.

Enrolments in the 247 Catholic colleges and universities totalled 219,706 in 1955, an increase of 8,786 over 1954. The 78 diocesan seminaries reported 9,539 students and 385 novitiates and scholasticates of the various orders and congregations were preparing 16,493 candidates for the priesthood.

Catholic schools of nursing accounted for 30% of all nurses graduated in the United States and its territories, with a total of 8,812 graduates. There were 334 state-approved Catholic schools of nursing, 43 of which were colleges offering basic degree programs; 291 were schools with three-year diploma programs, the majority of which were under hospital control.

Archbishop John F. O'Hara of Philadelphia, formerly president of Notre Dame university, Notre Dame, Ind., stated in a front-page editorial, July 29, 1955, in the *Catholic Standard and Times*, that Catholics in the United States contribute more than \$1,000,000,000 each year in taxes to the public schools of the country, a sum which is only part of their outright "gift" to public education.

Foundations to aid education recognized Catholic colleges in their 1955 programs. The Ford Fund for the Advancement of Education awarded Manhattan college, New York city, a grant for a self-survey of its operations. The Ford fund awarded six fellowships and the Guggenheim foundation four to Catholic university faculty members. The Rockefeller foundation granted the University of Notre Dame \$100,000 to support its research in international relations. (J. LAF.)

Jewish.—The year 1955 witnessed continued effort and progress in religious and cultural life throughout the Jewish world. Among the notable efforts and accomplishments were the establishment of a number of colleges and teacher training schools in America, in Europe and in Israel.

In New York city, a liberal college for girls known as Stern

college was opened as an extension of Yeshiva university. The primary purpose of Stern College for Women is to provide young women with an education in the liberal arts and sciences as well as a grounding in Jewish learning and traditions.

An institution of higher learning named Bar-Ilan university was dedicated on Aug. 27 in Ramat Gan, Israel. Sponsored by the Mizrahi Organization of America, the university is devoted to a study of traditional Judaism, combined with a full course in higher general education following the pattern of American colleges.

Hebrew Union college-Jewish Institute of Religion of Cincinnati, O., and New York city announced, on the observance of its 80th anniversary, the opening of a graduate school in Jerusalem which would foster Jewish learning along liberal religious lines in keeping with the policies of Hebrew Union college-Jewish Institute of Religion.

To meet the increased need for religious teachers in Jewish communities in Europe, South America and North Africa, the department of education and culture of the Jewish agency in Jerusalem opened an institute for the training of teachers, named after the American Zionist leader, Chaim Greenberg.

To advance the study of modern Hebrew in Jewish communities and in general high schools and colleges, representatives from 30 countries attended a Hebrew congress in Jerusalem during the summer. One of the notable resolutions adopted by the congress was an appeal to the U.S.S.R. to remove current restrictions against religious education and the study of Hebrew in the Soviet Union and the satellite states.

In America, Jewish religious education continued to make progress, particularly in enrolment of new students. As in previous years, religious schools experienced a great shortage of teachers. To cope with this problem, the American Association for Jewish Education resolved to call a national conference in 1956 with a view of stimulating greater interest in the profession of Jewish education. (S. M. B.)

Representatives, House of: see ELECTIONS, U.S.; UNITED STATES CONGRESS.

Republican Party: see POLITICAL PARTIES, U.S.

Research Libraries, Association of: see SOCIETIES AND ASSOCIATIONS, U.S.

Resins: see PLASTICS.

Respiratory Diseases. **Psittacosis.**—By 1955, psittacosis was becoming a problem of increasing importance in the United States. Popularly the condition is known as parrot fever because the disease, and the virus which causes it, were first recognized as being transmitted to humans from parrots and other psittacine birds. The same or closely related viruses are prevalent among all birds including chickens and street pigeons. In 1951, the U.S. public health service had relaxed the interstate and foreign quarantine regulations for psittacine birds. A great increase occurred in the number of such birds, particularly parakeets, sold as household pets in the United States. Coincidentally the number of cases of psittacosis reported rose considerably. Only 20 to 30 cases were reported annually to the national office of vital statistics of the public health service for 1945 through 1951; the number thereafter steadily increased.

During 1954, cases were reported from 29 states and the District of Columbia. Eight states each reported 15 or more cases. Texas and California reporting 151 and 56, respectively. In Texas 149 cases were among employees of several poultry processing plants and the viruses isolated from turkeys were also associated with some of these plants. Pigeons, and possibly chickens, were also involved as the source of infection of

number of human cases. The total reported in the weekly *Communicable Disease Summary* for 1954 was 445, but the final figure for that year on an annual basis was expected to be greater. During 1955, as many as 10 cases were reported each week in these summaries. Most cases of psittacosis are probably not reported because other diagnoses, particularly primary atypical pneumonia or virus pneumonia, are made.

Influenza.—Dorland J. Davis, chief of the laboratory of infectious diseases of the National Microbiological Institute, briefly reviewed the occurrences of influenza epidemics in the United States and elsewhere in recent years in relation to the types of influenza viruses that caused them.

The changes in the specificity of the strains of influenza viruses that cause epidemics in different years had been shown to be reflected in the types of antibody that could be demonstrated in groups of individuals following vaccination with vaccines containing only single specific individual strains. When children, whose initial exposures had been only to recent so-called A prime strains (the term applied to strains of influenza A isolated in 1947 and thereafter), were vaccinated with a single strain of one of the A viruses, they showed marked increases in antibodies to the A prime strains and little or no increase in titer to the A strains that caused epidemics prior to 1947 unless they had been vaccinated with such strains. When sera from individuals of different age groups were tested with prototype strains, marked rises in titers were found in a few children to some strains that caused outbreaks in 1935 or earlier after vaccination with A prime strains; this was interpreted as indicating a limited prevalence of infections with viruses that resembled the earlier strains. Persons over 30 years old frequently responded with rises to the earlier type A strain regardless of the strain used in the vaccination, and, by contrast, some individuals were found who were considered to have escaped experience with the earlier viruses during periods when they were prevalent.

When antibody levels with the same prototype strains of influenza viruses were compared in sera collected during 1953 from persons in Sheffield, Eng., and in Michigan, it was found that: (1) similar shifts in the dominance of the types comprising the group A viruses occurred in both countries at the same time; (2) the levels of antibody were considerably lower in Sheffield but there was less difference to some viruses than to others, and (3) the lower levels of composite antibody titers in Sheffield correlated with and helped explain the higher incidence of influenza in England.

T. Francis Jr., recently summarized the current status of the control of influenza. He felt that the results of studies on vaccination with inactive influenza viruses demonstrated their high effectiveness. Reactions were few but persons naturally sensitive to eggs or chickens should not be given the vaccines, which are prepared in chick embryos. He felt that he could with confidence suggest a broader use of the vaccine and that it could sharply reduce the risk of influenza and other respiratory disorders which may accompany or follow it. Unfortunately, in spite of his wide experience not many shared his confidence in these vaccines, and they had not achieved general acceptance, but were reserved for special groups of individuals in whom protection against influenza was very important.

Common Cold and Other Acute Respiratory Infections.

—While no progress was reported on the isolation of the causative agent of the common cold, information had been accumulated about certain other viruses isolated in tissue cultures which seemed to be causally related to infections of the respiratory tract. R. J. Huebner, W. P. Rowe and their co-workers at the National Institutes of Health isolated a group of new viruses in tissue cultures from adenoid and tonsillar tissues removed

surgically, from secretions of the nose, throat and conjunctivae and from feces of persons with respiratory illnesses; they designated them as adenoidal-pharyngeal-conjunctival (APC) viruses. These viruses were grown from tissues which contained specific antibodies against them, merely by prolonged periods of incubation.

By the end of 1954 these workers had segregated 143 strains of such viruses into six specific types all of which grew readily in cultures of certain types of human cells. All six types were shown to be the cause of frequent infections in humans, beginning at an early age. Antibody studies in Washington, D.C., indicated that 50% of infants 6 mo. to 1 yr. of age had already been infected by at least one type; by the age of 15, the average person had already been infected by several types; and most persons had antibodies to four or more types by the age of 34.

They also produced some evidence that two of the types produce specific types of illness, one of these, type 4, corresponding to a type designated RI67 that was isolated by workers in the army medical school. The other, type 3, was recovered from many cases of acute nasopharyngitis and conjunctivitis during a winter outbreak in a hospital ward and a summer outbreak in a country day school; this type seemed to be established as a well-defined clinical entity.

In studies in Cleveland (O.), sera obtained from donors of infectious respiratory secretions and recipients of these secretions during a human transmission experiment carried out in 1945 were studied for antibodies to the RI67 and some of the APC viruses. The results indicated that the acute respiratory disease in those studies was caused by an agent that was either identical with, or closely related to the RI67 agent, and that this infection was distinct from the common cold and from primary atypical pneumonia. Other viruses, distinct from RI67, were also responsible for cases of this disease. Agents similar to the APC viruses, however, were recovered from cases of non-bacterial infections in the civilian population of Cleveland in July and Aug. 1954; type 3 was the virus predominantly implicated, but at least one other type was involved.

The present status of the prevention of the common cold and uncomplicated respiratory infections was recently summarized by J. H. Dingle. He indicated that no truly effective methods were yet available for the prevention of the great majority of respiratory diseases caused by viruses. He expressed real hope, however, that such measures would emerge from continued studies of the new respiratory viruses and those of measles, chicken pox and others and from the search for agents which kill them or inhibit their growth.

Histoplasmosis.—This fungous infection which is caused by *Histoplasma capsulatum* had received a great deal of attention in recent years because it produces lesions in the lungs resembling those of tuberculosis for which it is often mistaken. Most of the infections are recognized by a skin test with histoplasmin, a product of the causative fungus, in the same manner that tuberculosis infections are uncovered by skin tests with tuberculin. The fungus was isolated from soil and also from domestic animals, including dogs, cats and horses and from wild animals living in the proximity of human habitations.

At the 14th Conference on the Chemotherapy of Tuberculosis of the Veterans Administration, Army and Navy, evidence was presented which emphasized the importance of histoplasmosis as a problem in sanatoriums devoted to the treatment of tuberculosis. Two groups of workers discovered that about 2.2% of cases considered to have advanced tuberculosis with cavities in their lungs actually had active histoplasmosis, proved by examinations of specimens of lung or by cultivation of the fungus, and about 5.3% probably had this disease as evidenced by positive skin tests with histoplasmin or by finding antibodies

in the blood. It was estimated that about 1,300 such cases would be found in tuberculosis sanatoriums in the areas of high prevalence of histoplasmosis.

The treatment of histoplasmosis had not been satisfactory. Success was reported in an isolated case of localized histoplasma infection of the hard palate and gingiva by the use of 2-hydroxystilbamidine. As with many other infections, there was the possibility of increasing the dissemination of histoplasma infections widely throughout the body when cortisone or similar adrenocortical hormones were given, especially in large doses for prolonged periods; this was demonstrated experimentally in guinea pig infections.

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This French overseas island *département* in the Indian ocean has an area of 969 sq.mi. Pop.: (1946 census) 241,708; (1954 census) 274,370 (French Creoles, Negroes, mulattoes, Indians and Chinese). Language: French and Creole French. Religion: mainly Roman Catholic. Chief towns (pop., 1950 est.): St. Denis (cap.) 39,057; St. Paul 27,585; St. Pierre 24,652; St. Louis 23,925. Prefect in 1955, Pierre Philip.

History.—Marcel Cerneau and Georges Repiquet, both Radicals, were elected to the senate. Sugar production rose, so that a favourable adjustment of the balance of trade was possible.

(Hu. DE.)

Foreign Trade.—(1954) Monetary unit: franc C. F. A. (Colonies Françaises d'Afrique) = 2 metropolitan francs. In 1955 U.S. \$1 = 350 metropolitan francs. Imports 6,400,000,000 fr. C. F. A., including 4,400,000,000 fr. C. F. A. from France; exports 6,200,000,000 fr. C. F. A., including 5,000,000,000 fr. C. F. A. to France. Production (1954): sugar 175,000 metric tons; vanilla 52 metric tons; rum 87,000 hl.

Reuther, Walter Philip (1907–), U.S. labour leader, was born Sept. 1 at Wheeling, W. Va. After working in steel and automobile plants he and his brother Victor began in 1933 a tour of 11 European and Asiatic countries, working as labourers and studying various national labour movements, including that of the U.S.S.R. He returned home in 1935 and the following year was elected to the international executive board of the United Automobile Workers union. In 1942 he was elected vice-president and in 1946 president. On April 20, 1948, unidentified assailants seriously wounded him with a shotgun blast.

In 1949-50 Reuther's U.A.W. won substantial workers' pension concessions from the major automobile manufacturers. On Dec. 4, 1952, Reuther was elected president of the Congress of Industrial Organizations to succeed Philip Murray (1886-1952). As C.I.O. president Reuther became actively critical of the Eisenhower administration's labour policies, especially after the resignation of Martin P. Durkin as U.S. secretary of labour on Sept. 10, 1953. Meanwhile negotiations had been under way for a merger of the C.I.O. with the American Federation of Labor, leading to a final agreement in Dec. 1955, under which George Meany (*q.v.*) of the A.F. of L. became president of the new federation, named the American Federation of Labor and Congress of Industrial Organizations. Reuther was elected president of the industrial union department of the combined A.F. of L.-C.I.O. organization. Reuther in 1955 again won important wage concessions for the automobile workers, this time in the form of guaranteed annual wages.

Rheumatic Diseases. During 1955 considerable sums of money were appropriated by the United States congress to support an expanding program of research in this field, and a committee of the United Nations' World Health organization turned its attention to rheumatic diseases with a view to bringing to bear the energies and facilities of the entire world.

Bacterial Infections of Joints.—Highly successful measures had been developed for treatment of bacterial infections. Incidence of streptococcal and staphylococcal infections of joints was low because of the effective use of new agents in their treatment. Steadily improving control measures were wiping out other contagious diseases which in former years had also resulted in bacterial invasion of joints. Included among these were arthritis of scarlet fever, arthritis of cerebral spinal fever (spinal meningitis), arthritis of typhoid fever and arthritis of bacillary dysentery.

Still resistant to these new agents, however, were bacterial

forms of arthritis caused by brucellosis and tuberculosis, and arthritis caused by some highly dangerous yeast and mouldlike organisms.

Rheumatic Fever.—Although the causes of rheumatic fever remained unknown, mounting evidence pointed to streptococcal infections as a major factor in bringing on this disease. Prompt treatment of initial streptococcal infections with potent antibiotic agents was encouraged, as were daily injections of small prophylactic amounts of penicillin or one of the sulfonamide drugs for susceptible persons. By means of infrequent injections of long-acting repository penicillin, levels of penicillin in blood sufficiently high to reduce incidence of streptococcal infections were achieved. An injection once each month for two years completely protected 400 patients recently recovered from rheumatic fever.

Treatment of Acute Rheumatic Fever.—Hormones of the pituitary and adrenal glands were known to exert a powerful and dramatic suppressive effect upon inflammatory manifestations of rheumatic fever. Nevertheless, sharp divisions of opinion remained among physicians as to whether these hormones were in fact capable of lessening those complications of rheumatic fever which are most serious of all, that is, inflammation of the heart muscle and heart valves.

A relationship between glands of internal secretion and rheumatic fever was further suggested by finding unusually high levels of adrenal hormones circulating in the blood during the first week of the disease. After the ailment became well established, less than the normal level was found to be present. This phenomenon was now under intensive study.

A new test of the presence of rheumatic fever, C-reactive protein, was being widely used to provide a sensitive and reliable gauge of rheumatic activity. The test was especially satisfactory among individuals having no other inflammatory process.

Rheumatoid Arthritis.—Persons affected by this condition were believed to react abnormally to certain stimuli including infections, emotional stresses, trauma, exposures, fatigue and even some nutritional deficiencies. Exposure to these stimuli was thought to cause an alteration in the molecular structure of connective tissue components, also overgrowth of connective tissue elements. Among persons with rheumatoid arthritis, connective tissues of joints were thought to react with special violence to these stimuli, causing the arthritis. Many compounds were studied in an attempt to find a substance able to suppress this abnormal reaction of the connective tissues. Nitrogen mustard compounds were being studied in this regard but severe reactions sometimes followed their administration and limited a study among human patients.

Although rheumatoid arthritis is generally looked upon as a disease of the joints, new researches uncovered information pointing to serious defects also being present in many other structures of the body. Signs of severe damage were found in arteries in certain instances, also extensive defects in the heart, liver and kidneys. Among some such patients these visceral lesions were of surpassing importance, causing dangerous ailments of themselves and, in some cases, causing deaths. Although rheumatoid arthritis was seldom listed as a cause of death, mortality rates among persons with this disease were higher than among the general population. This higher rate was especially evident among younger persons. Valvular heart disease, infections of all sorts, kidney disorders and formation of clots in the great vessels of the lungs were notably frequent.

New developments in treatment of rheumatoid arthritis generally reflected the view that this ailment is a systemic one; hence measures aimed at the joints alone could not be expected to succeed. Most writers agreed that active manifestations of

rheumatoid arthritis were reversible and that patients could often achieve a degree of control with presently available treatments. The orthodox measures generally recommended included regulated periods of rest and activity, orthopaedic exercises aimed at correcting and preventing deformities, physiotherapy and well-balanced diets.

Among agents under special study to supplement these measures were a number of new steroid compounds. Synthetic derivatives of cortisone containing fluorine were tested and found to have enormous antirheumatoid arthritis potency when compared with cortisone and hydrocortisone. At the same time these compounds showed great tendencies to cause water-retention and arterial hypertension. New synthetic crystalline steroid compounds designated prednisone and prednisolone had survived preliminary clinical tests and were being widely used in place of cortisone and hydrocortisone. These compounds exerted beneficial effects similar to those obtained with cortisone and hydrocortisone and had the advantage of causing less of a tendency toward retention of sodium and water. A rather high incidence of other side effects with these compounds was, however, causing some concern as to their long-term usefulness. In particular, appearance of a round fat face, peptic ulcers, disorders of sugar metabolism, a tendency toward diabetes mellitus, and occurrence of fractures attributable to osteoporosis were reported in numerous cases.

Among many other measures being tested for the treatment of rheumatoid arthritis were the administration of gold by the oral route, transfusions of blood from pregnant women, and injections of solutions containing a derivative of bile-salt, namely triketocholanic acid. Phenylbutazone was being employed widely for the relief of painful symptoms in various musculoskeletal disorders including rheumatoid arthritis, but a rather high degree of toxicity prevented prolonged administration in doses large enough to produce notable relief.

Osteoarthritis.—This ailment, a frequent and painful accompaniment of the advancing years of life, appears to originate as a degenerative disturbance of articular cartilages in certain areas of the body. A specific liability to this disorder appears to reside in the end joints of fingers, in hips, knees and in certain portions of the spine. During the year an ailment resembling human osteoarthritis was produced in rats by administering large amounts of anterior pituitary growth hormone. After treatment with this substance for approximately a year, knees, ankles and spinal joints showed advanced osteoarthritic-like changes. These animal studies had not established with certainty that the human disease is produced by the same mechanism; however, such studies opened pathways for research by indicating one manner in which a similar ailment may be brought about.

No significant developments regarding treatment of osteoarthritis were recorded during 1955. (See also HEART AND CIRCULATORY DISEASES.)

(E. F. RG.)

Rhode Island. A north Atlantic state of the United States, in New England. Rhode Island was one of the 13 original states; it is popularly known as "Little Rhody." Area: 1,214 sq.mi. (smallest of the United States), including 157 sq.mi. of water, 67% woodland. Pop.: (1950 census) 791,896; (July 1, 1955 est.) 814,000. The principal cities, with 1950 populations, were: Providence (cap.) 248,674; Pawtucket 81,436; Woonsocket 50,211; Warwick 43,028; Newport 37,564; Central Falls 23,550.

History.—In 1955 the state again suffered severe hurricane damages, as it had the previous year. This time, in August, the rains brought by Hurricane "Diane" resulted in flood waters pouring through the city of Woonsocket as the Blackstone river

overran its banks, climaxed by the bursting of Horseshoe dam and the emptying of extensive Harris pond directly into the city. One life was lost and property damage alone was estimated at \$25,000,000.

The most important measures enacted during the 1955 session of the state legislature were as follows: five major appropriation acts including \$54,033,662.18 to conduct the operation of the government during the fiscal year ending June 30, 1956, a supplementary \$2,500,000 from reserve for the state's share of general public assistance costs, an additional \$1,900,000 for increased aid to local public school systems, \$596,100 as partial reimbursement to general voluntary hospitals for services available to citizens, and \$2,134,159.12 to cover an anticipated deficiency for the fiscal year ending June 30, 1955; an act continuing for another year the increased tax program initiated in 1951; three acts submitting for public approval at the general elections of Nov. 1956 the issuance of bonds for \$30,000,000 for modernization and improvement of the state highway system, \$5,000,000 for the development and improvement of the facilities of the University of Rhode Island, and \$10,000,000 to provide for the payment of bonuses to residents who served in the armed forces during the Korean hostilities; an act requiring annual state or independent postaudits of the financial records of all local governments; an act creating three local health districts with a view to improving and expanding available public health services through co-operative state-local administration and financing; an act establishing controls over the sale of barbiturates and other hypnotic and somnifacient drugs; an act requiring that local governments provide for the education of retarded children through special classes; a series of acts substantively altering the state's employment security program by reducing compulsory unemployment compensation and sickness compensation coverage from those persons working for an employer of four or more to those working for an employer of one or more, by increasing the maximum weekly benefits from \$25 to \$30, by increasing the annual salaries taxable from \$3,000 to \$3,600 and by providing for the inclusion of state employees within the benefits of the unemployment program. The legislature also passed an act providing for public approval for the calling of a constitutional convention to consider three propositions, life tenure for judges of the supreme and superior courts, pay increases for state legislators and authority for cities and towns to redevelop and rehabilitate blighted areas; after subsequent voter approval, the convention which was called proposed three amendments which concurred with the propositions noted above; at the next polling, the electorate approved only the amendment granting local redevelopment powers.

The chief executive officers of the state elected in Nov. 1954 for 1955-56 were Dennis J. Roberts, governor; John S. McKiernan, lieutenant governor; Armand H. Coté, secretary of state; William E. Powers, attorney general; Raymond H. Hawksley, general treasurer. Edmund W. Flynn was chief justice of the supreme court.

Education.—During 1954-55 there were enrolled in the public elementary and pre-elementary schools 77,194 pupils and 2,671 teachers; in junior high schools 18,941 pupils and 907 teachers; in senior high schools and vocational schools 18,073 pupils and 980 teachers. Pupils attending private schools numbered: elementary and pre-elementary 31,340; junior high 5,482; senior high and business 7,349. The total number of teachers in private day schools was 1,478. Current expenditures for day schools in 1953-54 were \$25,006,830 and for evening schools \$81,752. The commissioner of education in 1955 was Michael F. Walsh, working under the state board of education of seven members whose chairman was C. B. Collins.

Social Insurance and Assistance, Public Welfare and Related Programs.—There were 30,611 persons receiving some type of direct monetary public assistance as of Aug. 31, 1955, this number being 844 less than the previous year. During the year Sept. 1, 1954, to Aug. 31, 1955, the total amounts paid out in the different categories were as follows: old-age assistance \$5,690,415; aid to dependent children \$4,470,561; general public assistance \$3,814,479; aid to the blind \$152,163; aid to the disabled

\$1,228,033; soldiers' welfare \$273,908. In June 1955 there were 54,643 persons receiving federal old-age and survivors insurance at a monthly rate of benefits totalling \$2,959,801. During the year ending June 30, 1955, 728,908 benefit payments amounting to \$16,181,113 were made from the unemployment compensation fund, receipts into which totalled \$16,263,614. In the same period 251,487 payments totalling \$5,752,550 were drawn from the temporary disability fund (i.e., for those unemployed because of illness); receipts amounted to \$5,756,969. On July 31, 1955, there were 668 inmates in corrective institutions and 5,645 patients in charitable institutions and institutions for defectives, the number in the latter being 4,327.

Communications.—In Oct. 1955 the total highway mileage (excluding roads and streets under the control of the seven cities) was 2,680 mi., of which 1,382 mi. were in the state highway system with 876 mi. thereof having been built by the state. In Oct. 1955 railroads were operating 185.2 mi. of track in the state.

Water-borne commerce of the state for 1953 totalled 8,129,000 tons, of which 959,700 tons were foreign commerce (imports 954,062 tons, exports 5,638 tons); 6,573,519 tons were coastwise (receipts 6,041,314 tons, shipments 532,205 tons).

As of Oct. 1955 there were four publicly owned (state) airports and seven privately owned airports or landing fields. There were also two naval air stations owned by the United States.

Banking and Finance.—There were 22 banking institutions in 1955. Resources of 16 banks under state supervision totalled \$777,955,487; those of 6 banks under federal supervision totalled \$499,532,012. Savings deposits (exclusive of club accounts) in savings banks and trust companies (the 16 state banks) amounted to \$457,000,104 on June 30, 1955. In addition, 6 loan and investment companies had resources of \$6,612,967; 7 building and loan associations \$144,299,051; 61 credit unions \$37,471,231. The state closed its fiscal year on June 30, 1955, with receipts totalling \$67,211,154.23 (including federal grants of \$10,004,836.93); expenditures and encumbrances \$67,889,244.09; operational deficit \$678,089.86; free surplus \$7,017,347.16. The state gross debt was \$64,917,000; net debt \$58,234,909.52.

Agriculture.—The estimated total acreage of principal crops harvested in 1955 was 47,120. Cash income from crops in 1954 was \$7,318,000; from livestock and livestock products \$17,540,000; from governmental payments \$55,000; total gross farm income \$24,913,000. The estimated value of livestock on Jan. 1, 1955, was \$5,954,000, excluding turkeys and commercial broilers.

On Jan. 1, 1955, the livestock population of the state included 1,000 horses and colts; 21,000 milk cows; 8,000 other cattle; 5,000 hogs and pigs; 2,000 sheep and lambs; 615,000 chickens; and 5,000 turkeys. Livestock products in 1954 included 156,000,000 lb. of milk valued at \$10,215,000; 4,928,000 lb. of chickens, \$948,000; 4,853,000 lb. of commercial broilers, \$1,136,000; 922,000 lb. of turkeys, \$361,000; 8,833,000 dozen eggs, \$4,275,000.

Table I.—Leading Agricultural Products of Rhode Island

Crop	Indicated 1955	1954	Average, 1944-53
Corn, all, bu.	360,000	231,000	310,000
Hay, all, tons	56,000	51,000	48,000
Alfalfa hay, tons	7,000	7,000	3,000
Potatoes, bu.	1,155,000	1,148,000	1,323,000
Apples (commercial), bu.	245,000	165,000	181,000
Peaches, bu.	19,000	17,000	16,000

Source: U.S. Department of Agriculture.

Table II.—Principal Industries of Rhode Island

	All employees 1953	Salaries and wages 1953 (in 000s)	Value added by manufacture 1953 (in 000s)	Value added by manufacture 1952 (in 000s)
Food and kindred products	*	*	*	\$ 25,712
Textile mill products	59,137	\$199,292	\$266,021	236,519
Rubber products	6,809	24,785	39,094	39,044
Stone, clay, glass products	*	*	*	6,178
Primary metal industries	5,520	23,046	50,816	41,919
Fabricated metal products	7,139	24,895	34,752	39,798
Machinery (except electrical)	*	*	*	123,758
Electrical machinery	5,678	19,820	37,613	41,255
Miscellaneous manufactures	27,852	91,134	161,793	95,060

*Withheld because the estimate did not meet publication standards, either on the basis of the associated standard error of estimate or on the basis of a consistency review.

Source: U.S. Department of Commerce, Annual Survey of Manufactures, 1953.

Industry and Manufacturing.—The estimated number employed in the state in Aug. 1955 was 297,800, which was 12,700 more than in Aug. 1954. Employment was distributed as follows: manufacturing 132,700; trade (wholesale and retail) 53,200; government (federal, state, local) 35,300; service personnel, medical, legal, etc. 29,100; transportation and public utilities 15,700; construction 18,300; finance, insurance, real estate 12,700; miscellaneous 800. (Farmers, self-employed, domestics and armed service personnel are excluded.)

Employment in manufacturing in Aug. 1955 totalled 132,700, which was 5,366 more than in Aug. 1954, and the weekly payroll was \$6,590,500 for all manufacturing industries in Rhode Island according to the state department of labour. Wage earners were distributed among the manufacturing industries as follows: textiles 39,100; jewellery-silverware 24,400; metals and machinery 32,600; rubber products 5,400; apparel 4,000; optical products 4,000; food 4,800; miscellaneous 18,400. The average weekly earnings for all manufacturing employees were \$60.35, hourly earnings average \$1.54. (Jo. C. M.)

Mineral Production.—Rhode Island's mineral production ranked 47th among the states in value of output in 1953, and included principally building materials. Data for 1954 were not available in 1955, but outputs in 1952 and 1953, respectively, included: sand and gravel 589,000 tons (\$557,000) and 898,000 tons (\$776,000); stone 169,000 tons (\$655,000) and 162,000 tons (\$617,000); other nonmetallics valued at \$38,000 and \$69,000; total value \$1,250,000 and \$1,462,000.

Rhodesia and Nyasaland, Federation of.

This is a federation of three British central African countries: Northern Rhodesia, protectorate (north of river Zambezi); Nyasaland, protectorate (east of Northern Rhodesia); and Southern Rhodesia, self-governing colony (south of the Zambezi). The federation is bounded north by Tanganyika and the Belgian Congo, south by Bechuanaland and the Union of South Africa, west by Angola and east by Mozambique. Area: 489,854 sq.mi.; pop. (1955 est.) 7,072,000. Language: English, tribal dialects and (in Southern Rhodesia) Afrikaans. Religion: pagan, with Christian minority. Federal capital, Salisbury, S.Rhod. Governor general in 1955, Lord Llewellyn; federal prime minister, Viscount Malvern.

Northern Rhodesia.—Area: 290,323 sq.mi., including 3,000 sq.mi. of lakes. European pop. (1951 census) 40,842; total pop. (mid-1955 est.) 2,128,000, including 62,000 Europeans. Chief towns (pop. 1953 est.; European pop. in parentheses): Lusaka (cap.) 62,000 (6,000); Kitwe 60,926 (6,300); Luanshya 54,127 (4,727); Ndola 44,120 (5,120); Mufalira 41,668 (4,247); Chingola 34,484 (3,384); Broken Hill 32,810 (4,050). Governor in 1955, Sir Arthur Benson.

Nyasaland.—Area: 49,177 sq.mi., including 11,600 sq.mi. of lakes (mainly Lake Nyasa, which runs along much of the eastern frontier). Pop. (1945 census) 2,049,914, including 1,948 Europeans; (1955 est.) 2,545,000, including 5,600 Europeans. Chief towns (1952 est.): Zomba (cap.), pop. about 5,000; Blantyre about 17,000. Governor in 1955, Sir Geoffrey Colby.

Southern Rhodesia.—Area: 150,354 sq.mi. European pop. (1951 census) 135,596; total pop. (1955 est.) 2,399,000, including 166,000 Europeans. Chief towns: Salisbury (cap.), pop. (1953 est.) 120,000, including 50,000 Europeans; Bulawayo. European pop. only (1953 est.) 40,000. Governor in 1955, Vice-Adm. Sir Peveril William-Powlett; prime minister, Reginald Stephen Garfield Todd.

History.—In March 1955 the federal prime minister, Lord Malvern, announced the decision, following reports from French consultants, to proceed with the Kariba scheme on the Zambezi river. The alternative scheme, at Kafue in Northern Rhodesia, was still being actively investigated. In Nyasaland the Shire valley scheme was announced for control of the level of Lake Nyasa and the Shire river and hydroelectric power estimated to cost finally £75,000,000. The International Bank for Reconstruction and Development indicated its willingness in principle to lend money for the Kariba scheme; it was estimated that the first stage (to provide a generating capacity of 460 megawatts) would cost £55,000,000 by 1960 and the completed scheme (1,000 megawatts) £85,000,000. A lake nearly 200 mi. long and up to 30 mi. wide would be created by the 350-ft. dam.

The second budget presented by the minister of finance, Donald Macintyre, in June showed that the national income had increased to £265,000,000 in 1954, 12% above 1953 and 80% higher than in 1950. Exports in 1954 were valued at £153,000,000, an increase of £5,000,000 over 1953; total imports amounted to £125,000,000, giving a favourable visible balance of trade of £28,000,000 a year. In the first six months of 1955 exports totalled more than £76,000,000 and imports nearly £66,500,000. A record crop of 120,500,000 lb. of flue-cured tobacco was sold for more than £20,000,000. The first federal customs tariff came into force in July together with a new trade agreement with the Union of South Africa. The underlying policy was to assist those secondary industries which process and manufacture the raw materials of the federation.

On Aug. 1 the rail link was completed between Bannockburn in Southern Rhodesia and the port of Lourenço Marques in Mozambique. Rhodesia railways received their first shipments

of diesel electric main-line locomotives.

New federal ministries for power and law were created. A seventh cabinet minister was appointed (F. S. Owen). The federal supreme court was established on July 1 at a ceremony in Salisbury.

Immigration was encouraged by a renewed campaign and the appointment of an immigration attaché in London. The federation also became a member of the Intergovernmental Committee for European Migration at Geneva. (M. NN.)

Education.—*Northern Rhodesia* (schools, 1953): European primary 38, pupils 9,336 (of which 7 with secondary departments, pupils 1,430); coloured and Asian primary and secondary 8, pupils 492; African primary pupils 167,129 (of which 15,742 middle school) and secondary 430; African teachers in training 807; African vocational 41, pupils about 2,090. *Southern Rhodesia* (schools, 1952): European primary 147, pupils 22,328, teachers 561 (including 52 aided and recognized private, all levels); secondary 18, pupils 6,497, teachers 360; aided farm 17, pupils 119; coloured and Asian 21, pupils 3,769; African primary 2,154, pupils 231,551, teachers 6,598; postprimary 18, pupils 1,575, teachers 99; teachers' training colleges 22, students 961; institutes of higher (technical) education 2. *Nyasaland* (schools, 1954): government European primary 3; government coloured primary 1; African primary 4,688 (including 3 government), pupils 237,000; African secondary 4 (including 1 government and 1 multilateral with vocational departments), pupils 311; Asian primary pupils 790; African teachers in training 554 at 11 centres (including 1 government); African vocational pupils 730.

Finance and Banking.—Monetary unit: Rhodesian pound (£R1 = £1 sterling = U.S. \$2.80). Currency circulation (March 1952) £10,200,000, (March 1953) £11,400,000. Bank deposits (Dec. 1952) £42,800,000, (Dec. 1953) £45,900,000. Budgets: *federal state* (1955–56 est.), revenue £39,065,000, expenditure £61,078,115; *Northern Rhodesia* (1953 est.), revenue £30,340,709 (excluding development fund £6,977,211), expenditure £28,959,321 (excluding development expenditure £9,499,921); *Southern Rhodesia* (1954–55 est.), revenue £12,780,000, expenditure £18,676,911; *Nyasaland* (1954–55 est.), revenue £5,009,570, expenditure £4,990,025.

Foreign Trade.—(Federation 1954): imports £R1,503,480,000; exports £R1,762,080,000. Principal exports: metals and metal manufactures, minerals, tobacco, foodstuffs.

Transport and Communications.—Railways (1954): *Rhodesia* (Northern and Southern) 4,018 km.; *Nyasaland* 505 km. Roads (1954): *Southern Rhodesia* 45,600 km., of which 9,600 km. principal; *Northern Rhodesia* 25,500 km., of which 6,880 km. principal; *Nyasaland* 7,763 km., of which 2,720 km. principal. Motor vehicles licensed (1953): *Southern Rhodesia* cars 45,000, commercial vehicles 21,000; *Northern Rhodesia* cars 14,900, commercial vehicles 12,600; *Nyasaland* (Dec. 1954) cars 3,188, commercial vehicles 2,537. Telephones (Jan. 1954): *Southern Rhodesia* 37,063; *Northern Rhodesia* 6,077; *Nyasaland* 2,407.

Agriculture.—Main crops (metric tons): tobacco (1954–55 exports, dry weight) 62,000; millet and sorghum (*Southern Rhodesia*, 1953) 205,000; peanuts (*Southern Rhodesia*, 1953) 2,000; tea (exports, 1954) 7,600; cottonseed (*Nyasaland*, 1954) 5,000; cotton, lint (*Nyasaland*, 1954) 3,000; tung oil (*Nyasaland*, 1954) 928; maize (*Northern Rhodesia*, 1953) 116,711 short tons, (*Nyasaland*, 1954, surplus bought) 54,345 short tons. Livestock: *Southern Rhodesia* (Sept. 1955) cattle 3,077,000, sheep (Sept. 1954) 274,000, pigs (Sept. 1954) 128,000; *Northern Rhodesia* (Sept. 1954) cattle 972,000, sheep 61,000, pigs (1952) 46,000; *Nyasaland* (Sept. 1955) cattle 292,000, sheep 53,000, pigs (1952) 57,000.

Mineral Production.—*Northern Rhodesia* (metric tons, 1954) copper (smelter) 385,200, copper ore (metal content, 1953) 368,400, zinc (smelter) 27,000, lead (refined) 15,240, gold (1953) 103 kg.; *Southern Rhodesia* (metric tons, 1953) coal 2,618,000, iron ore (metal content) 34,700, chrome ore (metal content) 201,600, tungsten 211, asbestos 79,600, gold 15,585 kg.

Rice. The U.S. 1955 rice crop of 52,446,000 bags (of 100 lb. each) was the smallest since 1952, 11% less than in 1954, but substantially larger than the 39,357,000 bags average for 1944–53. In compliance with an acreage allotment and marketing quota program, approved by about 94% of the growers, acreage was reduced sharply by about one-fourth, to 1,815,000 ac., as compared with 2,405,000 ac. in 1954. The indicated average yield of 2,890 lb. per acre was the highest of record, 443 lb. more than in 1954 and 669 lb. above average for the decade 1944–53. The California yield was 3,400 lb. per acre, as compared with 2,400 lb. in 1954. The leading states were Texas with 14,520,000 bags (16,120,000 bags in 1954); Louisiana with 13,050,000 bags (14,996,000); Arkansas with 12,112,000 bags (14,651,000); and California with 11,254,000 bags (10,872,000). The national average support price for 1955-crop rice was set at \$4.66 per hundredweight, or 85% of parity, as compared with \$4.92 per hundredweight for 1954-crop rice. At the height of the autumn harvest, producers were receiving an average of

about \$4.50 per hundredweight as compared with \$4.04 a year earlier. Indicated U.S. consumption of 5.3 lb. per capita was the same as 1954 and comparable with 5.7 lb. pre-World War II average. Exports of rice in the 1954-55 marketing year (August to July) were 984,800,000 lb. (milled rice basis) or 37% less than the 1,574,800,000 lb. of the preceding year.

World production for 1955-56, excluding Communist China, North Korea and the U.S.S.R. was forecast at 270,210,900,000 lb., 3% more than the previous year. Of the total, 238,757,200,000 lb. were indicated for Asia. In all, 199,193,000 ac. were used as compared with 195,624,000 ac. the previous year and 178,572,000 ac. before World War II. Japan's 1955 rice crop was preliminarily forecast at a record 30,000,000,000 lb. (rough), about 5,000,000,000 lb. larger than the 1954 harvest, but a typhoon during harvest damaged quality and quantity. Europe produced, with a large acreage and favourable yields, 3,880,400,000 lb. from 996,000 ac. The Philippine estimate of the 1954-55 crop was pushed up to 7,161,000,000 lb.; even so, 100,000 metric tons were imported. On the basis of large exports during the first half of 1955, Thailand's indicated exports for the year were as high as 1,300,000 metric tons (as compared with 1,004,324

Rice Production of the Principal Producing Countries			
(In millions of pounds; rough)			
Country	Preliminary 1955-56	1954-55	Average 1945-46 to 1949-50
China	85,000	85,000	76,000
India	28,500	28,266	26,889
Pakistan	30,000	24,988	24,735
Japan	17,000	12,900	11,978
Thailand . . . . .	..	24,100	19,300
Indonesia	14,800	14,500	10,500
Burma . . . . .	..	..	..

tons in 1954), leaving only small carry-over stocks at the end of year. Malaya resumed large rice importation, taking 506,000,000 lb. in the first half of 1955 as compared with 247,000,000 lb. for the same period of 1954. (J. K. R.)

Rio De Oro: see SPANISH COLONIAL EMPIRE.

Rivers and Harbours. During 1955 initiation of construction work on the St. Lawrence Seaway project was a high light of continuing improvements on the rivers and harbours of the United States. This was a joint United States-Canadian undertaking to provide a 27-ft. channel from Montreal to Lake Erie, so that ocean-going vessels might continue into the Great Lakes, thus opening up a vast new area to direct ocean commerce.

An example of the studies constantly being made by the army corps of engineers to improve navigation channels was that of deepening the channels connecting the Great Lakes. Presently authorized Great Lakes connecting channels provided for controlling depths of 25 ft. for downbound traffic and 21 ft. for upbound traffic. The recommended 27 ft. would meet the needs of the larger modern vessels and would tie in with the 27-ft.-depth channels of the St. Lawrence Seaway project. At the 1955 session of congress the house approved the recommended deepening of the connecting channels. Favourable action by the senate was required, however, before the project would be authorized.

An example of a third category of river and harbour work performed by the corps of engineers, that of planning, prior to construction, was that of the Delaware river project, between Philadelphia, Pa., and Trenton, N.J., as authorized by congress in Sept. 1954. This project, in general, provided for a continuation in the Delaware river almost up to Trenton of a 40-ft. channel such as now exists up to Philadelphia. The existing channel ranges up to 28 ft. Congress appropriated \$100,000 for planning on this project in fiscal year 1956.



WATERFRONT IMPROVEMENT at Hoboken, N.J. A new pier (foreground) was completed in 1955, the first step in a program of modernization of the port facilities undertaken by authorities of both New Jersey and New York

For all phases of river and harbour work, as well as for flood control, congress appropriated \$559,506,514 for the functions assigned to the corps of engineers. This included \$553,955,500 in the regular civil functions appropriation bill and \$5,551,014 in a supplemental appropriation bill.

Major categories of the regular appropriation bill were as shown in Table I.

Table I.—River and Harbour Appropriations, 1955			
Category	Amount	Category	Amount
Construction, general* . .	\$401,173,000	General expenses . . .	\$ 9,300,000
Operation and maintenance, general . . .	83,030,000	General investigations .	5,940,000
Flood control, Mississippi river and tributaries .	51,962,500	Niagara remedial works	2,400,000
		St. Lawrence joint board .	150,000
		Total	\$553,955,500

*Includes \$5,515,000 for advance engineering and design.

In Table II are shown the 15 largest individual construction amounts.

Table II.—Construction Accounts	
Project	Amount
The Dalles dam, Ore. and Wash.	\$63,500,000
Mississippi river and tributaries, Ill., Mo., Ky., Tenn., La., Ark. and Miss.	37,262,000
Oahe reservoir, S.D.	25,000,000
Garrison reservoir, N.D.	20,100,000
Chief Joseph dam, Wash.	18,000,000
Los Angeles county drainage area, Calif.	14,000,000
Gavins Point reservoir, Neb. and S.D.	13,950,000
Buford dam, Ga.	11,830,000
McNary lock and dam, Ore. and Wash.	11,000,000
Table Rock reservoir, Ark. and Mo.	11,000,000
Tuttle Creek reservoir, Kan.	7,500,000
New Cumberland lock and dam, O. and W.Va.	7,000,000
Cheatham lock and dam, Tenn.	6,360,000
Markham Ferry reservoir, Okla.	6,300,000
Central and Southern Florida project	6,300,000

(S. D. S.)

Canada.—The second longest suspension bridge in the British Commonwealth, over the harbour of Halifax, N.S., was opened on April 2, 1955, to join the city of Halifax with the town of Dartmouth. Costing \$10,750,000, the Angus L. Macdonald bridge has a total length of 5,290 ft., including approaches. Minimum clearance over the harbour is 165 ft. The bridge accommodates a roadway 27 ft. wide and a 5-ft. sidewalk for pedestrian use.

A contract was awarded for blowing up British Columbia's notorious Ripple rock in the Strait of Georgia in what promised to be the biggest controlled explosion in Canadian history. Ripple rock lies in the track of a busy coastal shipping lane, Seymour narrows, a natural bottleneck in the channel separating Vancouver Island from the British Columbia mainland. It has been called the worst menace to navigation on the west coast of North America, having wrecked scores of vessels and taken more than 100 lives in recent decades. Two jagged peaks which rise to within 10 and 20 ft. of the surface were to be blasted

by 550 tons of nitron placed by means of an underwater tunnel, 50 ft. below the bed of the narrows, extending from the Maud Island shore. Previous attempts to eliminate Ripple rock had ended in costly failures, millions having been spent on the project.

The 1954 report of the national harbours board, which operates the eight major harbours of Canada, showed a total operating income of \$20,258,000 and a net income surplus of \$1,792,000. Equivalent figures for the previous year were \$21,000,000 and \$2,400,000. The decrease in operating income was about 4% and paralleled a reduction of the same percentage in aggregate cargo tonnage, the chief factor being a lower volume of grain traffic. Total cargo tonnage handled by the eight harbours administered by the board decreased by 4% in 1954 over 1953, the figures being 40,890,000 tons against 42,500,000 tons. Parliament voted the national harbours board \$5,107,346 for 1955 (\$4,782,500 in 1954), including \$938,900 for Halifax; \$1,250,000, Saint John, N.B.; \$1,311,500, Quebec; \$1,423,000, Churchill. (See also CANALS AND INLAND WATERWAYS.) (W. H. V. A.)

Roads and Highways. **United States.**—During 1955 the highway construction program in the United States went forward at a record-breaking rate. Estimates indicated that about 33,000 mi. of principal highways would be completed at a cost of \$3,093,000,000, and construction of an additional 75,000 mi. of local and other roads and streets would cost \$1,532,000,000. With the addition of maintenance, administration and interest to these capital outlays, highway expenditures were expected to reach \$7,200,000,000. More than 80% of the construction on principal highways represented resurfacing and reconstruction of worn-out and obsolete highways. The mileage of surfaced streets and highways was expected to reach 2,288,000, an increase of 60,000 mi. All streets and highways, improved and unimproved, totalled 3,396,000 mi. Motor vehicle registrations exceeded 61,000,000 during 1955.

The federal-aid highway program accelerated considerably during the year as the result of an increase in the annual authorization rate from \$575,000,000 to \$875,000,000 and an early apportionment of the 1956 funds, effective July 1, 1954. Federal and federal-aid projects completed during the fiscal year ending June 30, 1955, including work in national forests, national parks and other federal areas and miscellaneous projects, totalled 22,155 mi.

At the end of the year more than 3,500 mi. of expressways were completed or under construction in the United States. At mid-year 1,471 mi. of toll highways were in service and 1,527 mi. were being built; it was estimated that expenditures for these roads would amount to \$2,500,000,000.

Africa.—The Belgian Congo, in its third year of a ten-year program to build 5,700 mi. of first-class arterial roads, was lagging because of lack of funds but had completed 310 mi. and surveyed 2,500 mi. Over-all mileage of all roads amounted to 75,000. South Africa had completed 4,200 mi. of a proposed 5,270-mi. national road system conceived in 1934, the annual cost averaging \$14,000,000. In addition, the provincial road mileage had grown to 104,000 with about 350 mi. of all type construction being added annually. Ethiopia completed restoration of its primary system of highways to better than prewar condition, including 550 mi. in Eritrea, and was planning a system of secondary development roads. Egypt intensified its road-building program and established a highway training centre with \$3,000,000 technical aid funds. The Cairo-Alexandria road was being reconstructed to higher standards, a project expected to cost \$20,000,000 and to be completed in 1956. Egypt's share in the \$30,000,000 road construction project to connect the Arab countries was \$5,000,000; construction was already begun.

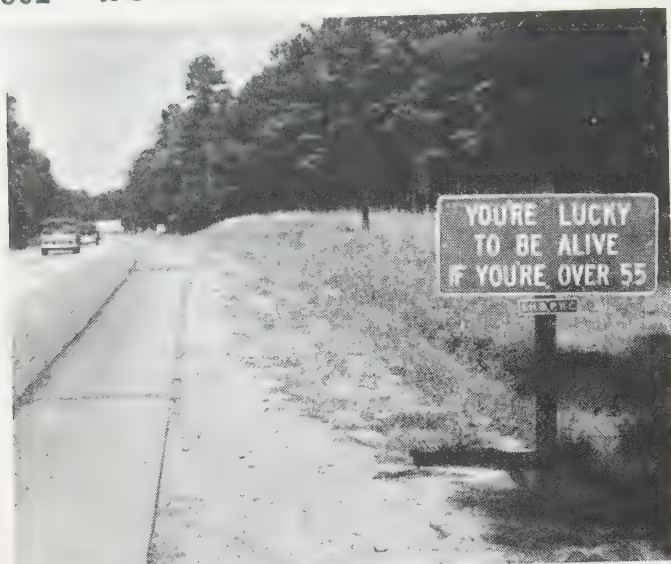
The 316-mi. Suez-Matruh road was still under construction. Liberia had spent more than half its \$6,000,000 first five-year highway program funds on improvement of a 175-mi. road between Monrovia, the capital, and the French Guinea boundary, and about one-fourth on a development road at the other end of the country. A second construction program with \$15,000,000 available was begun, to reach the interior provinces and connect them with the two port towns.

Canada.—Canada was second only to the United States among the nations of the world from the standpoint of dollars per capita spent on highways. Slightly more than half the 4,187-mi. trans-Canada route remained to be completed. A total exceeding \$600,000,000 was spent on highways in 1955 by the federal, provincial and municipal governments and the army and private enterprises.

Mexico.—Three main roads from the United States to Mexico City were in use. More than \$10,000,000 had been spent in the construction of a toll road between Mexico City and Acapulco and \$4,000,000 on the Mexico City-Piedras Negras road. More than \$70,000,000 was spent on highways in 1955, compared with \$43,000,000 in 1954. Construction continued on the highway across the Isthmus of Tehuantepec. The 62-mi. connection from Tecata to Ensenada in Baja California was completed.

Central America.—The status of the approximately 1,574-mi. inter-American highway from the southern border of Mexico to the Panama canal, at the beginning of a three-year accelerated construction program, was as follows: Guatemala, 84 mi. paved, 208 mi. substandard all-weather, 25 mi. impassable, total 317 mi.; El Salvador, 175 mi. paved, 21 mi. all-weather, total 196 mi.; Honduras, 24 mi. all-weather and 70 mi. substandard, total 94 mi.; Nicaragua, 132 mi. paved, 106 mi. substandard all-weather, total 238 mi.; Costa Rica, 60 mi. paved, 219 mi. standard all-weather, 134 mi. impassable, total 413 mi.; Panamá, from Costa Rican border to the Panama canal, 98 mi. paved, 15 mi. standard all-weather, 189 mi. substandard all-weather, 14 mi. impassable, total 316 mi. South of the Panama canal, on the Pan-American highway, there were 40 mi. passable and approximately 200 mi. through the Darien area as yet unsurveyed.

South America.—Colombia's road-building program, begun in 1951 and calculated to produce 2,000 mi. of trunk highways connecting principal cities and towns with Caribbean and Pacific ports, was nearly completed. More than \$40,000,000 per year had been spent in this program. The 300-mi. road from Medellín to Turbo on the Gulf of Urabá was completed during 1955. Peruvian highway expenditures jumped from less than \$600,000 in 1948 to more than \$11,000,000 in 1955. Chile began a five-year development program estimated to cost \$80,000,000 annually, with \$32,000,000 to be spent on the Pan-American highway. The road system in Uruguay amounted to 4,000 mi., a 33% increase in mileage since 1947. Paraguay, with less than 1,200 mi. of road, began construction of a 310-mi. all-weather highway from Asunción, the capital, to the rich Mennonite farm lands. Venezuela completed 18 mi. of bridges, 200 mi. of pavement and 260 mi. of first-class road to raise its total mileage of first-class road to 300 and of all types to 1,000. The 600-mi. Pan-American highway section between Caracas and the Colombian frontier was completed. The first road in southern Ecuador to reach the sea, the 100-mi. Cuenca-Pasaje road, was completed in 1955 and was part of a three-year plan to spend \$35,000,000 on 560 mi. of highways, including sections on the Pan-American and Andes-to-the-Pacific east-west roads. Brazil, with only 1,250 mi. of high-type paved highways, planned a 31,000-mi. system to connect with roads in Venezuela, British Guiana and Peru. Bolivia completed the 310-mi. Cochabamba-Santa Cruz highway in 1954, after ten years' effort, and had paved almost the entire length. Argentina spent \$25,000,000 on highways in 1955 and



HUMOROUS WARNING SIGN, one of 180 placed along a 182-mi. stretch of U.S. highway 1 in North Carolina by the state highway commission. Increasing use of the signs was planned if studies of 1954 and 1955 accident statistics indicated that motorists were heeding the slogans

planned to spend \$14,000,000 annually on expressways. The 2½-mi. limited-access approach to Buenos Aires was under construction at an estimated cost of \$1,000,000.

England.—A four-year program to improve existing roads and lessen traffic jams at important intersections was begun, with \$600,000,000 allotted for over- and underpasses. The sum of \$180,000,000 would be spent on multilane national expressways, one between London and Yorkshire and another between Birmingham and Preston. A program for the complete rebuilding of Great Britain's highway system was being studied.

Europe.—The Lulea-Malmö expressway in Sweden was nearing completion as a four-lane divided superhighway. New construction and maintenance lagged in France, west Germany, Yugoslavia and neighbouring states because of lack of funds. Belgium completed 35 mi. of a 175-mi.-long superhighway and had a long-range program for construction of 610 mi. of limited-access express roads, 3,750 mi. of first-class highways and 8,125 mi. of secondary roads. Italy completed 500 mi. of roads at a cost of \$46,000,000 in 1955, to swell the total completed in recent years to 4,450 mi., and had 2,200 mi. under construction. A five-year highway improvement program in Spain was completed, and the country's network included 12,000 mi. of national roads, 13,600 mi. of regional roads, 21,000 mi. of local roads and, with the provincial roads, totalled 77,500 mi. Switzerland had 10,350 mi. of main roads, 4,480 mi. of secondary and 19,200 mi. of local for a total of 34,030 mi. of improved highway. Greece in the five years ending in 1955 completed construction of 19,000 mi. of new roads and reconditioning of 2,500 mi. of war-damaged roads.

Near East.—In Jordan surveys were completed for a \$5,000,000 construction program and work was begun on a bridge across the Jordan river. More than \$2,500,000 in highway construction equipment was imported and put to work. Turkey completed eight years of highway modernization, for which the United States contributed more than \$43,000,000 in aid. The system included 15,150 mi. of national roads. Twenty-four miles of paving were completed in Saudi Arabia on the 171 mi. from Jidda to Medina, making a total of 87 mi. of paved road in the country. Construction was begun on the 1,000-mi. trans-Arabian highway between Jidda and Dammam and on the Mecca connection to that route. Iraq in the second year of its second five-year highway improvement program had 32 projects, covering 1,000 mi., and 30 bridges, including a 500-ft. structure over

the Euphrates, under construction estimated to cost \$27,000,000. Iran established a highway research laboratory at Tehran and proposed spending \$85,000,000 in extension of its 3,750-mi. system of main highways.

Far East.—India had under construction about 700 mi. of new road paralleling its northern border and completed a number of short feeder roads into the Himalayas. In Tibet two completed highways provided new links between that country and China. The journey from Lhasa to Yaan was reduced from several months by caravan to ten days by motor.

Japan was in the second year of a highway improvement program estimated to cost more than \$700,000,000, to be spent on a 26,200-mi. highway system, including two underwater inter-island vehicular tunnels. The Resettlement and Development program on the island of Mindanao in the Philippines progressed as expected. Nineteen new bridges had been built, ten in 1955. Eighty-six miles of new roads were built, 50 during 1955, to assist new settlers in reaching resettlement areas. On the other islands, more than 250 mi. of roads were rebuilt or improved, including erection of permanent bridges, and 3,720 mi. placed under permanent machine maintenance. Formosa was planning to restore its 1,000 mi. of trunk roads, 2,800 mi. of county and rural roads and 5,900 mi. of lower-class roads. (See also MOTOR TRANSPORTATION.)

Rockefeller Foundation: see SOCIETIES AND ASSOCIATIONS, U.S.

Rockets: see JET PROPULSION; MUNITIONS.

Rodeos: see SHOWS.

Roman Catholic Church. In 1955 the College of Cardinals comprised 60 members. Three in nations under communist influence were restricted in their full liberty of action.

Communist contempt for religion had brought death, imprisonment, expulsion and suffering to at least 185 bishops and other heads of sees throughout the world. Communist China was responsible for 99 names on the list, among which were Cardinal Tien, archbishop of Peking, 18 archbishops, 56 bishops and 24 monsignori. The U.S.S.R. ranked second on the list of persecutors with 29 victims. Other countries marked as persecutors were Albania, Bulgaria, Czechoslovakia, Hungary, North Korea, Poland, Rumania and Yugoslavia.

The total Catholic population of the world at the beginning of 1955 was estimated at 470,100,000. The Americas had 191,424,000 Catholics, the United States (including Alaska and the Hawaiian Islands) accounting for 32,575,702. This last figure represented a ten-year increase of 8,612,031 more than the 23,963,671 Catholics reported in 1945.

Serving the Catholic people through the world were 360,000 priests, the ratio being nearly one priest for every 1,300 Catholics. Of this total number of priests 27,760 were missionaries working among a non-Catholic population of 2,000,000,000 of whom 1,500,000,000 were non-Christian.

There were 26 archdioceses and 106 dioceses in the United States. The hierarchy consisted of 208 members: four cardinals, 34 archbishops and 170 bishops, the largest number in the history of the Catholic Church in the country.

At the parish level 13,362 communities were reported, 673 being without resident clergy. Also listed were 8,085 chapels, 4,905 missions and 1,878 stations, an increase of 636 in the number of places where Holy Mass was celebrated regularly.

The United States Catholic Negro population increased by 20,000, of whom 10,000 were converts. The 1955 Catholic Negro population was about 477,000, served by 655 priests in 45 parishes. They were assisted by 1,800 nuns and 600 lay workers

There were 345,000 persons of American Indian blood in the United States, of whom 111,327 were Catholics. Among the Indians, 175 priests maintained 410 churches and chapels.

The 3rd International Catholic Congress on Rural Life, an organization established to raise the standards of the spiritually and materially underprivileged rural population of the world, took place between April 17 and April 25, 1955, at Panamá city. The theme of the congress was set in a long message from Pope Pius XII. He called on large land owners to fulfil their "grave duty" of paying a just wage and to contribute toward the social and economic improvement of their workers. He further recommended that "the state must favour in its legislation the rural segments, sometimes in the matter of taxes and at other times regarding the sale of products. It should also help with agricultural credits and social security."

The 36th International Eucharistic congress opened in Rio de Janeiro, Braz., on July 17. Its purpose was to emphasize the unity of belief among Roman Catholics throughout the world and their fidelity to the Sacrament. The congress assembled nearly a million persons in Rio de Janeiro and brought more than 10,000 pilgrims from many countries. Besides 20 cardinals, 300 archbishops and bishops attended. An address in Portuguese by Pope Pius XII, broadcast from Rome, was the final act of the congress.

Pres. Juan D. Perón of Argentina accused a number of Catholic priests and the Catholic Action organization (Acción Católica Argentina) of infiltrating into the trade unions, the universities and other organisms of the national life of Argentina and alleged that the members of the Roman Catholic hierarchy were engaging in "intrigues" against the state. Three measures directed in effect against the church were authorized by Perón: a decree abolishing church control of religious education in schools; a bill legalizing divorce; a decree legalizing prostitution which had been banned in Argentina for 18 years. During the first half of 1955 more than 100 priests and Catholic students were jailed following public protests against the action taken by the government. The Argentine Episcopate issued a pastoral letter calling for the complete freedom of the press, radio and public assembly as "indispensable conditions" in order that "a real public opinion representing the thought of all inhabitants of the country can fully and freely express

itself." The pastoral letter stressed that it was essential that the rights and liberties of the church and its institutions should be safeguarded. Two prelates were arrested on charges of instigating violence. Following the expulsion of Bishop Tato and of the Vicar General Msgr. Novoa of the archdiocese of Buenos Aires, the Sacred Consistorial congregation in Rome declared that all officials participating directly or indirectly in the measures taken by the Argentine government had incurred excommunication.

After a revolt had forced the resignation of Perón in Sept. 1955, Archbishop Santiago Cardinal Copello, in his first official broadcast since the outbreak of church-state hostilities, urged the people to go back to work and restore peace.

On Oct. 20, 1955, the new Argentine government restored to the Catholic Church all privileges it lost during the Perón dictatorship.

On March 2, 1955, the Rev. Georges Bissonnette, an American Assumptionist priest who was serving the religious needs of the Catholic American community in Moscow, was ordered to leave the Soviet Union. Charles E. Bohlen, the United States ambassador to the U.S.S.R., lodged a protest on the ground that Father Bissonnette's expulsion violated the Litvinov agreement of 1933 guaranteeing freedom of conscience and religious worship to United States nationals on Soviet soil. The United States Catholic community in Moscow was still without a pastor at the close of the year.

The James J. Hoey awards, conferred each year on a white and Negro Catholic layman who have made outstanding contributions to the cause of interracial justice during the year, were bestowed upon Millard F. Everett of New Orleans, La., editor of *Catholic Action of the South*, and to James W. Hose, a physician. Hose, the Negro winner, was the guiding spirit behind the new Collins Chapel hospital in Memphis, Tenn. Everett was cited for his paper's uncompromising stand on the race question and against Louisiana's so-called "right to work" laws.

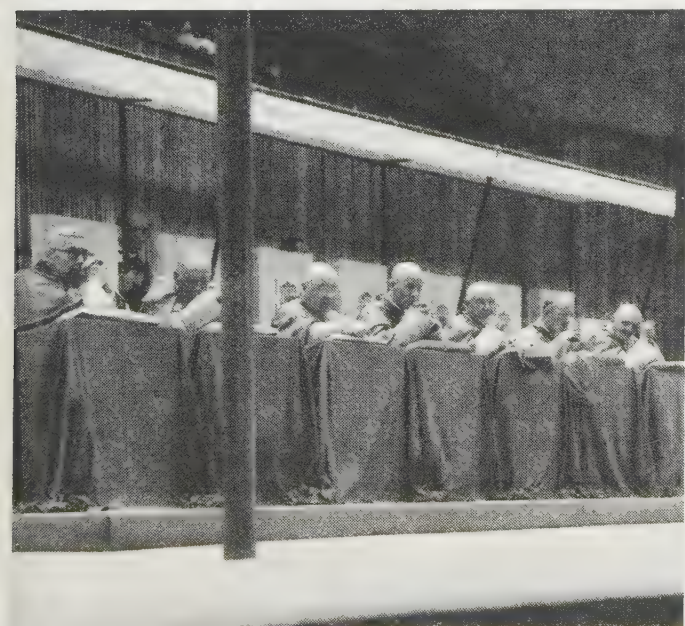
George Meany, president of the American Federation of Labor, received the 1955 University of Notre Dame Laetare medal for "conspicuous leadership in the ranks of labour" and his "practical Christian life." The university makes the award annually to an outstanding Roman Catholic layman. Meany was the first labour leader to receive the Laetare medal in its 78 years' history. (See also CHURCH MEMBERSHIP; MISSIONS, FOREIGN [RELIGIOUS]; PIUS XII; RELIGIOUS EDUCATION; SOCIETIES AND ASSOCIATIONS, U.S.; VATICAN CITY STATE.)

(J. LAF.)

Rotary International: see SOCIETIES AND ASSOCIATIONS, U.S.

Rowing. The longest winning streak in intercollegiate rowing history was broken on May 7, 1955, when the University of Pennsylvania varsity defeated the U.S. Naval academy eight. After three all-winning seasons, the sweep-swingers from Annapolis, Md., lost on the Charles river at Cambridge, Mass. Navy, with six members of its great crew of 1954 missing, won its first two races of 1955, against Princeton, and Cornell and Syracuse to extend its unbeaten string through 31 regattas. With their victory over Cornell and Syracuse at Annapolis, the Middies won the Clifford Goes trophy, up for competition for the first time. Russell (Rusty) Callow, Navy coach, was chosen as winner of the first national citation for an outstanding contribution to American rowing. He received the Mid-Hudson Schoolboy Rowing association plaque following a nation-wide poll of sports writers and rowing experts.

Following its victory over Navy, Penn went on to eight straight triumphs. They remained unbeaten going into the Intercollegiate Rowing association championship at Syracuse, N.Y.,



CATHOLIC CARDINALS at the opening of the 36th International Eucharistic congress, Rio de Janeiro, Braz., July 19, 1955. Twenty cardinals attended. Francis Spellman, archbishop of New York, and Samuel Stritch, archbishop of Chicago, are shown third and fifth from the left, respectively

*Federal Republic. †Estimated net imports. ‡Estimated and includes all countries.

oil) to the scraped bark just beneath the tapping cut brings about a quick response. Latex yield increases to a maximum in two weeks followed by a slow decline. the effect wearing off in about three months. No more than two applications a year are recommended. The Rubber Research institute exchanged clonal planting material with the Institute Agronomico do Norte, Brazil, and received in addition eight Dothidella-resistant clones for introductory trials in Malaya. This was a precautionary measure because the devastating South American leaf blight disease had never spread to far east areas.

Synthetic Rubber.—World production of all types of synthetic rubber for 1954 (excluding production in the U.S.S.R. and satellite countries, said to amount to 250,000 long tons annually) was 716,388 long tons of which the U.S. produced 622,852 long tons. This was a sharp drop as compared with that of 1953, and the trend was reversed in 1955, when in the first six months world production of all types totalled an estimated 506,660 long tons, compared with 351,211 long tons for the same period of 1954. The International Rubber Study group in October estimated total world production (excluding U.S.S.R. output) of synthetic rubber for 1955 at 1,065,000 long tons. Principal world stocks of synthetic rubber stood at an estimated

Table III.—World Consumption of Synthetic Rubber

Last half 1954	Total Continent of Europe†							
	U.S.A.*	U.K.	France	Germany†	Canada	Japan	Total‡	
July . . .	41,552	621	1,199	1,513	4,250	1,945	197	50,000
Aug. . . .	42,051	663	660	1,500	3,750	1,974	190	50,000
Sept. . . .	53,878	813	1,296	1,536	4,500	2,437	200	62,500
Oct. . . .	58,309	1,005	1,284	1,633	4,500	2,138	190	67,500
Nov. . . .	57,287	793	1,216	1,616	4,500	2,553	190	65,000
Dec. . . .	64,130	838	1,345	1,518	4,500	2,387	187	72,500
Year's total. .	636,727	8,693	14,437	16,999	50,750	30,080	2,267	740,000
First half 1955								
Jan. . . .	68,379	1,157	1,302	1,736	5,000	2,617	180	77,500
Feb. . . .	67,614	1,098	1,308	1,672	4,750	3,133	200	80,000
March . . .	77,118	1,244	1,480	1,812	5,250	3,368	230	87,500
April. . . .	72,046	1,538	1,534	1,607	5,250	3,006	240	82,500
May. . . .	75,409	1,395	1,579	1,691	5,500	3,344	300	87,500
June	79,479	1,526	...	1,841	5,500	3,783	300	92,500

*Includes oil content of the oil-extended types. †Federal Republic. ‡Estimated.

160,000 long tons at the end of June 1955. Production of synthetic rubber latices in the U.S. for 1954 totalled on a dry rubber basis: GR-S type 47,714 long tons; neoprene 8,214 long tons; N-type (butadiene-acrylonitrile copolymer) 6,866 long tons.

In the U.S. by May 1, 1955, all of the government-owned GR-S facilities—except the Akron (O.) laboratories, the plants at Institute, W.Va., and at Baytown, Tex.—had been sold for \$259,529,000. In addition, the private buyers had paid \$26,236,000 for raw material and miscellaneous equipment at the plants and about \$24,800,000 for inventories of synthetic rubber on hand. These amounts plus \$91,000,000 cash on hand in the synthetic rubber office of the Federal Facilities corporation yielded a total return to the government at that time of about \$401,565,000. On July 15 the Baytown plant was sold for a total of \$8,644,000. The government also realized \$2,279,700 from the sale of 447 pressurized tank cars.

The price structure of synthetic rubber remained much the same as in 1954. Depending on freight costs or allowances, GR-S 23 sold for 25 cents per pound; butyl 23 to 24 cents per pound; neoprene GN 41 cents per pound; N-type 58 cents per pound—all U.S. currency.

In Germany the chemical firms of Bayer, Hoechst and Badische Anilin planned large-scale expansion of the synthetic rubber industry there. The new firm, known as Buna Co., expected to have an output in 1958 of 45,000 metric tons.

In the U.S. on Dec. 2, 1954, announcement was made by



PARACHUTE TEST DROP of a load of military equipment protected by six "aero-pallet cushions," self-inflating rubber shock absorbers developed in 1955 to reduce the landing impact of heavy machinery dropped from aircraft

Goodrich-Gulf Chemicals Inc. that a group of its scientists working at the B. F. Goodrich Research centre in Brecksville, O., had duplicated by synthetic means the natural rubber molecule. The method used was not revealed. Identification was made by infra red spectra and X-ray diffraction patterns, which were virtually identical with those of Hevea rubber. The new synthetic, called Ameripol SN, mills like natural rubber and shows the same excellent tack, high gum tensile strength and low hysteresis (heat buildup on flexing) that natural rubber shows. Ameripol SN was used successfully to build heavy duty truck tires for which previously no variety of synthetic rubber would serve.

On Aug. 22, 1955, the Firestone Tire and Rubber Co. announced that members of its research staff had, two and a half years prior to that date, synthesized a rubber which showed an infra red spectrum and an X-ray pattern of the stretched vulcanizate which were essentially the same as those of natural rubber. Firestone said the new polymer, called coral rubber, was made by polymerization of petroleum-derived isoprene with an ionic alkali metal catalyst. Coral rubber showed some tack but not to the degree shown by Hevea rubber. In other properties it resembled natural rubber, however, and heavy-duty truck tires made of the new rubber performed satisfactorily in service. Both Ameripol SN and coral rubber were reported to be in the pilot plant stage.

Reclaimed Rubber.—World production of reclaimed rubber in 1954 was 343,195 long tons. For the first six months of 1955 it was an estimated 207,000 long tons compared with 172,608 long tons for the same 1954 period. U.S. consumption through

Table IV.—World Consumption of Reclaimed Rubber

Last half 1954	In (long tons)*							
	U.S.A.	U.K.	France	Germany	Australia	Canada	Brazil	Total
July . . .	16,301	1,941	1,548	2,490	694	871	605	24,450
Aug. . . .	17,760	1,797	886	2,177	694	627	563	24,404
Sept. . . .	19,926	1,890	1,744	2,386	694	982	424	28,046
Oct. . . .	22,098	2,750	1,719	2,487	587	922	557	31,120
Nov. . . .	22,321	2,488	1,647	2,559	586	984	467	31,052
Dec. . . .	24,546	2,034	1,671	2,334	586	970	430	32,571
Year's total. .	249,049	30,574	19,220	27,422	7,537	12,768	6,484	353,054
First half 1955								
Jan. . . .	25,322	2,768	1,612	2,853	602	1,062	532	34,751
Feb. . . .	24,333	2,367	1,558	2,555	602	1,350	534	33,299
March . . .	28,674	2,480	1,757	3,079	602	1,390	562	38,544
April. . . .	26,609	2,420	1,719	2,514	720	1,227	...	...
May. . . .	27,652	2,565	1,737	2,625	721	1,101	...	...
June	29,208	2,868	...	2,593	721	1,488	...	...

*All figures include both natural and synthetic reclaimed rubbers.

June 1955 was 161,798 long tons compared with 126,197 long tons for the same 1954 period.

Rubber Manufacturing.—World consumption of new rubber in 1954 was at an all-time high level of 2,505,000 long tons with a further shift toward natural as compared with synthetic. The total for all countries reporting was divided 70% natural, 30% synthetic rubber. In the U.S. the division for 1954 was 48% natural, 52% synthetic rubber. In the first six months of 1955 world consumption of new rubber was divided 65% natural, 35% synthetic rubber. In the U.S. for the same period, the division was 43% natural, 57% synthetic rubber. On the basis of the first six months' figures, world consumption of all varieties of new rubber in 1955 would approximate 2,900,000 long tons. In the U.S., one source estimated the rubber industry's sales in 1955 would exceed \$5,250,000,000 and new rubber consumption would approach 1,500,000 long tons.

Total shipments of pneumatic tire casings in the U.S. in 1954 (excluding aeroplane and industrial pneumatics) were 93,390,357 units (passenger 77,712,667; truck and bus 12,527,858; farm tractor and implement 3,149,832). Shipments for the first eight months of 1955 totalled 79,018,826 units (passenger 66,371,275; truck and bus 9,939,973; farm tractor and implement 2,707,578) compared with shipments during the same 1954 period of 65,837,997 units (passenger 55,255,313; truck and bus 8,272,502; farm tractor and implement 2,310,182). Tire inventories in the hands of manufacturers at the end of Aug. 1955 totalled 14,577,879 units compared with 10,470,057 units for the same date in 1954. (E. B. NN.)

Rugby: see FOOTBALL.

Ruiz Cortines, Adolfo (1891—), president of Mexico, was born on Dec. 30 in the state of Veracruz. He first rose to national political prominence when he became governor of Veracruz in 1944. When Miguel Alemán was elected president of Mexico in 1946, Ruiz Cortines became one of his most influential political aides and was later named minister of the interior. On Oct. 13, 1951, he was nominated by the Partido Revolucionario Institucional (P.R.I.) to succeed Alemán as president, and the following July he was elected by a huge majority. He took office on Dec. 1, 1952, for a six-year term. A determined advocate of economy and honesty in government, Ruiz Cortines refused to accept the usual president's special expense account and in 1953 exposed considerable graft among high officials of the Alemán administration, seizing their property and cancelling their government contracts.

In Feb. 1955 he conferred with U.S. Vice-Pres. Richard M. Nixon during the latter's good-will visit to Mexico. On Sept. 1, 1955, he declared in his annual message to congress and the nation that Mexico during the preceding year had attained the greatest economic prosperity in its history.

Rulers: see PRESIDENTS, SOVEREIGNS AND RULERS.

Rumania. A people's republic of southeastern Europe, Rumania is bounded north and northeast by the U.S.S.R., east by the Black sea, south by Bulgaria and west by Yugoslavia and Hungary. Area: 91,654 sq.mi. Pop.: (1948 preliminary census) 15,872,624; (1953 est.) 17,150,000. Language (1948 census): Rumanian 85.7%; Hungarian 9.4%; German 2.2%; Yiddish 0.9%; other 1.8%. Religion (1947 est.): Orthodox 81%; Greek Catholic 9%; Roman Catholic 7%; other 3%. Chief towns (pop., 1948 census): Bucharest (Bucuresti; cap.) 1,041,807 (1952 est. 1,042,000); Cluj 117,915; Timisoara 111,987; Ploesti 95,632; Braila 95,514; Iasi (Jassy) 94,075; Brasov (renamed Stalin) 82,984; Oradea 82,282; Galati 80,411.

First secretary of the Rumanian Workers' (Communist) party in 1955, Gheorghe Gheorghiu-Dej; chairman of the presidium of the grand national assembly, Petru Groza; chairmen of the council of ministers, Gheorghe Gheorghiu-Dej and (from Oct. 3) Chivu Stoica.

History.—In Rumania, as in other communist countries of eastern Europe, 1955 saw the abandonment of the relatively "soft" economic policy, especially in agriculture, which had been followed in 1953 and 1954. The continuing internal debate over policy was reflected in personal conflicts among the leaders of the regime and in the repeated postponement of the Rumanian Workers' (Communist) party congress, first announced in 1954, until the end of the year. Gheorghiu-Dej's resumption of the post of party secretary in October indicated that some of the internal problems had been resolved, at least temporarily.

The main disputes centred around the question of policy toward the peasants. In the early months of the year the government was still making certain concessions to the farmers, in the form of higher prices for goods delivered and reduced prices for equipment. Gheorghiu-Dej drew attention to the fact that the area under wheat was 300,000 ha. or 12.5% less than the average of 1948–50 and promised greater government aid to agriculture. Groza told a specially summoned conference of farmers in March: "The aim of this conference is clear, the undertaking of a great battle to gain more and better bread for all the workers, bread without which we cannot live."

In April Gheorghiu-Dej reverted to a more orthodox communist line, stressing the prime importance of heavy industrial development and calling for the "isolation" of the wealthier farmers and for more rapid collectivization. In accordance with this policy a revised system of land taxation was introduced in June. The government came to recognize that farming could not be conducted on a large-scale basis without substantial capital investment in it. The budget introduced in May therefore showed an increase of 25% in allotments to agriculture. The grain harvest in 1955 was the largest in five years and exceeded 10,000,000 tons.

At the beginning of October Gheorghiu-Dej relinquished the post of chairman of the council of ministers and reassumed control of the Communist party as first secretary. He was succeeded as premier by Chivu Stoica, a veteran communist and trade unionist and hitherto a deputy prime minister.

The government declared an amnesty in June for all Rumanian citizens and former citizens now living abroad. The decree was part of a general communist campaign to persuade émigrés to return.

Rumania was among the communist states represented at the Warsaw conference in May and subscribed to the new treaty of friendship, co-operation and mutual aid between the countries of eastern Europe and the Soviet Union.

The conclusion of the Austrian peace treaty on May 15 raised the question of the continued presence in Rumania of Soviet troops, whose nominal function was to guard Soviet lines of communication with Austria. Gheorghiu-Dej was constrained to declare officially that the Soviet troops would not be withdrawn, in view, he said, of the changed situation in Europe arising from the conclusion of the London and Paris agreements. It was noted that the Warsaw agreement had in any case provided the Soviet government with legal grounds for stationing troops in any satellite country. In August the government announced that the total manpower in the armed forces would be reduced by 40,000 by the end of the year.

In June N. A. Bulganin, Soviet premier, and N. S. Khrushchev, first secretary of the Communist party of the Soviet Union, visited Bucharest after having mended their quarrel with Marshal Tito of Yugoslavia. Though some improvement

in Rumania's relations with Yugoslavia was later noted, differences arose over the fate of the Serbian minority in Rumania. (See also EASTERN EUROPEAN ECONOMIC PLANNING.)

(D. FD.)

Education.—Schools (1951): primary about 14,000, pupils 1,795,000; secondary and vocational, pupils 323,000; institutions of higher education 11, students 57,000. Illiteracy (1951): 10.6%.

Agriculture.—No reliable data published since 1949. Main crops (metric tons, latest estimates): maize (1948) 5,279,000; wheat (1948) 2,600,000; barley (1947) 360,000; oats (1946) 280,000; rye (1947) 66,000; potatoes (1949) 1,090,000; sugar beets (1950) 844,000. Wine production (1951) 4,000,000 hl. Livestock (latest estimates): cattle (1953) 4,674,000; pigs (1950) 2,300,000; sheep (1948) 7,088,000; horses (1948) 939,000. Wool production, greasy basis (1934-39 average): 24,166 tons. The grain production in 1955 was said to be the best in five years, exceeding 10,000,000 tons, compared with the 1938 harvest of about 8,000,000 tons.

Industry.—Employment in industry (1955) about 2,800,000. Production (metric tons, 1954 est.): coal, 350,000; lignite, 6,000,000; crude oil, 9,800,000; natural gas, 3,800,000,000 cu.m.; electricity, 4,000,000,000 kw.hr.; pig iron (1952) 390,000; steel, 780,000; cement, 1,800,000; sulphuric acid (1955 plan), 143,000.

Finance.—Monetary unit: leu (pl. lei) with official exchange rate, high and fictitious, of 6 lei to the U.S. dollar. Budget (1954 est.): revenue 44,405,000,000 lei; expenditure 43,005,000,000 lei, including 19,350,000,000 lei invested in heavy industry.

Foreign Trade.—(1950) Imports U.S. \$213,000,000; exports U.S. \$239,000,000. Main sources of imports (1950): U.S.S.R. 49%; Czechoslovakia, Poland, Hungary and Bulgaria 33.3%. Main destinations of exports: U.S.S.R. 58.2%; four eastern European countries 30.4%. Rumanian trade with 17 western European countries (1953): exports U.S. \$48,600,000; imports U.S. \$56,300,000.

Transport and Communications.—Roads (1945): 43,163 mi., including 1,150 mi. modernized in 1947. Licensed motor vehicles (Dec. 1950): cars 14,000; commercial 12,000. Railways (1949): 7,363 mi. Telephones (1954 est.): 140,000. Radio receiving sets (1949): 226,000.

Running: see TRACK AND FIELD SPORTS.

Rural Electrification Administration. The Rural Electrification Administration marked its 20th year in 1955 with successful programs in financing rural electrification and telephone facilities.

In rural electrification, REA loaned \$167,530,430 in the year ending June 30, 1955. This brought the total of such loans since the agency was established in 1935 to \$3,050,000,000. The number of consumers on REA-financed power lines exceeded 4,000,000, including more than half of the nation's 4,900,000 electrified farms.

Two new generation and transmission co-operatives and one new electric distribution co-operative received loans during the fiscal year. This brought the number of active REA electrification borrowers to 999. These included 937 co-operatives, 40 public power districts, 17 other public bodies and 5 electric companies.

Two co-operatives paid off their government loans during the year with earnings from farm service. This made three co-operatives to repay with such earnings.

Use of electricity on REA-financed lines increased 14% during the 1955 fiscal year and the REA borrowers distributed about twice the amount of power they did in 1950. Energy sales amounted to about \$1,100,000 per day. Farmers on REA-financed lines used an average of 2,712 kw.hr. in 1954. In 1950 the annual average use was 1,752 kw.hr.

In the rural telephone program, REA loans in the fiscal year 1955 totalled \$52,744,000. This brought the total of such loans, since the program was established by congress in 1949, to \$234,181,000 to 176 independent telephone companies and 175 co-operatives. When the facilities contemplated in these loans were completed, REA telephone borrowers would be providing modern telephone service to more than 515,000 farm families and other rural subscribers in 43 states and Alaska. As of June 30, 1955, 157 REA-financed telephone organizations had placed in service 533 new dial exchanges.

In both the electrification and telephone programs, REA loans bear 2% interest and must be repaid over a maximum period of 35 years. As of June 30, 1955, electric borrowers had

paid the government approximately \$210,000,000 in interest and had repaid \$413,000,000 of principal on their REA loans. This included a current balance of \$85,000,000 of payments made by borrowers ahead of schedule which could be applied against future interest or principal instalments. Less than \$400,000 was delinquent. In the newer telephone program, principal and interest payments overdue amounted to about \$500,000.

For the 1956 fiscal year congress authorized \$160,000,000 in new electrification loan funds, plus reserve funds of \$100,000,000. Also available for loan was \$55,723,000 carried over from the previous years. New telephone loan funds authorized by congress amounted to \$75,000,000 for the fiscal year 1956. Funds carried over from 1955, amounting to \$33,556,000, also were available for telephone loans. (See also CO-OPERATIVES.)

(A. NN.)

Rural Rehabilitation Loans: see FARMERS HOME ADMINISTRATION

Russell Sage Foundation: see SOCIETIES AND ASSOCIATIONS, U.S.

Russia: see UNION OF SOVIET SOCIALIST REPUBLICS.

Russian Literature. The principal event of the year 1954-55 for Russian literature was the second congress of the Union of Soviet Writers, which was held in Moscow during Dec. 15-26, 1954. The previous congress had met 20 years earlier under the presidency of Maxim Gorky. The second congress was attended by 738 delegates, representing 3,695 writers belonging to 45 nationalities. Thirty-one foreign writers had also been invited. The principal report, on "the position and tasks of Soviet literature," was presented by Aleksey Surkov, first secretary of the union. Reports were also presented by Samed Vurgun (Soviet prose); Konstantin Simonov (literary prose); Aleksandr Korneichuk (drama); Boris Polevoy (literature for children and young persons); Serghey Gherasimov (motion pictures); Pavel Antokolsky, assisted by Mukhtar Aouezov and Maxim Rylsky (translations from the literature of the peoples of the U.S.S.R.); and Boris Rurikov (the main problems confronting literary criticism).

The congress, which took place under official auspices, was opened by a message from the central committee of the Communist party, reminding writers of their duty to inspire a mood of "socialist realism" and to struggle against any reversion to nationalism, cosmopolitanism and other manifestations of "bourgeois ideology." It closed with a reply from the congress to the party, promising to oppose all deviations from socialist realism and to serve the cause of world peace. Many writers were severely criticized, notably Ilya Ehrenburg for his novel *The Thaw* and Vera Panova for her novel *The Seasons*. The congress re-elected its governing bodies, the presidium and the secretariat. Aleksey Surkov remained first secretary, i.e., the real head of the union.

Two other literary conferences were held during 1955. The first, from May 28 to 31, was on military literature; writers were invited to concern themselves primarily with Russia's heroic past, with the exploits of the soldiers during the national struggle against Hitlerite Germany and with the day-to-day life of the army. They were also asked to write biographies of military leaders and to translate books about military subjects published abroad. On their side, the political leaders of the army proposed that books about the war should conform more closely to historical truth than in the Stalin era.

The second conference, which met in mid-July, was for writers on "kolkhozian themes"; the conference complained that contemporary literature was not sufficiently concerned with the life of the peasants in the collective farms and in particular in the newly developed areas in Siberia.

According to Soviet practice, two periods of ten days were set aside during the year, one devoted to the literature of Byelorussia (Feb. 11-21), the other to that of Bashkir (May 27-June 5). From March 21 to 23 the Maxim Gorky Institute of World Literature assembled many writers to consider the achievements and failures of Soviet literature during 1954-55.

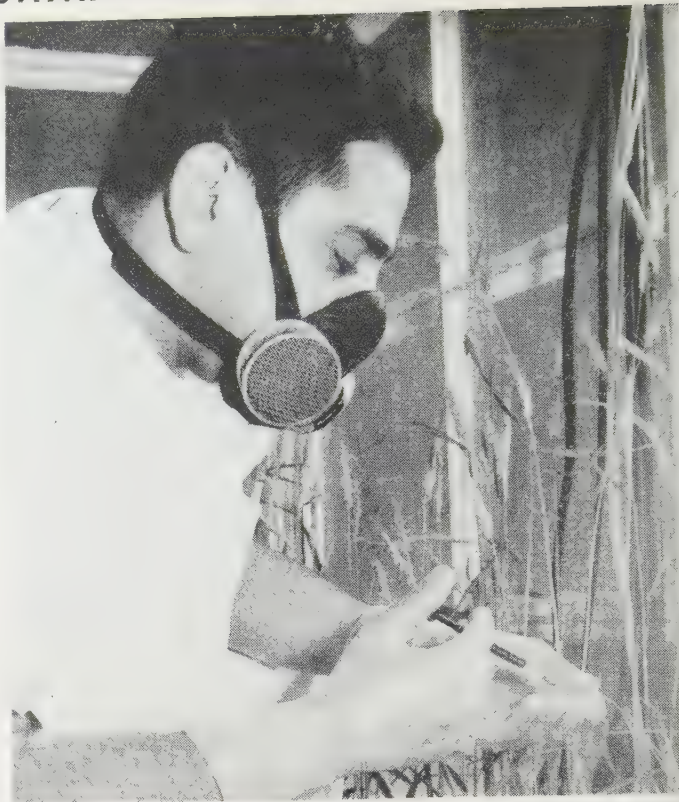
The Order of Lenin was awarded to Mikhail Sholokov on the occasion of his 50th birthday (May 23). To mark the occasion, newspapers, literary reviews and the radio paid tribute to this great Cossack novelist, author of *And Quiet Flows the Don*. Also, many hitherto unpublished chapters of his second great novel, *Virgin Soil Uplifted*, were published. By 1955 Sholokov's works had run into more than 400 editions, numbering throughout the world nearly 21,000,000 copies. *And Quiet Flows the Don* had been published in 18 languages, and 7,755,000 copies had been printed. *Virgin Soil Uplifted* had appeared in 45 languages, within the U.S.S.R. and abroad. The Soviet literary world also celebrated, in April, the 55th anniversary of the death of Vladimir Mayakovsky, considered to be the father of Soviet poetry. The Order of Lenin was also awarded, in his 50th year, to the Ukrainian writer Aleksandr Korneichuk.

As in other years, the Union of Soviet Writers was associated with many foreign literary commemorations: the 150th anniversary of the birth of Hans Andersen (in April); the bicentenary of the death of Montesquieu (in February); the 150th anniversary of the death of Schiller (in May); the 50th anniversary of the death of Jules Verne (in March). The publication of the periodical *Inostrannaya Literatura* ("Foreign Literature") was resumed; in its third number it began to publish a translation of Ernest Hemingway's *The Old Man and the Sea*.

(A. PR.)

Rye. The 1955 U.S. rye crop of 28,448,000 bu. was a large one by comparison with 23,688,000 bu. in 1954 or an average of 21,097,000 bu. for the previous decade. From 5,052,000 ac. sown in the fall of 1954, much of which was used for pasture or as a cover crop, acreage harvested was 2,081,000, 21% more than the 1,718,000 ac. of 1954 or an average of 1,740,000 ac. The average yield was 13.7 bu. per acre as compared with 13.8 bu. in 1954 and 12.1 bu. per acre for the decade 1944-53. North Dakota with 7,950,000 bu. was the leading producer, followed by South Dakota (3,718,000 bu.) and Illinois (2,738,000 bu.)

Domestic disappearance in 1954-55 was 23,000,000 bu. consisting of 5,100,000 bu. for food, 4,700,000 bu. for distilling, 6,700,000 bu. for feed and 6,500,000 for seed. Exports were 3,000,000 bu. Carry-over stocks on July 1 were 16,100,000 bu., the largest since 1944. Imports during 1954-55, largely from Canada, were under a quota of 3,300,000 bu., as compared with 13,500,000 bu. imported in 1953-54. The quota was continued at the same level for the next two years. Price support to producers was reduced to \$1.18 per bushel on the 1955 crop as compared with \$1.43 per bushel on the 1954 and 1953 crops. The Commodity Credit corporation owned 6,454,000 bu. of rye on June 30, 1955; about 30% or 7,250,000 bu. of the 1954 crop



RADIOACTIVE RYE PLANTS being injected with a fungus to produce spur-like projections on the plants, from which radioactive forms of the drugs ergonovine and ergotamine would be prepared. This was part of a continuing research program at the Argonne National laboratory of the U.S. Atomic Energy commission in 1955

was put under the support program and it appeared likely that an even larger amount from the 1955 crop would come under the program.

World rye production was estimated at 1,610,000,000 bu. as compared with 1,575,000,000 bu. in 1954 and 1,732,000,000 bu. average pre-World War II. Rye stocks on July 1 of the principal exporting countries were 43,000,000 bu., compared with 1954 (49,000,000 bu.) and 1953 (66,000,000 bu.) (J. K. R.)

Saar. A German state (*Land*) united with France by monetary (from Nov. 20, 1947) and customs (from April 1, 1948) union. Area: 991 sq.mi. Pop.: (1954 est.) 980,858. Language: German. Religion: Roman Catholic 73.4%, Protestant 25.3%. Capital: Saarbrücken, pop. (1953 est.) 116,395. Prime ministers in 1955, Johannes Hoffmann and (from Oct. 24) Heinrich Welsch.

History.—During the early months of 1955 a fresh agreement was negotiated to confirm the economic union between the Saar and France, at the same time arranging for the extension of the autonomy of the Saar. This agreement was signed on May 3 but never ratified. Just beforehand at the end of April the question of the ownership of Völklingen, the biggest steelworks in the Saar was settled. These had been confiscated from the German owner, Hermann Röchling, at the end of World War II by the French, and it was now arranged that the French and German Federal Republic governments should buy out the Röchlings for 200,000,000 DM. and divide the shares between them. This put an end to rumours that a French firm would acquire Völklingen, but German nationalist sentiment in the Saar reinstated the fact that the Röchlings were not reinstated.

Both the French and German Federal Republic parliaments having accepted the Paris treaties, which included the Saar statute signed by Pierre Mendès-France and Konrad Adenauer on Oct. 23, 1954, the council of Western European Union met in

Rye Production of the Principal Producing Countries

(In thousands of bushels)

Country	1955	Preliminary 1954	Average, 1945-49	Average 1935-39
U.S.S.R. . . . .	...	...	895,000	885,000
Western Germany	149,600	161,330*	98,900	119,000
Canada	14,700	14,176	12,653	9,191
Turkey . . . . .	...	17,320	13,679	14,301
Spain . . . . .	...	19,000	17,117	18,363
Netherlands	18,300	20,290	15,520	20,394
France	17,930	20,235	20,618	29,993
Austria	15,430	14,720	12,260	20,611
Other Europe* (estimated total)	445,000	405,000	337,000	481,000
United States	28,448	23,686	22,336	44,917

*Comprises Albania, Bulgaria, Czechoslovakia, eastern Germany, Hungary, Poland and Rumania.

London on June 24, 1955, to appoint a commission to supervise the referendum through which the statute attempted to provide for its own acceptance by the people of the Saar. The commission consisted of a British, Dutch, Luxembourgish and Italian member, with the Belgian senator, Fernand Dehousse, as its chairman. The date of the referendum was fixed for Oct. 23, 1955.

On July 31 the German Party of the Saar (D.P.S.) and the German Social Democratic party (D.S.P.) were re-founded and immediately transformed the situation by announcing that they would campaign for the rejection of the statute. To vote for the statute, they arbitrarily declared, would be to vote against Germany, although the statute had been sponsored by Adenauer and was supported by the German C.D.U. (Christlich-Demokratische Union). Things became still more critical when on Aug. 7 a branch of the C.D.U. was founded in the Saar under the leadership of Hubert Ney and also came out against the statute. Since the Saar population was preponderantly Catholic the outcome depended upon whether this new Catholic party could steal a following from the Catholic People's party which supported the government of Hoffmann.

The three pro-German parties joined together to form what they called the Deutscher Heimatbund which organized fiercely nationalistic meetings all over the territory of the Saar.

On Oct. 23 in the referendum, 423,434 people voted "No" and only 201,973 voted "Yes." This gave 67.7% against the statute and only 32.3% for it, 96.7% of the electorate having voted. Hoffmann immediately resigned and a caretaker government took over from him. This was presided over by Heinrich Welsch. The caretaker government arranged for the *Landtag* (Diet) to be dissolved and to be newly elected on Dec. 18. (See also EUROPEAN UNITY.) (E. Wl.)

Safety: see ACCIDENTS.

Sailing: see YACHTING.

St. Christopher: see LEEWARD ISLANDS.

St. Croix: see VIRGIN ISLANDS.

St. Helena. British colony in the south Atlantic with dependencies of Ascension (34 sq.mi.; pop. [1953 est.] 168) and the Tristan da Cunha group (total area 38 sq.mi.; only Edinburgh settlement on Tristan da Cunha [16 sq.mi.] inhabited; pop. [Dec. 1953 est.] 292). Colony area 47 sq.mi.; pop. (mid-1954 est.) 4,880. Language: English. Religion: Christian (90% Anglican). Capital: Jamestown (pop. about 1,600). Governor in 1955, J. D. Harford; administrator, Tristan, P. R. Forsyth Thompson.

History.—The low price of flax and the consequent depression of the industry continued to cause unemployment in 1955, and in an effort to improve production plans were considered for one flax factory manager to study methods in New Zealand. Health and educational facilities continued to develop and St. Helena received substantial assistance from United Kingdom colonial development and welfare funds. The crawfish industry in Tristan da Cunha had a good season despite difficult weather conditions. In October the frigate "Magpie" landed members of an expedition en route to Gough Island to study animal and plant life and to establish a meteorological station. (J. J. Ty.)

Education.—Schools (1953): primary 6, pupils 697, teachers 12; all-range 3, pupils 261, teachers 5; secondary (including 2 middle schools) 3, pupils 316, teachers 16. Pupil-teachers: primary 18, all-range 10, secondary 4.

Finance and Trade.—Currency: sterling. Budget (1953 est.): revenue £136,172; expenditure £139,103. Foreign trade (1954): imports £215,000; exports £47,000. Livestock (1953): cattle 792; sheep 2,065; goats 2,096; pigs 141; poultry 7,802; donkeys 1,173; horses 35. Production (1953): hemp 975 long tons.

St. John: see VIRGIN ISLANDS.

St. Kitts-Nevis: see LEEWARD ISLANDS.

St. Laurent, Louis Stephen (1882—), Canadian statesman, was born on Feb. 1 at Compton, Que., and educated at St. Charles college, Sherbrooke, and Laval university, Quebec, Que. He entered federal politics on Dec. 10, 1941, and was in turn minister of justice and attorney general, later secretary of state for external affairs. On Nov. 15, 1948, he became the 17th prime minister of Canada. As Liberal member for Quebec East, he was elected to parliament in 1942, 1945, 1949 and 1953.

During 1955 St. Laurent led the government in the second session of the 23rd parliament, which began on Jan. 7 and concluded on July 28. During this session the house approved the agreements which ended the occupation of western Germany and enabled the German Federal Republic to join the defensive alliance of the west. The government, under St. Laurent, set up a royal commission to inquire into and report upon the prospects for Canada's economic future.

In February, he was present at a meeting of commonwealth prime ministers held in London, Eng. In September the prime minister travelled west and took part in the golden jubilee celebrations of the provinces of Saskatchewan and Alberta. In April he presided over the preliminary meeting of the federal-provincial conference and again in October presided over the main conference which was called to discuss fiscal and other matters of concern to both federal and provincial governments.

During 1955 St. Laurent welcomed to Canada H.R.H. The Princess Royal and the Earl and Countess of Bessborough, and a considerable number of other distinguished visitors.

(H. E. K.)

St. Lawrence Seaway: see CANALS AND INLAND WATERWAYS.

St. Louis. St. Louis, Mo., covers an area of 61 sq.mi. on the west bank of the Mississippi river 15 mi. below the confluence of the Missouri. By the 1950 census it had a population of 856,796, with an additional 824,485 in the adjacent metropolitan area. Mayor of St. Louis in 1955 was Raymond R. Tucker, Democrat.

The need for greater civic progress inspired St. Louis voters to go to the polls on May 26, 1955, and approve overwhelmingly the largest public works program in the city's history. It called for a \$110,639,000 bond issue for 23 different kinds of projects from street expansion to erection of a planetarium. A \$16,395,000 bond issue was passed for school improvement on the same day.

An aldermanic election held April 5 resulted in a landslide victory for the Democrats, who won the presidency of the board and 12 of the 14 seats at stake. Their majority on the board increased to 24 to 4.

Public transportation passengers, subject to frequent fare increases in the past, were introduced for the first time to a zone fare system. An extra nickel was added for long rides, mostly beyond the city limits. The yield to the Public Service company, owner of the transit organization, was estimated at an additional \$177,000 annually. All bus and street car transportation was shut down, starting Oct. 11, by a wage dispute strike of operators.

Major crime in St. Louis increased during the first half of 1955—reports showing 14,918 offenses as compared with 13,738 during the same period of the previous year. This brought an investigation of the police department by a special committee of the Missouri legislature. Earlier the legislature had voted the police a pay increase averaging 15%, amounting to \$1,306,598 annually.

Fluoridation of the city water supply began late in the year. The September term saw a 2% increase in public school enrolment and completion, uneventfully, of racial integration in the elementary and high schools. An 8½-block blighted area on the edge of the downtown district was razed, with three blocks to provide a parkway connecting neighbouring Memorial and Aloe plazas and the rest to be used for private apartment houses. Work got underway and progressed toward completion on a new architecturally unique terminal building at Lambert-St. Louis Municipal airport costing \$5,250,000.

At the end of the fiscal year on April 11, 1955, the city government had a \$2,797,000 operating surplus, accumulated in two years. Operating cost for the fiscal year had been \$47,810,000, income \$49,467,000. The new 1955-56 budget was set at a record \$51,485,339. Real estate was assessed at \$1,185,000,000, an \$18,000,000 increase. The total tax rate (city, state and schools) was \$3.09 per \$100 valuation. (E. L. R.)

St. Lucia: see WINDWARD ISLANDS.

St. Pierre and Miquelon.

This French overseas territory consists of eight small islands off the south coast of Newfoundland. Area: 93 sq.mi. Pop. (1945 census): 4,354. Language: French. Religion: Roman Catholic. Chief town, St. Pierre, pop. (1945) 3,636. Administrator in 1955, Pierre Sicaud.

History.—Pierre Sicaud succeeded Irénée Davier as administrator in Jan. 1955. He decided that the islands' fishing fleet should be increased by two trawlers. In October he paid an official visit to Newfoundland. Joseph Lehuenen was elected mayor of St. Pierre. The 1955 budget was balanced at 303,000,000 fr. C.F.A., including a grant of 190,000,000 fr. C.F.A. paid by the French government. (HU. DE.)

Education.—(1954) Schools: state 8, pupils 547, teachers 32; private 9, pupils 702.

Finance and Foreign Trade.—(1954) Monetary unit: franc C. F. A. (Colonies Françaises d'Afrique)=2 metropolitan francs. In 1955 U.S. \$1=350 metropolitan francs. Imports 506,000,000 fr. C. F. A., including 282,000,000 fr. C. F. A. from Canada. Exports 169,000,000 fr. C. F. A., including 69,000,000 fr. C. F. A. to the United States (dried cod, 1952, 300 metric tons).

St. Thomas: see VIRGIN ISLANDS.

St. Vincent: see WINDWARD ISLANDS.

Salk, Jonas Edward (1914–), scientist, creator of a preventive vaccine against paralytic poliomyelitis, was born Oct. 28 in New York city. In 1939 he was graduated from New York university school of medicine. Three years later his demonstrated brilliance in bacteriological research won him a fellowship from the National Research council (from funds supplied by the National Foundation for Infantile Paralysis) which enabled him to work with Thomas Francis, Jr., virologist and epidemiologist at the University of Michigan, Ann Arbor.

In 1947 Salk joined the faculty of the University of Pittsburgh (Pa.) school of medicine as associate research professor in bacteriology. He also became director of the virus research laboratory. There, under a series of grants from the National Foundation for Infantile Paralysis, he worked first on classification of the poliomyelitis virus (1949-50) and then on development of a poliomyelitis vaccine.

In the preventive project his task was to bring to fruition knowledge gained through many years, including several momentous discoveries regarding the poliomyelitis virus, all prerequisite to creation of a vaccine. (See POLIOMYELITIS.) Indeed, until 1949 Salk himself had been seeking not a vaccine to protect against paralytic polio but rather one to prevent influenza.

"I think the time has come," he wrote to the National founda-

tion in 1950, "for initiating the critical experiments for immunologic prevention and more than that, the time has come for these experiments to be carried out in man."

For his vaccine he had the choice of trying to find strains of virus so weakened and attenuated as to be incapable of causing disease, and therefore suitable as possible "live" virus vaccines, or of using inactivated ("killed") virus—that is, virus subjected to chemical or physical treatment to bring it to a point where it could not cause paralysis. In either form the virus, by its presence in the human body, would stimulate production of protective antibodies and hence should prevent paralytic polio. He chose to use virus inactivated by chemical treatment (formaldehyde). One of the major problems then was to carry the process of treatment with formaldehyde to the degree necessary to assure safety, yet not so far as to vitiate the ability of the virus to stimulate production of antibodies.

In working out his formula Salk conducted thousands of experiments, first with animals, later with more than 9,000 human beings including himself, his wife and his three sons. In these and in exhaustive laboratory tests he proved the safety of the vaccine, but the measure of its effectiveness required a much broader trial.

Accordingly, in the spring of 1954 the vaccine was administered to 440,000 children in a nation-wide field trial sponsored by the National foundation. Detailed records were kept through the ensuing months on these and on 1,390,000 others who participated as controls. These data were the basis of an evaluation study by the Poliomyelitis Evaluation centre at the University of Michigan.

On April 12, 1955, at a scientific meeting in Ann Arbor, attended by many of the nation's leading scientists, results of the evaluation were announced. The Salk vaccine was declared safe and effective: 60% to 70% against paralysis caused by the type I polio virus, and 80% to 90% against that caused by types II and III. Thus the Salk vaccine was a historic breakthrough following a series of scientific assaults on the mysteries of poliomyelitis which had been carried on for decades.

In recognition of his work Salk was given a citation by Pres. Dwight D. Eisenhower on April 22, 1955, in which the president described the development of the vaccine as "a historic contribution to the welfare of humanity." Honours were conferred on Salk from many other sources, among them City College of New York, New York university, Roosevelt college, the American Therapeutic society, and the Commonwealth of Pennsylvania, which established the Jonas E. Salk chair of preventive medicine at the University of Pittsburgh with Salk himself the first appointee. On July 30 the U.S. congress passed a bill authorizing a special gold medal to be awarded to Salk.

(B. O'C.)

Salt: see MINERAL AND METAL PRODUCTION AND PRICES.

Salvador, El.

A republic on the Pacific coast of Central America, the smallest but most densely populated country on the isthmus, El Salvador has an area of 8,260 sq.mi. (of which 8,165 sq.mi. are land) and a population (1950 census) of 1,855,917 (1954 official est., 2,158,000). The capital is San Salvador, pop. (1950 census) 161,951, (1953 est.) 180,713. The 1950 populations of other principal cities are (1953 estimates in parentheses): Ahuachapán 10,294 (11,092), Chalchuapa 9,855 (10,557), Cojutepeque 10,015 (10,942), Mejicanos 9,389 (10,402), San Miguel 26,702 (28,730), Santa Ana 51,702 (56,952), Nueva San Salvador or Santa Tecla 18,313 (20,246), San Vicente 10,950 (11,795), Sonsonate 17,949 (19,070), Usulután 9,481 (10,512), Villa Delgado 13,331 (14,695) and Zacatecoluca 9,190 (10,023). Language: Spanish; religion: predominantly

Roman Catholic. President in 1955: Lieut. Col. Oscar Osorio.

History.—During 1955 El Salvador prepared to elect a new president to succeed Lieut. Col. Oscar Osorio who had led the country since 1950. His term was to expire on Sept. 14, 1956. Three candidates had been vying for the all-important presidential backing which would probably mean nomination by the government-sponsored Partido Revolucionario de Unificación Democrática, but Lieut. Col. José María Lemus unofficially seemed to have been selected by May 1955. However, the other two men were supported by newly formed parties: Lieut. Col. Rafael Carranza Amaya by the Partido Democrático Constitucionalista and Col. José Alberto Funes by the Partido Institucional Democrático. A fourth contender was Roberto Canessa, who hoped to rally a following through his Partido de Acción Nacional. There was also the possibility that Col. José Asencio Menéndez, who opposed President Osorio in 1950, might decide to run again at the head of his Partido Acción Renovadora. In accordance with the electoral laws, all candidates who held official posts resigned prior to Sept. 14, 1955, one year before inauguration.

El Salvador had long advocated closer relations between the Central American countries, the ideal being eventual political reunification. The most important step was the founding of the Organization of Central American States (*q.v.*). The Communist threat in Guatemala had delayed the organization's formal inauguration, but work began in earnest with the organizational meetings held in Antigua, Guatemala, from Aug. 18 to 24, 1955. Salvadorean Foreign Minister José Guillermo Trabanino was chosen as first secretary-general of the organization. (See also GUATEMALA.)

A significant Central American economic conference took place in San Salvador from May 4 to 9, 1955, under the auspices of the Economic Commission for Latin America of the United Nations. Several joint ventures were approved, of which the following were already being implemented late in the year: a paper mill for the highlands of Honduras; a technical and research institute to exploit local products and resources to be located in Guatemala; and a program to standardize customs and tariffs, looking toward a customs union for the area.

According to the United States embassy in San Salvador, a resurvey of El Salvador carried out in the last few years had revealed that the area of the country is probably no more than 8,000 sq.mi. instead of the 13,176 sq.mi. previously given. This would make it the smallest Latin-American republic instead of Haiti, and it would also mean a substantially greater population density. (R. HN.)

Education.—In 1954 there were 2,032 primary schools with 210,125 pupils, 95 kindergartens with 11,144 pupils, 126 secondary schools with 12,376 pupils and 418 centres for combating illiteracy. Primary teachers totalled 6,286; secondary 1,164. The national university had 1,315 students and 207 professors in 8 faculties. According to the 1950 census, 57.7% of those ten years of age and over were illiterate.

Finance.—The monetary unit is the colón, valued at 40 cents U.S. currency in 1955. The 1955 budget placed revenue at 155,531,934 colones and expenditure at 162,750,000 colones. In 1954 (preliminary figures) revenue was 165,300,000 colones and expenditure 151,950,000 colones. On Dec. 31, 1954, the external debt was 16,197,478 colones. Currency in circulation (July 31, 1955) totalled 91,980,000 colones; demand deposits, 95,590,000 colones. The U.S. department of commerce estimated U.S. direct investments in 1954 at \$23,000,000, of which public utility investments accounted for \$17,000,000. The cost-of-living index (San Salvador) stood at 158 in May 1955 (1948=100).

Trade and Communications.—Exports in 1954 totalled 262,600,000 colones; imports, 216,900,000 colones. Leading exports were coffee (88%), cotton (6%), vegetable oils, livestock and cottonseed meal. Leading customers were the U.S. (72%), western Germany (11%), the U.K. (3%) and the Netherlands (3%); leading suppliers, the U.S. (59%), western Germany (7%), the Netherlands (6%) and Honduras (5%).

The two principal railroads have 385 mi. of main-line track, all narrow gauge. National highway mileage (1950) was 1,693, of which 934 mi. were all-weather. On Jan. 1, 1954, there were 10,551 automobiles and 4,702 trucks; telephones numbered 15,000, 75% of which were automatic.

Production.—Coffee production in the 1954-55 season was estimated at 1,325,000 bags of 132 lb. each; exports in 1954 were 996,000 bags. Other production estimates in 1954-55 included sugar 34,700 metric tons; cotton

90,000 bales of 480 lb. each; rice (rough) 75,000,000 lb.; tobacco (1954) 1,054,000 lb. In 1953 there were 827,430 cattle, 261,252 pigs and 20,451 sheep and goats. According to the 1950 industrial census, there were 11,106 industrial establishments, only 117 of which had more than 50 employees. Installed electric power capacity totalled 54,800 kw. in 1954. In 1954, 5,325 troy ounces of gold and 256,772 oz. of silver were produced. (J. W. Mw.)

Salvation Army. The movement which became known in 1878 as the Salvation Army originated in the Christian mission meetings conducted in London, Eng., 13 years previously by the Rev. William Booth, a Methodist minister. Its primary aim is to preach the Gospel of Christ to men and women who are untouched by ordinary religious efforts.

Internationally, the Salvation Army had by 1955 developed its religious and charitable program in 85 countries and colonies, preaching the Gospel in 81 languages and dialects and ministering through 16,900 chapels, or corps, as the organization terms the centres of work.

The world-wide activities of the Salvation Army are directed from London, where in 1955 Gen. Wilfred Kitching had his administrative office.

In the United States, the Salvation Army's organization is divided into four administrative areas with headquarters in New York city, Chicago, Ill., Atlanta, Ga., and San Francisco, Calif. Each area is under the supervision of a territorial commander. During 1955 Commissioner Donald McMillan, with headquarters in New York city, was the national commander and co-ordinator of work throughout the country.

In September there were 26,775 Salvation Army officers serving throughout the world, 5,138 of them being in the U.S.

In March 1955 the Salvation Army celebrated its 75th anniversary in the United States, and Pres. Dwight D. Eisenhower issued a proclamation recognizing a special National Salvation Army week.

In the United States there were 110 social service institutions ministering to the needs of men, providing shelter and work for approximately 46,000 homeless men annually. There were 34 maternity homes and hospitals, caring for about 14,000 mothers and infants annually, as well as four general hospitals. Aid to the unmarried mother and her child is one area of service in which the Army specializes.

In 1955 there were also 13 Evangeline residences for young businesswomen in the larger cities, as well as 100 homes and lodges for men, women and children. Summer camps provided rest periods for 35,000 mothers and children. A total of 1,476 missing persons were located during the year through the efforts of the four missing persons bureaus. In the area of prison work, nearly 8,000 inmates and their families were given assistance, and 2,734 prisoners were paroled in the care of Salvation Army officers.

The Salvation Army is one of the agencies comprising the United Service organizations, and in 1955 had 34 units under its particular management. More than 2,000,000 soldiers attended S.A.-U.S.O. clubs during the year. (Do. McM.)

Samoa, American. The Samoan Islands extend from 13° 26' to 14° 22' S. lat. and from 168° 10' to 172° 48' W. long., and are about 2,700 mi. E. of Australia and 2,200 mi. S. of the Hawaiian Islands. American Samoa consists of the inhabited islands of Tutuila, Tau, Olosega, Ofu and Aunuu, and the uninhabited coral atoll, Rose Island. Swains Island, 210 mi. N.W. of Tutuila and owned by one family, was made a part of American Samoa in 1925. Total area of American Samoa is 76 sq.mi. and total population was estimated as of June 30, 1954, at 21,600 with about four-fifths of the population on the main island of Tutuila. Pago Pago (pop. 1950 census, 1,586), on Tutuila, is the capital. About four-fifths of the

population is Protestant.

History.—American Samoa is an unorganized United States possession, administered by the department of the interior since July 1, 1951. Richard Barrett Lowe was governor in 1955; the secretary of American Samoa was Allan Macquarrie.

In 1954 a constitutional committee, consisting primarily of Samoans, was appointed to develop a law for American Samoa, aiming at eventual local self-government. For the first time provision was made for a complete governmental organization for Swains Island along substantially the same lines as for other villages of American Samoa.

Education.—It was estimated in 1954 that 99% of all persons 10 years of age or older were literate. As of June 30, 1954, there were 7,037 students enrolled in 61 public and 6 missionary schools. There were 189 public-school teachers and 24 missionary-school teachers. Expenditures for education during the fiscal year ending June 30, 1954, represented 16.5% of total expenditures.

Finance and Trade.—Imports in the fiscal year ending June 30, 1954, totalled \$992,543, of which the United States was the major source followed by Australia and New Zealand. Exports totalled \$546,238, of which two-thirds was copra and one-fifth canned tuna. Revenues collected during the 1953-54 fiscal year totalled \$524,970; expenditures amounted to \$1,627,324. The difference between revenues and expenditures was made up by a grant from the U.S. government. The Bank of American Samoa, which is a government institution, operated by the American Trust company of San Francisco, is American Samoa's only banking institution. As of June 30, 1954, it had a capital of \$50,000.

Transportation and Communications.—In 1954 Tutuila had 69 mi. of roads, of which 4 mi. were surfaced, and a 6,000-ft.-long coral-surfaced airstrip. There is no commercial air service, but Samoan Airlines planned to start service from this airfield in 1955 to fly between Western Samoa and American Samoa. About 1,400 tons of freight were carried by trucks in 1952. Land transportation consisted of 9 buses, 90 autos and 84 trucks. One radio broadcasting station, operated by the government, was in operation in 1955.

Production.—The main products of American Samoa are copra, fish and native handicraft, principally pandanus mats and rugs woven from grass. Principal crops, with estimated production for the 12 months ending June 30, 1954, were copra (1,097 metric tons), citrus fruits (100 tons), bananas (2,500 tons), breadfruit (2,400 tons) and taro (1,500 tons). An estimated 29,400 ac. were under cultivation. There were 287 cattle, 14,400 hogs and 66,900 chickens. (S. Nr.)

Samoa, Western: see NEW ZEALAND; TRUST TERRITORIES.

San Francisco. The population estimate for the city and county of San Francisco, Calif., as of Jan. 1, 1955, amounted to 805,000 persons, compared with 775,357 reported by the U.S. bureau of the census, April 1, 1950. The mayor of San Francisco in 1955 was Elmer E. Robinson, who was re-elected for a four-year term, commencing Jan. 8, 1952.

There were 123 public schools in the city in 1954 with an enrolment of 158,629 and a total average daily attendance of 84,720. Several thousand students attended private and technical schools. In 1954 there were 26,652 attending Catholic schools.

Total employment in the city in March 1955 amounted to 462,900. Retail trade based on taxable sales for 1954 amounted to \$1,480,307,000; sales of food for off-premise consumption and of gasoline, which are not included in taxable sales, would increase total sales in 1954 to about \$1,800,000,000. Wholesale trade in 1954 was about the same as in 1953 and amounted to \$4,876,000,000. The value added by manufacture in San Francisco in 1954 was estimated at \$720,000,000 compared with \$410,000,000 six years earlier.

The total foreign trade passing through the San Francisco customs district amounted to \$728,454,593 in 1954 of which \$403,696,502 represented exports and \$324,758,091 imports.

San Francisco's tax rate for the fiscal year 1955-56 was \$7.02 per \$100 assessed valuation. The assessment roll for the fiscal year was \$2,046,285,694. Estimated fiscal-year revenue amounted to \$197,312,174 of which \$89,092,566 would be derived from city taxes. The city's bonded debt limit as of June 30, 1955, based on the 1955-56 assessment, amounted to \$245,554,283. Bonds outstanding not matured on June 30, 1955, amounted to \$179,792,000. Margin for future bond sales June 30, 1955, was \$133,550,283. Bonds authorized but unsold June 30, 1955, amounted to \$51,235,000.

City officials of San Francisco proposed a capital improvement program for 1955-56 amounting to \$39,134,599 and for the five-year period 1956-61, amounting to \$158,983,774. The program in order of size of expenditures included water supply and distribution, traffic way signals and lights, Parking authority, recreation and parks, public health, sewers and disposal plants, municipal railway, police and fire protection and libraries and museums.

Some important events which occurred in San Francisco during the 1954-55 period included: the dedication of the \$10,000,000 passenger terminal building at the San Francisco International airport; the opening of St. Mary's Square garage, an underground six-story structure with a capacity for 1,025 cars and costing \$2,100,000; the opening of the Equitable Life Assurance society's new \$10,500,000 25-story building; the approval by the California Toll Bridge authority of the issuance of \$80,000,000 of bonds for construction of two new bridges in the immediate San Francisco bay area—one, a twin to the Carquinez bridge near Vallejo to cost \$46,000,000, and the other to replace the ferries between Martinez and Benicia and to cost \$34,000,000; the commemorative session of the United Nations, June 20 to 26. (R. B. Kr.)

San Marino. A small republic in central Italy (with which it is united by the customs union), San Marino is entirely surrounded by the province of Emilia and situated on the slopes of Monte Titano, 14 mi. southwest of Rimini. Area: 38 sq.mi. Pop. (1954 est.): 13,000. Language: Italian. Religion: Roman Catholic. San Marino is governed by two *capitani reggenti* appointed every six months by a grand and general council elected by universal suffrage every four years.

History.—The world's smallest and oldest republic remained under communist control during 1955. This was the result of the election of the grand and general council held on Aug. 14. The results, compared with 1951, were as follows:



ELECTION POSTERS lining a typical narrow street of San Marino, It., in 1955

Party	1951		1955	
	Votes	Seats	Votes	Seats
Communist	1,306	18	1,656	19
Left Socialist	991	13	1,338	16
Christian Democratic	1,922	26	2,006	23
Other	248	3	245	2
Totals	4,467	60	5,245	60

As in 1951 the Popular front over-all majority was only 77; the Christian Democrats brought about 200 Sammarinese from the United States, hoping that they would tip the scale. (Residence in San Marino is not a requirement for voting.) But the Communists and Left Socialists brought hundreds of voters from France, Belgium and northern Italy and increased their majority to 743. Women have no vote in San Marino.

Education.—Schools (1952): primary 18, pupils, 1,255; secondary 3, pupils 186.

Finance.—Budget (1954 est.): balanced at 150,000,000 lire. San Marino uses Italian currency. In 1955 the lira was valued at about 625 to U. S. \$1.

Santo Domingo: see DOMINICAN REPUBLIC.

São Tomé: see PORTUGUESE OVERSEAS TERRITORIES.

Sarawak: see BRITISH BORNEO.

Saskatchewan. Central of the three prairie provinces of Canada, Saskatchewan was created in 1905 by act of the federal parliament. Area: 251,700 sq.mi. Pop.: (1951 census) 831,728 (official June 1, 1954, est.) 889,000. Capital: Regina, pop. (1951) 69,928 (1955 est.) 80,000.

History.—The provincial legislature passed 89 public bills during the third session of the 12th legislature and approved resolutions seeking extension of the Prairie Farm Assistance act, the establishment of a board of livestock commissioners as a federal regulatory body, extension of the powers of the Canadian Wheat board to handle all grains, federal-provincial conferences to discuss agricultural problems and unemployment, and maintenance of the Crows Nest Pass Freight Rates agreement. Reductions averaging 25% were made in premium rates under the Saskatchewan Automobile Accident Insurance act, the previous deficit of \$1,881,551 having been wiped out. The royal commission on agriculture and rural life published five studies covering farm mechanization, farm costs, land tenure, agricultural credit, and rural roads and local government. Biggest natural resources developments centred on uranium and oil. During 1955 Saskatchewan celebrated the golden jubilee of the province, about 500 communities staging celebrations and attracting 3,000,000 or more persons. A large carry-over of wheat again created a storage crisis with a continuing shortage of ready cash in rural areas. Serious spring floods devastated much farm land in 1955. During 1955 a further 7,500 farms were served with electricity, bringing the total to 32,500.

Education.—During the 1953-54 school year there were 29,358 pupils attending secondary schools and 159,983 attending public schools making a total of 189,341. There were 7,480 teachers with an average daily pupil enrolment of 148,210. Total school operating revenues for 1953-54 totalled \$31,282,071.

Public Health and Welfare.—During 1954 the Saskatchewan Hospital Services plan, government-sponsored program of hospital care insurance, covered 97% of all persons entitled to participate. A total of 165,172 patients (excluding newborns) were admitted to hospital care under the plan. Total public assistance expenditure by the province, including old-age security supplementary allowance, blind persons' allowances, old-age assistance, mothers' allowances and social aid for 1954 was \$3,854,831.

Transportation and Communications.—At March 31, 1955, there were 162,495 passenger autos and 594 public service vehicles on 159,634 mi. of provincial and municipal road. Of this mileage 1,212 mi. were bituminous, 19,753 mi. gravelled. During 1954, 164,404 telephones were in service, which meant 18.7 instruments per 100 population.

Banking and Finance.—The 1955-56 provincial budget estimated revenues of \$79,992,920 and expenditures at \$79,971,810. As of March 31, 1954, net debt less sinking funds and revenue producing loans and advances, was \$94,022,000. In 1954 the two largest publicly-owned corporations, power and telephones, showed net earnings of \$3,386,000, while all other crown corporations together earned a net profit of \$763,000. At Dec. 31, 1954, there were 281 active credit unions, which loaned \$20,404,607 to 73,964 members.

Agriculture.—Main crops, 1954 (1955 preliminary estimates in parentheses): wheat, 151,000,000 bu. (298,000,000 bu.); oats, 86,000,000 bu. (140,000,000); barley, 53,000,000 bu. (109,000,000); rye, 6,700,000 bu. (8,400,000); flax, 4,800,000 bu. (13,100,000). Preliminary estimate of farm cash income for 1954 was \$473,094,000; valuation of major items: wheat, \$264,259,000; oats, \$25,340,000; barley, \$34,669,000; rye, \$6,333,000; flax, \$7,981,000; cattle, \$57,291,000; hogs, \$23,965,000; poultry, \$10,034,000; dairy produce, \$23,252,000. On June 1, 1954, there were 1,387,000 cattle and 539,000 hogs on Saskatchewan farms.

Fisheries, Furs and Forestry.—Commercial fish production in 1953-54 was 8,481,011 lb. valued at \$1,281,022. For the same year the timber cut, all types, was 28,355,923 cu.ft. valued at \$9,065,802. The total value of wild fur pelts for this period was \$1,383,310.

Manufacturing.—Statistics are for 1953 when 11,604 employees, in 1,062 establishments, earned \$32,395,518 in salaries and wages. Raw materials worth \$180,303,942 were converted into finished products with a net value of \$79,941,332 and a gross value of \$266,613,086. A breakdown of production statistics available for 1953 shows the four leading classes, in terms of value to be (number of employees in parentheses): petroleum products, \$67,777,002 (1,003); flour mills, \$42,911,324 (723); slaughtering and meat packing, \$31,879,941 (1,142); butter and cheese, \$28,008,313 (1,298). In 1953 the total value of all industrial products was \$266,613,086.

Mining.—During 1954 oil production was 5,422,899 bbl. There were 1,094 wells on production. Natural gas consumption was 4,824,265,000 cu.ft. with 120 wells on production. Preliminary value figures for all mineral production for 1954 was \$56,977,794. The leading minerals were copper, \$21,024,360; zinc, \$12,059,400; coal, \$3,956,000; gold \$3,391,703; petroleum, \$8,250,000. (J. H. Ar.)

Satellite, Artificial: see PHYSICS.

Saudi Arabia. Saudi Arabia is an Arab kingdom covering four-fifths of the Arabian peninsula. (See ARABIA.) Area: about 617,760 sq.mi. Pop. (1952 est., no census ever taken): 7,000,000. Religion: Moslem. Chief towns (pop., 1954 est.): Riyadh (cap.) 80,000; Mecca 150,000; Jidda 100,000; Hufuf 100,000; Buraida 50,000; Medina 45,000. King, Sa'd ibn Abd ul-Aziz al Saud. Prime minister and viceroy of Hejaz, Amir Faisal, crown prince and eldest brother to King Saud.

History.—The dispute between Egypt and Iraq over the latter's treaty of alliance with Turkey provoked an immediate declaration from the Saudi Arabian government that it was in full accord with Egyptian foreign policy and that were Egypt to secede from the Arab league, Saudi Arabia would also do so. Later the government accepted Egypt's invitation to subscribe to the new Egyptian-Syrian defense and economic treaty (see SYRIA); and in May King Saud threatened the Lebanese president (Camille Shamun) that unless Lebanon discontinued its efforts to force Syria and Jordan to accede to the Turco-Iraqi treaty, Saudi Arabia would retaliate politically and economically.

In Aug. 1955 there was a recrudescence of trouble between the Saudi Arabian and the British governments over the disputed ownership of the Baraimi oasis. The Saudi Arabian government had held up a convoy organized by Great Britain to carry relief supplies for the victims of an extensive fire in the Baraimi zone, and it was in this atmosphere of friction that the arbitration commission appointed in Dec. 1954 met in Geneva, Switz., in Sept. 1955. The British opened their case with charges of extensive bribery by the Saudi Arabian authorities to induce local sheikhs and notables to transfer their allegiance and their interest in the potentially rich oil fields believed to be in their territories from the sultan of Muscat and the ruler of the Trucial state of Abu Dhabi to Saudi Arabia. These allegations were denied by Saudi Arabia. But on Sept. 16 the British delegate, Sir Reader Bullard, resigned from the commission alleging the total lack of impartiality of his Saudi Arabian colleague, Sheikh Yusuf Yasin, the Saudi Arabian foreign minister, who, he had discovered, was the state officer in charge of affairs at Baraimi. This resignation was followed by that of the president, C. de Visscher (Belgium), and the tribunal closed. Thereupon levies from Muscat under British command reoccupied the oasis. The Saudi Arabian reaction was an official statement placing the responsibility for future developments on Britain.

(O. M. T.)

Education.—Schools (1949): primary 207, pupils 27,712, teachers 875; secondary 8, pupils 1,116, teachers 181; vocational 5, pupils 311, teachers 17; 1 preuniversity school, pupils 25, teachers 3.

Finance.—Monetary unit: rial; about 10.35 rials=£1 sterling and 1 rial=approximately 28 U.S. cents. Budget (1954-55 est. U.S. dollar equivalent): revenue U.S. \$305,940,000; expenditure U.S. \$361,330,000; estimated revenue from oil royalties and income tax U.S. \$257,700,000.

Foreign Trade.—Imports (1953 est.) £58,000,000; exports £235,000,000. Main imports: textiles, cereals, tea, coffee, sugar, rice, motor vehicles, building materials. Main exports: oil; also gold concentrates, hides and skins, gum, dates, clarified butter.

Transport and Communications.—Main roads (1954) Jidda-Mecca 72 km. asphalted; Jidda-Medina 168 km. completed; motor track Mecca-Persian gulf 1,325 km. Air transport: Saudi Arabian Airlines, 5 airports. Radio receiving sets (1950) 10,000.

Savings and Loan Industry. Savings and loan associations in the United States continued to make record progress in serving savings customers and in financing housing needs during 1955. Total assets, total mortgage loans held and total savings capital of all operating savings and loan associations reached new peaks.

In the year ended June 30, 1955, the increase in savings capital at all savings and loan associations amounted to \$4,700,000,000. This exceeded corresponding increases in other comparable forms of saving. During the same period the increase in time deposits at all commercial banks was \$2,200,000,000, and the rise in savings accounts at all mutual savings banks was \$1,900,000,000. Individuals increased their holdings of United States savings bonds by \$700,000,000 and their investments in life insurance reserves by \$3,900,000,000. Savings accounts with the postal savings system declined \$240,000,000 and with credit unions rose \$470,000,000. The increase in savings accounts at savings and loan associations comprised more than one-third of the total increase in these savings of individuals during the 12-month period.

Although new savings continued to flow into the savings and loan associations at a record rate during the year, withdrawals absorbed a high proportion. In the first nine months of 1955, gross savings receipts were \$10,300,000,000, 24% over the corresponding period in 1954. Withdrawals aggregated \$7,000,000,000, an increase of 33%. As a result, the net inflow of savings totalled \$3,300,000,000, or 9% more than in the same period a year previously. During the first nine months of 1955, the ratio of total withdrawals to gross savings receipts was 68%, as compared with the corresponding withdrawal ratio of 64% in the year before.

The growth in lending volume of the nation's savings and loan associations is indicated by the fact that mortgage loans acquired by insured associations were 39% greater in Jan.-Sept. 1955 than in the same period in 1954. Savings and loan associations continued as the leading lender for home financing, recording 38% of total home mortgage financing in the first nine months of 1955, with commercial banks next at 19%.

At the end of Sept. 1955 total assets of all savings and loan associations, somewhat more than 6,000 in number, amounted to \$36,200,000,000. Mortgage loans held came to \$30,600,000,000, with conventional loans constituting about two-thirds of the total. United States government obligations were owned in the amount of \$2,300,000,000, and cash holdings were \$1,600,000,000. Savings capital totalled \$30,500,000,000. Federal Home Loan bank advances approached \$1,300,000,000. Reserves and undivided profits exceeded \$2,500,000,000.

The imposition of credit restraints, particularly late in the third quarter, in face of very high mortgage demand, was a major event of the year. In usual circumstances, the net increase in mortgages held by savings and loan associations is made possible by the net increase in savings capital at these institutions. In the 12 months ended June 30, 1955, for instance, all savings and loan associations increased their total mortgage loans held in the amount of \$5,100,000,000, while total savings capital rose \$4,700,000,000. In the third quarter of 1955, however, the



"WE'RE ALL SET, GLADYS! . . . Your father gave us his blessing, this rabbit's foot, and the names of a couple of friendly loan companies . . ." a 1955 cartoon by Lichty of the Chicago Sun-Times Syndicate

increase in mortgage holdings substantially outran the net inflow of savings. During this period total mortgage loans held rose \$1,600,000,000, while total savings capital rose \$675,000,000, the excess of increase in the mortgage portfolio over the increase in savings capital being met by advances from the Federal Home Loan banks, by other borrowings and by drawing down of holdings of cash and government securities. It became increasingly apparent that the net inflows of savings together with repayments on outstanding mortgages were failing to keep pace with the very strong demands for new mortgage loans.

The Federal Home Loan Bank system, which had become an independent agency under the Housing act of 1955, has as a first duty that of providing additional liquidity to the member savings and loan associations by making advances when needed to meet unusual withdrawal demands. A second task is to assist, to some extent, the member savings and loan associations in meeting mortgage loan commitments. The Federal Home Loan Bank board on Sept. 8 adopted a policy of restricting the extension of credit through Federal Home Loan bank advances to member savings and loan associations. As a general rule it was required that each member association should follow a mortgage loan program that contemplated meeting loan demands out of savings inflow and loan repayments, and that a reasonable reduction in advances then outstanding should be required before renewal of outstanding advances. Later in the year the board authorized stand-by credits to member savings and loan associations as a relaxation of the September directive.

(J. K. L.)

Savings Banks: see BANKING; SAVINGS AND LOAN INDUSTRY.

Schools: see EDUCATION; UNIVERSITIES AND COLLEGES. See also section *Education* in articles on countries and states.

Scotland: see GREAT BRITAIN & NORTHERN IRELAND, UNITED KINGDOM OF.

Scrap: see SECONDARY METALS.

SEC: see SECURITIES AND EXCHANGE COMMISSION.

Secondary Education: see EDUCATION.

Secondary Metals. The by-products of other ores are classified as secondary metals. For instance, silver is obtained from ores mined primarily for their content of gold and from some of the base metals such as zinc. Gold, in many cases, is the by-product of copper mining and other base metals. Sometimes the production of the secondary metal exceeds the mine production as, for instance, secondary lead recovery has done for nine years. Included with by-product recovery is the metal recovered from old or new scrap. Old scrap is salvaged from irreparable or obsolete equipment. New scrap is primary metal produced in manufacturing processes which is reworked before final use. Recoveries of both types are shown in Table I, but only the recovery from old scrap adds to the available supply.

Table I.—Secondary Nonferrous Metals Recovered in the U.S.
(in 000 short tons or fine ounces)

	1954	1953	1952	1951	1950	1949
Copper—tons						
As metal	250.0	242.9	173.9	186.4	240.7	250.1
In alloys	597.0	694.0	713.9	722.9	699.1	448.2
In compounds	18.1	21.6	15.4	22.9	17.4	14.8
Total	865.1	958.5	903.2	932.3	977.2	713.1
From old scrap*. . .	422.0	429.4	414.6	458.1	485.2	383.5
Lead—tons						
As metal	120.0	126.6	140.1	168.9	129.3	152.6
In alloys	360.9	360.1	331.2	349.2	353.0	259.6
In compounds	480.9	486.7	471.3	518.1	482.3	412.2
Total	425.0	428.8	411.8	441.7	427.5	364.1
From old scrap*. . .						
Zinc—tons						
As metal	94.6	78.6	83.1	85.1	104.1	84.2
In alloys	151.1	181.4	196.1	188.5	178.2	116.2
In compounds	26.1	34.7	31.2	40.8	43.7	37.4
Total	271.2	294.7	310.4	314.4	326.0	237.8
From old scrap*. . .	72.7	64.2	74.7	68.2	74.1	51.7
Tin—tons						
As metal	3.3	3.2	3.2	3.7	4.0	3.9
In alloys	25.3	27.1	28.6	30.2	30.7	20.7
In compounds	0.7	0.6	0.4	0.5	0.7	0.6
Total	29.3	30.9	32.3	34.4	35.5	24.9
From old scrap*. . .	19.1	21.4	22.9	23.0	24.2	16.5
Aluminum—tons						
As metal	5.8	5.2	4.9	5.3	2.1	0.3
In alloys	282.6	358.8	296.3	285.9	241.2	180.0
In compounds	3.6	4.7	3.3	1.4	0.4	0.4
Total	292.0	368.7	304.5	292.6	243.7	180.7
From old scrap*. . .	60.0	78.9	71.3	76.6	76.4	44.6
Magnesium—tons						
Total (in alloys) . .	6.5	11.9	11.5	11.5	7.3	6.0
From old scrap*. . .	3.3	6.0	7.2	6.2	5.0	2.9
Nickel—tons						
Total	8.7	8.4	7.5	8.6	8.8	5.7
From old scrap*. . .	4.6	5.2	4.3	4.8	4.8	1.9
Antimony—tons						
Total (in alloys) . .	22.4	22.4	23.1	23.9	21.9	18.1
From old scrap*. . .	18.9	19.0	19.6	19.9	18.8	15.0
Platinum—ounces . .	31.0	29.5	28.6	22.8	33.9	41.7
O.P.M.†—ounces . .	34.3	34.3	30.0	31.0	24.2	41.8
Gold—ounces	966.4	1,068	881	—	1,050	1,147
Silver—ounces	18,628.7	19,389	25,038	46,651	45,257	22,660

*Secondary metal recovered from old materials, the remainder having come from the reworking of new plant scrap. †Other platinum group metals.

Iron and Steel Scrap.—About half of the furnace charge in making steel is scrap and this, in turn, is about equally old and new scrap. Data for 1953 and 1954 on the plant (new) scrap and the purchased scrap are lumped together in Table II, as the U.S. bureau of mines does not now report them separately.

(F. E. H.)

Table II.—Scrap in the U.S. Iron and Steel Industry

	Pig iron output	Steel output	Plant	Scrap consumption Purchased	Total
1939	34,895	46,079	19,622	16,705	36,327
1946	44,842	66,603	26,134	23,350	49,484
1947	58,327	84,894	31,579	29,285	60,864
1948	60,073	88,640	32,420	32,544	64,964
1949	53,323	77,978	29,166	25,172	54,338
1950	64,810	96,836	32,094	29,403	61,497
1951	70,487	105,200	34,694	33,814	68,507
1952	61,308	93,168	34,837	34,186	69,023
1953	74,853	111,610	...	...	77,131
1954	57,948	88,312	...	...	61,354

Secret Service, U.S. The United States secret service is a bureau of the treasury department, established July 5, 1865. Its powers and duties are defined in title 18, U.S. code, section 3056. They include protection of the president of the United States and members of his family, the president-elect and the vice-president at his request; the suppression of currency counterfeiting and of forgeries of

government checks and bonds.

During the year ended June 30, 1955, secret service agents captured 16 plants for the manufacture of counterfeit paper money and \$1,021,916 in counterfeit bills. Of that total, only \$102,482 was successfully passed on storekeepers and cashiers. The balance of \$919,434 was captured before it could be put into circulation. The representative value of counterfeit coins seized was \$5,262.76, of which \$4,975.32 was successfully passed. There were 124 new counterfeit note issues during the year, and 186 persons were arrested for violating the counterfeiting laws.

There were 33,260 forged government checks received for investigation, an increase of 1,329 over the previous year, and 12,139 were on hand as of July 1, 1954. Agents completed investigations of 30,177 forged checks worth \$2,609,335.91, but on June 30 there was a growing backlog of 15,222 forged checks awaiting investigation. Agents arrested 2,825 persons for forgery of government checks.

Thieves continued to steal and forge United States savings bonds. Agents received 5,607 forged bonds for investigation and there were 2,063 such cases awaiting investigation July 1, 1954. Agents completed investigations of 4,961 forged bonds worth \$437,103.54 and arrested 86 persons for bond forgery. Many of the bonds were stolen by burglars from private homes where the bonds had been concealed in shoe boxes, bureau drawers and other makeshift hiding places.

Secret service agents arrested 172 persons for crimes other than counterfeiting and forgery, making a total of 3,269 persons arrested, an increase of 157 or 5% over the previous year. There were 2,979 convictions, representing 98.1% of convictions in all cases prosecuted, some of which were pending from the previous year.

Prison sentences during the year totalled 3,159 years, and additional sentences of 2,715 years were suspended or probated. Fines in criminal cases totalled \$61,242.

Cases of all types received for investigation aggregated 43,990, an increase of 2,627 or 6.4% over the previous year. Although 40,627 cases were closed during the year, there were 18,585 cases awaiting investigation and 956 pending prosecution as of June 30, 1955.

(U. E. B.)

Securities: see BANKING; STOCKS AND BONDS.

Securities and Exchange Commission.

A bipartisan, quasi-judicial agency of the U.S. government, the Securities and Exchange commission (SEC) administers several laws in the general field of securities and finance enacted for the protection of the investing public.

Securities Act of 1933.—This law prohibits fraud and deceit in the sale of securities generally; provides recovery rights to defrauded investors; and requires disclosure of financial and other information concerning securities offered for public sale. Such disclosures are obtained through the filing of registration statements with the commission containing pertinent data essential to informed investment analyses, and the delivery to investors of a prospectus setting forth the salient facts. At the end of the 1955 fiscal year, \$103,000,000,000 of securities had been registered, \$10,900,000,000 during that year.

Registration of securities does not guarantee against loss in their purchase. It seeks to provide investors with information upon which they may make an informed analysis of the securities and prudent investment decisions based thereon. Nor is registration a warranty of the accuracy of the facts disclosed; but investors who suffer losses in the purchase of registered securities have important recovery rights if the facts are misrepresented.

Securities Exchange Act of 1934.—Issuers of securities listed for public trading on national securities exchanges are required by this law to register and file periodic reports disclosing financial and other information required by investors for informed investment decisions. At the year's end, 3,658 security issues of 2,219 issuing companies were so listed and registered, and the volume of trading therein during the year was approximately \$37,977,338,870.

Holders of listed securities also must be provided with pertinent information when their proxies are solicited on corporate matters. In addition, management officials and large stockholders of listed companies must report their transactions in the equity securities of their companies and are accountable to the issuer for short-term trading profits therein—measures designed to curb misuse of “inside” information. During the year, 1,934 proxy statements and 28,975 insiders' reports were filed.

This law further provides a system for the regulation of securities markets designed to eliminate all impediments to free and open markets; and the commission exercises a continuing surveillance in furtherance of investor protection in accordance with the prescribed standards. Exchanges as well as brokers or dealers in an over-the-counter securities business must register and conform their business practices to the requirements of the law and rules of the commission promulgated thereunder; 15 exchanges and 4,334 brokers and dealers were registered at the year's end. Also registered was one association of brokers and dealers which, like the exchanges, has disciplinary powers over its members.

Public Utility Holding Company Act of 1935.—This law provides for regulation of holding company systems of electric and gas utility companies in the interest of protecting investors and consumers against certain abuses which led to its enactment, and it also seeks to delimit the scope of each system's operations to an integrated system of utility properties and to simplify their corporate and capital structures and redistribute voting power on a fair and equitable basis. Among such abuses were the issuance of securities against unsound values; inadequate disclosures to investors; exorbitant service charges; overloading of subsidiaries with debt; absentee management and control, often through disproportionately small investment; and extension of holding company systems without regard to economics of operation. Many of these had the effect of thwarting effective state regulation.

The integration and simplification program, virtually complete, saw the divestment of widely separated properties not retainable with the integrated properties of particular systems and the simplification of pyramided corporate and complex capital structures and redistribution of voting power among security holders upon an equitable basis, all in keeping with the statutory requirement of fair and equitable treatment of security holders affected. As an over-all result of this process and the granting of related exemptions, 1,958 of the 2,200 companies which had been subject to the statute as components of registered holding company systems were released from jurisdiction as such, including 425 electric and gas utility companies with assets of more than \$10,000,000,000, most of which emerged as independent operating companies. The process also tended toward the restoration of local management and control and more effective state regulation. Ultimately, it was expected that about 18 holding company systems with assets of \$6,500,000,000 would continue as registered systems subject to commission regulation under the act, which regulation would supplement that of state commissions.

The law also prescribes standards governing mergers and consolidations, purchase of utility securities and assets, issuance and sale of securities, servicing contracts and similar matters;

these must be passed upon by the commission in accordance with the terms of the law. One of the important duties of the commission over the past several years had been to consider, in terms of these provisions of the law, the issuance of securities by system companies to finance their businesses, including unprecedented expansion programs. During recent years annual financings by registered systems had approximated \$1,000,000,000, of which \$750,000,000 represented sales of securities to the general public and the balance intrasystem sales.

The commission also administers the Trust Indenture act of 1939, the Investment Company act of 1940 and the Investment Advisers act of 1940, and serves as adviser to federal courts in corporate reorganization proceedings under chapter x of the Bankruptcy act. (O. L. DuB.)

Seeing Eye, Inc.: see SOCIETIES AND ASSOCIATIONS, U.S.

Segni, Antonio (1891—), Italian politician, was born at Sassari, Sardinia, Feb. 2. He succeeded Mario Scelba as prime minister of Italy on July 6, 1955. A lawyer with a degree in agricultural and commercial law, he joined the Christian Democratic party in 1919 (then called Partito Popolare Italiano) and worked as an organizer in the provinces. In 1924 he was a member of the party's national council, but two years later all political organizations were dissolved by Mussolini. Segni taught agrarian law for 17 years at the universities of Pavia, Perugia and Cagliari; he was also rector of Sassari university. At the beginning of 1943 he was one of the organizers of the revived Christian Democratic party in Sardinia. He joined the second I. Bonomi cabinet (Dec. 1944–June 1945) as undersecretary to the minister of agriculture, retaining this office in the F. Parri cabinet (June–Dec. 1945) and in the first A. de Gasperi government (from Dec. 9, 1945). Segni was elected to the constituent assembly for Cagliari (June 2, 1946) and on July 12 was made minister of agriculture in the second De Gasperi cabinet, keeping this portfolio in the following three De Gasperi ministries. Re-elected on April 18, 1948, he continued to serve as minister of agriculture in the sixth and seventh De Gasperi cabinets. He prepared and put into practice the Land Reform bill. In July 1951 he was appointed minister of education in the eighth De Gasperi cabinet. Re-elected to the chamber of deputies in June 1953, he joined the G. Pella cabinet (Aug. 1953–Jan. 1954) again as minister of education. On July 6 he formed the 17th postwar Italian cabinet, a coalition of Christian Democrats, Liberals and Social Democrats.

Seismology. Seismologists consider the 12-month period ending Oct. 15, 1955, to have been one of less than normal earthquake activity. There were, nevertheless, a number of damaging shocks. One on April 1, 1955, in the southern Philippines, was a major disaster with an estimated death toll of 432. During eight hours, recurring shocks rocked the island of Mindanao, resulting, besides the death toll, in several million dollars' damage to property and crops in the Iligan, Ozamiz and Lake Lanao areas. Highways were closed by great cracks, some three to four feet wide, and by landslides and huge fallen boulders. Lake Lanao, one of the largest in the Philippines, lowered about six feet, and houses toppled into the water.

Greece, one of the most seismically active lands in the world repeatedly struck in recent years by devastating earthquakes suffered again when, on April 19 and 21, 1955, a series of quake destroyed parts of Volos, a principal seaport and industrial city. A U.S. destroyer in the harbour rendered emergency assistance to thousands of inhabitants forced to spend the night in rain

drenched streets. After the shocks on April 21, 65% of the inhabitants were homeless.

Perhaps the most important quake from the scientific viewpoint occurred on Dec. 16, 1954, when great ground displacements occurred on geological faults east of Fallon, Nev. Vertical displacements of 6 to 23 ft. and horizontal shifts of 4 to 12 ft. occurred east of Fairview Peak, and movements as great as 15 ft. took place on the west side of Dixie valley. These displacements, which required extensive readjustments to the coast and geodetic survey control network of Nevada, were the greatest noted in North America since the great Yakutat, Alaska, quake of 1899, and rank among the greatest of history. Such a shock in a populated area would be a major catastrophe.

Other quakes occurred in widely separated areas. Beginning Dec. 4, 1954, a series of more than 100 shocks killed one person, injured several and made thousands homeless in Trinidad. Two million dollars' damage to public and private buildings in Eureka, Calif., was caused by a quake on Dec. 21, 1954, which impaired telephone service and power and radio station operations.

Quetta, Pak., the scene in 1935 of one of the greatest earthquakes of history, was shaken on Feb. 19, 1955, by tremors which killed 12 persons and drove thousands from their homes to spend the nights in the streets. On April 14 at least 39 persons were killed and 113 injured according to unconfirmed reports from Sikang province, China. On July 16 a strong tremor struck Samos Island, 175 mi. S.E. of Athens, collapsing 90 houses. It also caused the death of two persons and wrecked more than 700 houses on Turkey's Aegean coast.

On July 20 heavy damage and some injuries occurred in the lofty mountains of northern Ecuador, where a new church and many adobe houses were collapsed by a shock felt sharply in Quito. A few days later, on July 28, more than 20 quakes tumbled scores of homes in Valdivia, Chile, as two dormant volcanoes became active. Water was contaminated by volcanic ash which endangered thousands of cattle and sent 200 persons to hospitals with smoke poisoning.

A sharp earthquake jolted the thickly populated Nile river delta area on Sept. 12, killing 20 persons, injuring many and causing extensive damage. Eight houses and two school buildings collapsed. Nine school girls were killed when a panic-stricken class surged down the stairs and broke through a balustrade, plunging to the floor below.

An interesting geophysical and geological investigation, using seismic techniques, in the Gulf of Mexico showed the southern Gulf to be a typical oceanic area modified by sedimentary loadings. Cores taken in depths of more than 1,700 fathoms showed a three-foot layer of recent sediments from Wisconsin, outlining the extremity of the Wisconsin glacial epoch.

New seismological stations were established at Akureyri, Ice., Comitán, Mex.; Eureka, Nev.; and O'Higgins base, Antarctica. Telemetering of seismic recordings over a microwave radio link was improved by the coast and geodetic survey, using a UHF-FM system with commercial types of transmitters and receivers. This provides the advantage of locating seismometer detectors in remote, undisturbed areas, while actually recording the tremors at convenient central points.

Trends in engineering practices for building construction to resist earthquake forces were evident in San Francisco, where use was being made of tapered columns and spandrel beams resembling butterflies because they are deeper at the ends than the middle. Other developments were an earthquake-resistant tank where ring girders form the floors to provide seismic bracing, and a nine-story reinforced-concrete parking garage in which a prestressed I-shaped shear wall was designed to withstand 68% of the total estimated horizontal force caused by an

earthquake occurring at the worst angle. (See also COAST AND GEODETIC SURVEY; DISASTERS.) (E. B. R.)

Selective Service, U.S. The United States Selective Service system was assured of uninterrupted operation when on June 30, 1955, Pres. Dwight D. Eisenhower signed into law a bill extending until July 1, 1959, the system's authority to induct regular registrants. The same act extended until July 1, 1957, the authority of Selective Service to induct doctors and dentists for the armed forces. Both were to have expired as of June 30, 1955.

Another amendment provided for exemption from training and service but not from registration, in accordance with regulations prescribed by the president, of certain aliens who subsequent to June 24, 1948, served on active duty for a period of not less than 18 months in the armed forces of a nation with which the United States is associated in mutual defense activities as defined by the president.

A further provision exempted from induction for training and service, "except after a declaration of war or national emergency made by the Congress subsequent to the date of enactment of this title," persons who after Sept. 16, 1940, served honourably on active duty for not less than one year in one of the armed forces; those who subsequent to Sept. 16, 1940, were discharged for the convenience of the government after having served on active duty for a period of not less than six months; and those who served for a period of not less than 24 months as commissioned officers in the public health service, or in the coast and geodetic survey.

In extending the so-called "doctor draft," the congress provided that no person in the medical, dental and allied specialist categories shall be inducted after he has attained the 35th anniversary of the date of his birth if he applies or has applied for a commission in one of the armed forces in any such categories and is or has been rejected for commission on the sole ground of physical disqualification. It also lowered from 50 to 46 the maximum age for the induction of individuals in these categories.

During the calendar year 1955, the armed forces called upon Selective Service to supply a total of 153,000 men, 133,000 of whom were for the army and 20,000 for the navy. For the first time since Dec. 1945, the navy called upon Selective Service to furnish 10,000 men in November and 10,000 in December.

In keeping with the expressed intent of the congress, Selective Service, immediately following enactment of the Reserve Forces act of 1955, began preparation for carrying out its responsibilities in the administration of that program. Some of this responsibility is concerned with the records which must be assembled and maintained for members of the standby reserve and the part which the Selective Service system must play in the extension of the ready reserve. The possible mobilization of the Standby reserve would require that there be established individual records for each standby reservist. These records must be complete enough at all times to permit a current classification to be available so that if a mobilization should come at any time, the Selective Service system would be able to indicate to the department of defense what standby reservists were immediately available for mobilization.

The make-up of the Selective Service system remained materially unchanged through the calendar year 1955. There were approximately 4,000 local boards, 92 appeal boards, plus 28 panels (1 in each federal judicial district in each state, territory and possession), 56 "state" headquarters (1 in each state, New York city, District of Columbia, Hawaii, Alaska, Puerto Rico, the Virgin Islands, Panama Canal Zone and Guam), and a national headquarters in the District of Columbia. Uncompen-

sated personnel of the system, including local board members, appeal board members, government appeal agents, advisors to registrants and medical and scientific advisors to local boards all serving without pay, totalled 40,000 as against approximately 8,000 paid personnel. (L. B. H.)

Reserve Forces Act of 1955.—The Reserve Forces act of 1955, which became law on Aug. 9, added three significant features to existing statute governing military reserves.

First, it modified the structure of the reserve forces to permit establishment of a ready reserve adapted to the world strategic situation, and to permit, through a process of screening the ready reserve and selective mobilization of the standby reserve, the proper distribution of critically skilled personnel between military and defense-supporting requirements in the event of mobilization. Second, it provided an effective means for securing compliance with the requirement to take part in the reserve training imposed on young men who entered the armed forces after Aug. 9, 1955. Third, it provided a method for the direct entry of young men into the reserve and their initial active training for effective reserve participation.

Including provisions added to existing law by the Reserve Forces act of 1955 and associated legislation, a young man between the ages of 17 and 18½ has available to him a number of choices by which he may fulfil his military obligation:

(1) He may enlist in a regular component for three or more years of active service in which case he acquires an obligation for six years of active and reserve service.

(2) He may enlist in the army for two years, assuming the six-year obligation.

(3) He may volunteer for induction by Selective Service for two years of active duty within a total six-year obligation.

(4) He may enlist in the reserve for six years with the agreement to serve two years on active duty during his obligation.

(5) He may enlist in the reserve for eight years, undergoing six months of initial active duty for training followed by draft-deferred membership in the Reserve for the remainder of eight years contingent on satisfactory participation.

(6) He may join the national guard and, without undergoing initial active training, complete his military obligation in a draft-deferred status by satisfactory participation with his national guard unit until age 28. By undergoing six months of active duty for training, however, he may fulfil his obligation in eight years. Subject to presidential authorization, the law made similar provisions by which young men may enter the reserve.

(7) He may enroll in the reserve officers training corps or other college-type training program, and complete college in a draft-deferred status; and upon being commissioned, serve a minimum of two years of active duty within a six-year obligation or six months of active training within an eight-year obligation, depending on service requirements. (See also LAW.)

(J. A. N.)

Selenium: see MINERAL AND METAL PRODUCTION AND PRICES.

Senate: see UNITED STATES CONGRESS.

Senegal: see FRENCH UNION; FRENCH WEST AFRICA.

Seventh-day Adventists. In 1955 the church reached a world membership of more than 1,000,000. As of Sept. 30 the membership in the United States and Canada was 291,368. At the annual autumn meeting of the executive committee, which legislates for the church, these actions, among others, were voted: that steps be taken to train more effectively the personnel to direct the Pathfinder clubs, which are composed of junior youth; that the church members give special attention to circulating among their Jewish friends a new journal launched by the church, called the *Isra-*

elite, which seeks to set forth the teachings of the Christian faith; that the church record its vigorous opposition to the serving of liquor on commercial passenger planes; that it oppose the use of hypnosis in the treatment of disease. The concluding topic of the annual autumn meeting was the setting of the budget for 1956. Appropriations totalled \$20,814,801, an increase over the preceding year of more than \$500,000. These appropriations were largely for the maintenance of overseas work, and they did not include the maintenance of North American churches or pastors.

A historical high light of the year was the 50th anniversary of the denomination's medical college, located at Loma Linda and Los Angeles, Calif., which was in the midst of a multi-million-dollar expansion program. Dedicated during the year, on the Loma Linda campus, was a building to house the dental college. The welfare agencies of the church, through its Dorcas societies, were called into active service in connection with the disastrous hurricanes and floods that struck the northeastern part of the United States. (See also CHURCH MEMBERSHIP.) (F. D. N.)

Seychelles. British colony and dependencies, 92 islands in the Indian ocean. Area 156 sq.mi. (Mahé 55 sq.mi.). Pop.: (1947 census) 34,632; (mid-1954 est.) 37,391, mainly Negro. Language: English; French Creole patois. Religion: Christian (about 66% Roman Catholic). Capital, Victoria (Mahé Island), pop. (1952 est.) 10,000. Governor in 1955, Sir William Addis.

History.—Development work in Seychelles costing £730,000 was planned for 1955–56. During 1955 a local businessman obtained a lease of the Aldabra Islands (about 750 mi. S.W. of the main Seychelles group), under conditions to preserve rare flora and fauna. The dried fish trade expanded—Ceylon and Malaya placing orders—and the marketing of essential oils benefited from the formation of an association of their producers, distillers and shippers.

Considerable controversy was caused in July by the suspension and exclusion from the colony by his bishop of Ven. C. A. Roach, Anglican archdeacon of Seychelles, who was on furlough in England. Archdeacon Roach had repeatedly alleged religious persecution and undue governmental influence by the Roman Catholic majority. (J. J. Ty.)

Education.—(1954) Government and mission schools: primary 32, junior secondary 2, secondary 2 (with primary departments), vocational 1; all pupils 5,740; all teachers (excluding private) 146, student and pupil teachers 70.

Finance.—Monetary unit: Seychelles rupee, equal to 1s. 6d. sterling and 21 cents U.S. Budget (1954 actual): revenue Rs. 3,800,422; expenditure Rs. 3,764,270.

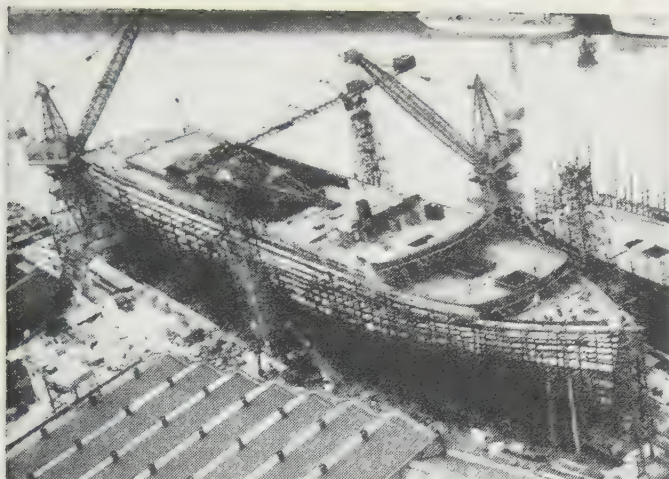
Foreign Trade.—(1954) Imports Rs. 8,086,860; exports (including re-exports, Rs. 33,432) Rs. 9,081,859. Production (long tons 1954): copra 6,472; cinnamon leaf oil 99; cinnamon bark 475; patchouli leaf (dry) 67; vanilla 1,370 kg.; guano (including phosphate rock) 11,863 long tons.

Sheep: see LIVESTOCK.

Shipbuilding. The total world tonnage under construction or on order of vessels of 1,000 gross tons or more as of July 1, 1955, was 6% above the July 1954 total. The figures shown in the table, released by the Shipbuilders Council of America, do not include construction in the U.S.S.R. or satellite countries.

The world shipbuilding gross tonnage of 12,596,534 was an increase of 721,217 gross tons over July 1954.

United States.—The United States position in world shipbuilding slipped further during 1955, from eighth to tenth place. In many individual European shipyards there were more ships under construction than in all the shipyards of the United States. On Jan. 1, 1955, 15 merchant vessels (1,000 gross tons and



"EMPRESS OF BRITAIN," 26,000-ton ocean liner of the Canadian Pacific fleet, under construction near Govan, Scot., in June 1955

over) aggregating 212,660 gross tons were on order, under construction or awaiting delivery in domestic shipbuilding yards. These included ten tankers, three cargo vessels, one ore carrier for Great Lakes service and one new cargo vessel undergoing conversion and completion as an auxiliary cargo attack vessel for the navy.

During the first nine months of the year eight new vessels were delivered. They consisted of four tankers, three "Mariner"-class C4-S-1a cargo vessels and one Great Lakes "self-unloader" bulk ore carrier. During this period only three vessels were launched, including two tankers and the last of the "Mariner"-class cargo vessels. In the same months of 1954 there had been 27 vessels launched and 30 delivered.

Of the 20 vessels ordered since Oct. 1954, 13 were tankers aggregating approximately 210,000 gross tons. Four of these tankers were being built under the 1954 authorization of public law 575 for use by the Military Sea Transportation service, and two additional small ice-strengthened tankers were being built for use in the logistical supply of arctic bases. One tanker was being built for a private firm to replace tankers which had been sold to foreign owners, and six tankers were being built for private firms to replace tankers which had been traded in to the Maritime administration for placement in the reserve fleet as authorized in 1954 by public law 574. One small ore carrier was being built for private account for use in South America, as well as a passenger-auto ferry for use between New Bedford, Martha's Vineyard and Nantucket.

Five more vessels were currently being built under authorization of public law 458 as a part of the program of navy shipbuilding and conversion, fiscal 1955. These five consisted of a prototype "roll-on-roll-off" vessel, a special-purpose cargo ship dock and three small ice-strengthened cargo ships. Because of the commercial design of these vessels, even though they were ordered for use by the navy, they were listed as commercial construction.

Of the total of 41 commercial ships authorized by the congress in 1954, only 17 were under construction as of late 1955. The congress during 1955 enacted additional legislation, sponsored by the Maritime administration, which raised the total of vessels authorized to 59.

Bureau of labour statistics figures showed that there were 123,600 persons employed in private U.S. shipyards as of Jan. 1954. In Jan. 1955 employment had decreased to 98,200 but by July had recovered to 102,000. Average hourly earnings in the shipbuilding and repairing industry, according to the bureau of labour statistics, during June 1955 were \$2.18 as compared with \$2.13 in 1954. The average weekly hours worked also were

greater in 1955 than 1954, 39.3 compared with 38.8.

Because no new orders for seagoing commercial vessels were received during all of 1953, 6 only during the latter part of 1954 and only 14 in 1955 (to Oct. 20), the amount of new work had not been sufficient to provide any continuity of work in the shipyards. The yards survived primarily because of the naval program of construction started during 1954. The contracts let by the navy department during the first nine months of 1955 totalled approximately \$115,000,000, one-third the value of those let during 1954. The 1955 awards were for six LST's, a nuclear submarine, a cable ship conversion and a number of small boats.

The fiscal 1956 navy construction program, which was authorized by the congress in public law 157, proposed the construction of 28 vessels, ranging in size from an attack aircraft carrier to an inshore minesweeper, as well as more than 1,000 small service craft.

Construction of nonpropelled craft used along coastal and inland waterways, such as barges, scows and carfloats, during the first eight months of 1955 was reported at 315,875 gross tons, compared with 186,725 tons for the same period of 1954. Construction of self-propelled small craft such as towboats, tugs and trawlers also increased from 10,128 gross tons for the first eight months of 1954 to 20,405 gross tons for the same period of 1955. (H. G. S.)

Great Britain and Other Countries.—A marked change in the position of the world shipbuilding industry occurred during 1955. In the previous year there had been a noticeable falling-off in the number of contracts placed for new ships, accentuated by actual cancellations of existing orders, but in the last quarter of 1954 there appeared the first signs of what developed into a spate of ordering. Foreign shipowners, principally Norwegian, suddenly began reserving berths, mainly in European shipyards, where fixed prices and promises of early delivery were then obtainable. These orders were almost invariably for dry-cargo ships of the tramp type.

In the first part of 1955 this tendency spread, with the result that fixed prices and early delivery became less and less easy to obtain; even United Kingdom yards, which could rarely offer delivery before 1958 because of the huge backlog of existing orders, began to receive more contracts. Many of the new orders were for ore carriers, in anticipation of a substantial

Merchant Shipbuilding in Principal Countries of the World, July 1, 1955

New Construction in Hand or on Order (1,000 gross tons and over)			
Country of Building	Number of Vessels	Gross Tons	% of Total Gross Tons
Great Britain	418	3,857,362	30.6
Germany	270	1,783,265	14.1
Japan	104	1,365,700	10.8
Sweden	142	1,360,100	10.8
Holland	127	1,083,691	8.6
France	91	853,826	6.8
Italy (excluding Trieste)	58	630,000	5.0
Norway	62	544,773	4.3
Denmark	55	286,260	2.3
United States	14	214,060	1.7
Belgium	25	194,600	1.6
Spain	22	170,320	1.3
Trieste	13	76,290	.6
Australia	11	65,367	.5
India	9	44,060	.3
East Germany	6	27,000	.2
Canada	4	12,160	.1
Hong Kong	2	10,200	.1
Poland	1	10,000	.1
Turkey	1	4,500	.1
Republic of Ireland	2	3,000	.1
Total	1,437	12,596,534	100.0

increase in world-wide demand for ships of this type during the next five years.

By the middle of 1955 it became apparent that these orders for dry-cargo ships might prejudice the position of the major oil companies, since the world demand for oil transport also

promised considerable expansion. Few orders had been placed by tanker operators for delivery after 1957, and in the second half of 1955 millions of tons of new tankers were contracted for, with delivery up to the end of 1960. Within the space of one month the Shell group announced the placing of contracts with British and Dutch yards for an initial program of 34 tankers of 18,000 or 32,000 tons dead weight; other oil groups followed suit; and new ground was broken by a British liner group, the Peninsular and Oriental Steam Navigation company, by ordering 25 tankers from U.K. shipyards on behalf of itself and its subsidiaries.

Meanwhile, shipbuilding costs in most countries continued to rise. In the United Kingdom costs were substantially increased as a result of an increase of nearly 6% in the price of steel suitable for shipbuilding, mainly because of increased costs of transport and coal. Wages in the shipbuilding and engineering industries were subjected to an advance of 10% early in the year, and six months later a demand for a further 10% increase was lodged.

Several interesting ships were launched during 1955 including the new "Empress of Britain" (26,000 tons gross), which was launched from a Clyde yard by Queen Elizabeth II. This ship, together with a sister ship under construction on the north-east coast, was designed for the Canadian Pacific line's North Atlantic service between Great Britain and Canada. Other large passenger liners launched were the "Reina del Mar" (19,350 tons gross) for the Pacific Steam Navigation company's service between Liverpool and the Pacific coast of South America, and the "Bergensfjord" (18,500 tons gross) for the North Atlantic service of the Norwegian American line.

Large ships completed included the Cunard passenger liner "Ivernia" (21,600 tons gross) and the Netherlands whaling factory ship "Willem Barendsz" (26,150 tons dead weight), the largest merchant ship so far built in the Netherlands. Tankers up to about 45,000 tons dead weight continued to predominate in the shipyards, but specialized ore carriers became commoner. Among those launched were the "Sept Iles" and "Leader," each of about 32,000 tons dead weight, built in England for Canadian and U.S. owners, respectively. The new merchant fleet of Israel received several vessels built in Germany under reparations agreement, including the "Israel" (10,500 tons gross), the first of two similar passenger and cargo liners intended for service between Haifa and New York.

(P. DF.)

Shipping, Merchant Marine: see MERCHANT MARINE.

Shoe Industry. By the third quarter of 1954 the outlook for shoe production in the United States had improved considerably, and with increased activity in the months of November and December the final figures for that year were within 2% of the record high production of 1953. There were 523,996,000 pairs of shoes produced in 1954 as compared with 532,031,000 in 1953.

Production continued upward in 1955, there being 395,229,000 pairs of shoes made during the first eight months of the year as compared with 352,523,000 for the same period of 1954. At that rate the total for the entire year 1955 would be approximately 560,000,000 pairs of shoes.

Retail sales for the first six months of 1955 were 5% ahead of the same period in the previous year, and it was estimated that the gain for the entire year would be nearly 10%. Inventories at retail were in good shape and the price structure was favourable. Increases in leather costs edged prices up slightly, in some cases, but in general manufacturers and merchants absorbed the increases and did not pass them on to the consumer.

New styles in each category—men's, women's and children's—had considerable influence in creating greater consumer demand. Women's shoes were light and flexible, with soft construction

Table I.—Shoe Production in the United States

Pairs	1954	Jan.-Aug. 1955
Women's shoes	245,519,000	195,890,000
Men's shoes	94,485,000	72,102,000
Misses' and children's shoes	67,896,000	47,182,000
Boys' and youths' shoes	19,471,000	15,408,000
Infants' and babies' shoes	36,291,000	24,852,000
All other shoes	60,334,000	39,795,000
Total	523,996,000	395,229,000

and a glovelike feel that ensured better fit. Interest in heels in the mid-height range was considerable. The stacked heel on the new version of "spectator" and tailored shoes gained in popularity, and the variety of heel heights was matched by the materials used—glass, aluminum and wood, in addition to conventional covered heels.

Textured-grain leathers, new suèdèd leathers, matte-, dull- and lustre-finish leathers, as well as printed leathers, all played an important part in women's shoes. Vinylite, both clear and in the tortoise-shell shades, continued to be popular, especially in the open-toe, open-back styles on high glass or lucite heels.

Manufacturers and retailers of men's shoes concentrated their efforts on low cut, the Italian influence, slimmer lines and soft-grain leathers, and the customer response was good. Black shoes to go with the dark suitings and separate jackets in men's apparel gained in popularity during the year over the charcoal colours.

The children's shoe category proved to be the most profitable branch of the industry during the year. Preferences were for colours and patterns that closely resembled the styles for adults.

Leather supplies and demand were in favourable balance during the first ten months of 1955. The large domestic production of hides and skins kept raw materials prices stable, and market changes were minor.

World per capita output of leather footwear increased from

Table II.—World Footwear Production

(In thousands of pairs)		Per capita		Per capita	
	1940	1952	1954	1954	1954
North America	444,383	2.40	572,814	2.60	603,815
South America	51,892	.57	71,447	.62	75,742
Europe	455,131	.90	498,081	.86	502,368
Asia and Oceania	63,088	.05	100,258	.07	98,171
Africa	18,136	.11	36,107	.36	37,814
Total	1,032,630	.47	1,278,707	.57	1,317,910

Source: Business Information Service, U.S. Department of Commerce.

0.47 pairs in 1940 to 0.60 pairs in 1954. The United States, with an annual consumption of leather footwear in excess of three pairs per capita, accounted for 40% of the world shoe production in 1954.

(E. G. AN.)

Shooting. Logan Bennett of Hodgenville, Ky., who never before had won a trapshooting title, captured the men's prize in the 56th Grand American handicap competition at Vandalia, O., in Aug. 1955. A field of 2,024 competed, the largest ever assembled for the event. Bennett broke 99 of 100 targets from 19 yd. U. B. Sellers, of Okolona, Ky., with 98x100 from 21 yd., tied for second with Bruce Doughman of Brookville, O. Firing from 20 yd., Mrs. Dolly Isetts of Kenosha, Wis. scored 93x100 for women's honours, while R. L. Schwiager of Grand Island, Neb., with 95x100 from 21 yd. was junior king. George Heaney of Indianapolis, Ind., broke 94 from the 24-yd line to lead the professionals. Among other major winners were the following:

Preliminary Handicap

Men—F. B. Rees, Heyworth, Ill.
 Women—Mae Ramey, Miamisburg, O.

National Doubles

Men—Hugh McKinley, Harrisburg, O.
 Women—Helen Thomas, Los Angeles, Calif.
 Professional—Homer Clark, Jr., Alton, Ill.

North American Clay Target

Men—Ned Lilly, Stanton, Mich.
 Women—Helen Thomas

High Over-all

Men—Ned Lilly
 Women—Joan Pfeuger, Miami, Fla.
 Professional—Cliff Doughman, Morrow, O.
 Junior—Larry Gravestock, Amarillo, Tex.

All-Around

Men—A. M. Feltus, Washington, Miss.
 Women—Joan Pfeuger
 Professional—Cliff Doughman
 Junior—Bill Morris, Jr., Russell, Kan.

National Veterans

Men—Homer Clark, Sr., Alton, Ill.
 Women—Mrs. Van M. Marker, Versailles, O.

National Amateur Trapshooting.—George Van Wyck of Nyack, N.Y., scored 196x200 to win the singles in the 46th annual championships, held on the New York Athletic club range at Pelham Manor, N.Y. Mrs. Karl Jonas of Philadelphia, Pa., took the women's singles, J. J. McHale, Sr., of Hamilton, Ont., the men's senior and Nick Egan of Flushing, N.Y., was junior champion. M. D. Clark, Woodbury, Conn., with 93x100, retained the doubles honours. Van Wyck also took the non-championship preliminary handicap with a 94. Elbert Johnson, Wingdale, N.Y., tallied 93x100 from 22 yd. for handicap honours and Bob Smith, Taneytown, Md., captured the over-all prize with a total of 365.

National Skeet Championships.—The U.S. title meet at Waterford, Mich., saw eight new records established. The most outstanding score was the world five-man team mark of 1241x-1250 set by the California marksmen Alex Kerr, Beverly Hills; William Hay Rogers, Atherton; George A. Young, Camp Pendleton; Jack Horner, San Francisco, and Andy Laird, Stockton. Kerr, who had captured more national crowns than any skeet competitor, also took the all-gauge and small-gauge events and teamed with Laird to win the small-gauge two-man contest. Jack Lovett, Jr., Montgomery, Ala., won high over-all for the third straight year. In the women's events, Mrs. Alphonso Ragland, Jr., of Dallas, Tex., won the all-around, small-gauge and sub small-gauge and Mrs. Leon Mandel of Chicago, Ill., took the all-gauge and 20-gauge shoots.

European Championships.—At Cairo, Egypt, Douglas Palmer of the United States defeated Aly Riad, Egypt, in a shoot-off for men's individual honours and helped the U.S. win team skeet laurels. Mrs. Dolly Isetts gained the women's crown. Mrs. Isetts also led rivals from four countries in the clay target championship test, the men's award going to Egypt's S. Ghaleb.

Rifle and Pistol Shooting.—The U.S. tournament was held at Camp Perry, O., in August and a 43-year-old woman, Mrs. Viola Pollum, furnished the meet's big surprise by winning the small-bore rifle title. Competing against 500 of the nation's best .22 caliber marksmen, the Brookville (Pa.) gunner scored 6,390 out of a possible 6,400. She accounted for 630 bullseyes and her other shots were 9's. Among other major champions were the following:

National Outdoor Rifle

High-power (NRA match rifle)—Pfc. L. G. Crow, U.S. army
 High-power (M-1 service rifle)—Capt. J. W. Kolb, U.S. army
 Women's high-power (NRA)—Marlene Bellinger, Seattle, Wash.
 Women's high-power (M-1)—Ruth Sawyer, Dayton, O.
 Civilian high-power (M-1)—Paul Sullivan, Washington, D.C.
 Civilian high-power (NRA)—Ammon Bell, Hummelstown, Pa.
 Junior small-bore—W. J. Grater, Oxnard, Calif.
 Junior high-power (NRA)—G. M. Van Orden, Triangle, Va.
 Junior high-power (M-1)—W. Johnson, Warwick, Va.

National Trophy Matches

Individual—Lieut. C. A. Folsom, U.S. army
 Team—U.S. marine corps (H. J. Witkowski, E. L. Hayes, F. A. Wigmore, G. L. Armitage, C. D. Castaneda, S. H. Kamrau)

Indoor Small-bore Rifle

Men—V. F. Wright, Fort Wayne, Ind.
 Women—Ruth Sawyer
 Junior—Richard Grymes, Washington, D.C.
 Team—Minneapolis Rifle club (H. Woltman, E. D. Swanson, R. K. Sandager, O. C. Helseth)
 Intercollegiate—Leonard Puccinelli, California
 Intercollegiate team—California (John Ward, F. X. Clasby, Tao-Yuan Wu, James Carter, Charles Quesnoy)

National Pistol

Men's outdoor—M/Sgt. Huelet Benner, U.S. army
 Women's outdoor—Mrs. Gertrude Backstrom, Hoquiam, Wash.
 Men's indoor—C. E. Hery, Everett, Mass.
 Women's indoor—Mrs. Backstrom

(T. V. H.)

Shopping Centres: see BUILDING AND CONSTRUCTION INDUSTRY.

Shows. This article covers horse and dog shows, livestock exhibitions and such travelling shows as circuses, carnivals, ice skating revues and rodeos. For musical and dramatic events of 1955. see the articles DANCE; MOTION PICTURES; MUSIC; and THEATRE. (See also FAIRS AND EXHIBITIONS.)

Horse Shows.—The largest and longest established of the horse shows in the United States are those of the International Live Stock exposition, which in 1955 was held in Chicago, Ill., Nov. 25–Dec. 3 in the International amphitheatre, and the American Royal, held in Kansas City, Mo., Oct. 15–22. Both were regarded as outstanding events in the quality and number of gaited horses, harness horses and ponies, and hunters and jumpers.

Quarter horses, a rapidly gaining breed in all parts of the country, were emphasized at the National Western Stock show in Denver, Colo., Jan. 14–22, at the Southwestern Exposition and Fat Stock show in Fort Worth, Tex., Jan. 28–Feb. 6, and at the International Dairy show in Chicago, Oct. 8–15.

The Kentucky State fair, Sept. 9–17, at Louisville, was one of the year's leading saddle horse shows; and large competitions of hunters were featured at the National Horse show, Nov. 1–8, in Madison Square Garden in New York city and at the Royal Agricultural Winter fair, Nov. 11–19, in Toronto, Ont.

Other prominent horse shows of the year were featured at the Harrisburg, Pa., show; the Devon Horse show, Devon, Pa.; and those held in conjunction with the Illinois, Indiana, Kentucky, Minnesota, Missouri, Ohio and Wisconsin state fairs.

Livestock Shows.—The National Western Stock show in Denver, Jan. 14–22, was the first of the country's annual livestock shows. It featured the nation's largest display of purebred Hereford cattle and quarter horses, and also was the setting of the largest annual Hereford auction sale.

Shortly following the Denver show was the Southwestern Exposition and Fat Stock show at Ft. Worth. It was held in the Will Rogers Memorial auditorium, one of the country's largest and most modern livestock show buildings, Jan. 28–Feb. 6. The Fort Worth show was distinguished by a large competitive exhibition of purebred Brahman cattle, a breed gaining rapidly in popularity for crossing purposes with the English beef breeds. At Fort Worth also was held the major showing of the English beef breeds—Aberdeen-Angus, Herefords and Shorthorns. This was the country's oldest livestock show.

Following Fort Worth was the Houston (Tex.) Fat Stock show, Feb. 2–13, another major exhibition of the beef breeds as well as Brahmans. Both shows featured championship rodeos as daily entertainment.

Big livestock competitions were featured at the leading state fairs, starting in August. With the exception of the New York and Texas state fairs, the largest were in the midwest. They were preceded by county fairs during July and August. Winners of county shows usually go on for further competition at the state fairs.



GRAND CHAMPION of the 1955 Westminster Kennel club show, New York city, Kippax Fearnought, bulldog, shown with the nonsporting group trophy he won Feb. 15 on his way to the best-in-show honours

State fairs continued in consecutive weeks in circuits through the eastern, midwestern and western states. Among those with the largest livestock exhibitions in 1955 were the Illinois, Indiana, Ohio, Iowa, Missouri, Minnesota and Wisconsin state fairs.

Largest in point of attendance each year is the Texas state fair at Dallas, which in 1955 was held Oct. 7-23. It featured a Pan-American exposition attracting many Latin-American visitors.

Highlighting the dairy breeds was the National Dairy Cattle congress at Waterloo, Ia., Oct. 1-8, and in the following week was the 3rd annual International Dairy show at the International amphitheatre in Chicago. The latter event attracted the year's largest showing of several of the dairy breeds and included the national show of the Jersey breed. There was considerable Canadian participation.

Earliest of a series of livestock exhibitions, which follow after the state fairs, was the Eastern States exposition, in Springfield, Mass., Sept. 17-25. Emphasis at this event is usually on the exhibition of dairy cattle from the east.

Another large show of this class, featuring the beef breeds, was the Ak-Sar-Ben Livestock and Horse show in Omaha, Neb. It was held Sept. 23-Oct. 2. Also in October were the Grand National Live Stock exposition in San Francisco's Cow Palace, Oct. 28-Nov. 7, and the Pacific International at Portland, Ore., Oct. 15-22.

A more recently established eastern show of growing importance was the Eastern National Live Stock show at Timonium, Md., which was held Nov. 12-18. It emphasized competitive exhibitions of purebred Aberdeen-Angus and Hereford cattle.

The American Royal Livestock show was held in Kansas City, Oct. 15-22. It is one of the country's longest established major livestock events. It ranks as a major exhibition of the beef breeds and its horse show is among the nation's best.

The show year was brought to a close with the International Live Stock Exposition and Horse Show at Chicago, which exceeded all the other shows of the year in number of livestock entries. The 56th annual show was held Nov. 25-Dec. 3.

The Chicago Stock Yards was the setting of the largest feeder cattle shows and sales in 1955, where three separate events, held Sept. 22-23, Oct. 13-14, and Oct. 27-28, drew a combined entry of 579 carloads (20 head to a car) of western produced calves, yearlings and 2-year-olds. These were sold at auction to corn-belt and eastern feeders to convert into finished fat cattle for the 1956 markets.

The two principal livestock exhibitions of Canada are the Royal Agricultural Winter fair, held in 1955 during Nov. 11-19, and the Canadian National exhibition, held Aug. 26-Sept. 10, both in Toronto. The winter fair is among the world's leading exhibitions of purebred livestock and farm products.

The oldest established stock show in the world is the Highland show in Scotland. It celebrated its 116th anniversary in June, followed by the British Royal show in early July, in its 107th show under sponsorship of the English Royal Agricultural society.

(W. E. O.)

Dog Shows.—Formal dog shows and field trials continued their popularity and growth in 1955, along with the continuing popularity of the dog in general. Shows for all breeds numbered 401, against 386 in the previous record year of 1954. The specialty, or one-breed shows, again reached a new high, numbering 326 against 304 in 1954. This gave a total of 727 championship or point shows. In addition there were approximately 465 informal or sanctioned shows, also termed match shows but with no championship status.

The largest show was the New York city show of the Westminster Kennel club on Feb. 14-15 with 2,035 dogs competing. The top award was won by the California bulldog entry Champion Kippax Fearnought, owned by John A. Saylor.

An outstanding show event of 1955 was the continuation of the wins of best-in-show at all-breeds shows by the fawn boxer Bang Away of Sirrah Crest. His victories now totalled 121, a new world record in any breed.

Field trials with competition on actual game or under simulated hunting conditions showed the following winners:

In bird dogs the national championship was run at Grand Junction, Tenn., and was won by the pointer male Lone Survivor, owned by E. R. Calame of Jonesboro, Ark. The Weimaraner national champion in the field at Highland, Mich., was won by Gerri v Fabien, owned by Mrs. Adelaide L. Frazer, Eugene, Ore. The German Shorthaired Pointer national championship was won by Dixon's Sheila, owned by Russell V. Dixon of New Haven, Mich. The trial was held at Killdeer Plains, O. The National Irish Setter championship was run at Dover, Del., and was won by R. C. Baynard Jr.'s Double Jay, a male. The All-America Quail championship, run at Crab Orchard Wildlife Refuge, Carbondale, Ill., was won by H. E. Longsdorf's pointer male Warhoop Jake. The Cocker Spaniel national championship stake, held at Ringoes, N.J., was won by the English Cocker Spaniel male Greatford Meadowcourt Pin, owned by Albert F. Winslow, Goshen, N.Y. The English Springer Spaniel national championship stake, held at Crab Orchard Wildlife Refuge, Carbondale, Ill., was won by the male Ludlovian Bruce of Greenfair, owned by Mr. and Mrs. Jos. C. Quirk, Greenwich, Conn. (this dog also won the title in 1954). The National Retriever championship stake, held near Sacramento, Calif., was won by the black Labrador male Cork of Oakwood Lane, owned by

Harold Mork of Anoka, Minn.

In stud book registrations, which are regarded as an indication of tendencies in breed popularity, the beagle was first in 1955, by a wide margin. The next nine in order were: boxer, cocker spaniel, chihuahua, dachshund, German shepherd dog, collie, poodle, Boston terrier and pekingese. (W. Ju.)

Circuses, Carnivals, Rodeos and Other Travelling Shows.

—In contrast to most other outdoor entertainment, circuses and carnivals did not fare as well as usual in 1955, the season being spotty. Economic conditions were favourable, yet most shows failed to make a profit. Circuses were hampered by a constant turnover of working forces, principally resulting from the notoriously low pay and poor living conditions, coupled with poorly presented shows, lack of advertising and the public's consequent lack of interest. The larger sponsored shows, playing mostly indoors, were least affected and had an excellent season. Such outfits as Hamid-Morton, Polack Bros., Tom Packs, Orrin Davenport and Gil Gray, usually sponsored by some prominent organization, presented shows superior to most of the tented outfits, and with well-paid personnel and high-powered promotion drew excellent business. Smaller shows employing telephone crews to sell tickets found it increasingly difficult to play return dates because of the methods employed.

The Clyde Beatty circus, playing the western half of the country, found the going rough and closed several weeks earlier than usual. The Ward-Bell combination, in its first season, played the western country, Alaska and parts of Canada, to only fair results. King Bros., Mills Bros., Hunt Bros. and Al G. Kelly-Miller Bros., leading truck shows, all found business spotty and below that of 1954. Ringling Bros.-Barnum & Bailey, the only large circus on the road, was plagued with troubles during the entire season. Its first two stands were big, the Madison Square Garden, N.Y., engagement grossing more than \$2,000,000, and a week in Boston, Mass., more than \$250,000. But a change in advertising policy which discontinued most of the billboard advertising that had always been a mainstay for attracting attendance proved disastrous. Changes in key personnel caused dissension and union trouble added to the show's worries. Over most of the country business was unsatisfactory. There also was doubt as the season closed as to whether the Madison Square Garden contract would be renewed for 1956.

Reports from Europe indicated that the circuses, most of them small truck outfits, did very well in 1955. However, the Bertram Mills show, largest in England, reported profits down compared with 1954. Latin-American circuses had a fairly good season.

Bad weather plagued the early season stands of carnivals in the United States, and continuing restrictions on chance games cut their income. The larger shows recouped early season losses with good business at the state affairs, but most of them closed with grosses considerably less than in 1954.

There was little change in the rodeo setup. The events, staged mostly at western fairs, remained popular. The World's Championship rodeo at Madison Square Garden, and the International rodeo at International stadium, Chicago, Ill., both drew large attendances, mainly because of their star "names," Roy Rogers and Gene Autry, respectively.

Stock car auto racing and automobile thrill shows continued their popularity, drawing excellent business both at fairs and "still" dates. One thrill show outfit made a trip to Europe, the first to play on the continent, and was tremendously successful. The increase in number of ice skating shows had an unfavourable effect on business, but several of the long established outfits had a profitable season.

The popularity of "hillbilly" shows on several radio and television stations led to the launching of several road companies

featuring rural and western music. Stations WSM, Nashville, Tenn.; WLS, Chicago, and WLW, Cincinnati, O., furnished talent for the shows, which in many spots did turnaway business. Several attempts were made to revive the once popular repertoire shows under canvas, but with little success. An attraction which found favour since its introduction in 1954 was "Dancing Waters," a water spectacle using gorgeous electrical effects. A number of units toured the country with satisfactory results.

The effects of television on outdoor show business were plainly evident. Circuses and other travelling shows were engaging show business personalities who had been publicized on television and found that the practice resulted in a marked increase in attendance. Each year the "little fellow" was finding it more difficult to compete with show interests that could invest large sums in promotion and publicity and could experiment until the show was shaped to hit the popular chord. (NA. G.)

Siam: see THAILAND.

Sierra Leone: see BRITISH WEST AFRICA.

Sikkim. An Indian-protected state, Sikkim is bounded north by Tibet, east by Bhutan, south by India and west by Nepal. Area: 2,744 sq.mi. Pop. (1951 census): 135,725, mostly Nepalese (Gurkha) but including Bhotias of Tibetan extraction (about 9%) and Lepchas or Rongpa (about 10%) of Indo-chinese origin. State religion: lamaistic Buddhism, but most of the Nepalese are Hindu. Capital, Gangtok. Maharaja, Tashi Namgyal. Dewan (chief minister) in 1955, J. S. Lall.

History.—Unofficial reports revealed in 1955 that Chinese communists, firmly established in Tibet, started propaganda for a free "Gurkhanstan" to include Sikkim, Nepal, Bhutan and the Darjeeling districts of India.

Finance.—Budget (1951 est.): balanced at Rs. 2,100,000 including the fixed annual subsidy of Rs. 300,000 from India. Monetary unit—Indian rupee, valued in 1955 at 21 U.S. cents.

Silk. The production and consumption of silk in most countries of record in the world continued in 1955 the upward trend noticed in 1954.

Outstanding developments in the United States, the second largest silk consumer, were the continued substantial use of douppioni, both raw and spun, for textured effects in all-silk and mixed fabrics, the swing to deniers coarser than 20/22 and the employment of silk as a decorative additive to wool, cotton and synthetic materials for improved hand and drape and for crossdye effects.

At the annual International Silk congress in Brussels, Belg., in May, closer co-operation among nations in the promotional program for popularizing silk was promised, further research was agreed upon to improve the quality especially for yarn-dyed fabrics, and the raw silk classification proposed by Japan was adopted. Japan's price stabilization law continued the previous year's minimum of 190,000 yen (about \$4.10 per pound) and the maximum of 230,000 yen (about \$4.95 per pound), but an amendment permitted creation of a nongovernmental organization to buy at a "cushion" level of about \$4.30. Prices in New York ranged for 2A 20/22 warp stock from \$4.80 to \$4.40, and for 200/250 douppioni from \$4.40 to \$3.50 per pound.

In Japan, the largest producer and consumer, the cocoon crop was the most abundant since World War II, and exports of raw

World Use of Silk in Major Consuming Countries*

(World use in bales of 132 lb. each, some European consumption unreported)

Year	Japan	U.S.	France	Italy	Switzerland	Great Britain
1955	186,500	51,792	17,727	18,530	2,553	2,848
1954	180,197	48,546	12,030	16,970	6,054	4,803
1953	189,325	41,171	15,550	13,348	6,098	5,075

*Exports and consumption estimated on nine months' figures.

Sources: Central Raw Silk Association of Japan; Japan Statistical Monthly.

silk and douppioni were the greatest since 1950. Japan's shipments of silk and silk-mixed fabrics were 150% of 1954, and its exports of silk waste were 234% of 1954. A small quantity of douppioni from Italy and South Korea was used in the U.S. Silk from the mainland of China, formerly the second largest producer, had been prohibited from entering the U.S. since 1951, but an unknown quantity found a market in Europe and Asia. Pongee fabrics incorporating tussah silk were prohibited by the U.S. government from entering the country. Tariff cuts negotiated at Geneva reduced U.S. import duties from 35% to 17½% on some types of silk waste and slightly on silk fabrics. (See also TEXTILE INDUSTRY.) (D. D. LD.)

Silver. Six countries mine most of the silver produced in the world, as shown in Table I, based on U.S. bureau of mines reports.

Table I.—World Silver Production

(in 000,000 fine ounces, smelter output)

	1954	1953	1952	1951	1950	1949	1948
United States . . .	35.58	37.74	39.84	39.91	42.31	34.94	39.23
Canada	30.68	28.30	25.22	23.13	23.22	17.64	16.11
Mexico	39.90	47.87	50.35	43.80	49.14	49.45	57.52
Honduras	3.43	5.64	3.70	3.18	3.51	3.43	3.17
Argentina	1.64	0.90	0.96	1.25	1.15	1.25	1.20
Bolivia	5.05	6.11	7.07	7.14	6.56	6.66	7.56
Chile	1.49	1.50	1.25	1.19	0.95	0.80	0.86
Peru	20.40	19.65	18.39	14.96	13.37	10.61	9.29
Sweden	2.22	1.57	2.20	1.15	1.28	1.14	1.14
Belgian Congo . .	4.55	4.96	4.73	3.80	4.46	4.55	3.81
South Africa . . .	1.32	1.19	1.18	1.16	1.12	1.16	1.17
Japan	6.05	6.03	5.18	4.61	3.96	2.89	2.19
Australia	13.83	12.40	11.43	10.79	10.68	9.85	10.06
U.S.S.R. (est.) . .	25. ?	25. ?	24. ?	24. ?	24. ?	20. ?	12. ?
Total	213.4	221.6	215.1	199.6	203.3	179.2	172

United States.—Although it was still second in world output of silver, the decline of the past five years in U.S. production persisted in 1954. The 3% decline in mine production of recoverable silver occurred in California, Montana, Nevada, New Mexico, Utah and Washington. Idaho's output rose in 1954. Data in Table II are based on U.S. bureau of mines reports. Output of silver in the first eight months of 1955 totalled 24,615,581 oz., a lower rate than in 1954—the effect of strikes at several base-metal mines.

Table II.—Silver Industry in the United States

(in 000 fine ounces or of dollars)

	1954	1953	1951	1950	1949
Mine production . .	36,582	37,571	39,767	42,459	34,675
Imports	\$79,699	\$95,104	\$103,469	\$110,035	\$73,536
Exports	\$3,636	\$ 8,427	\$ 8,590	\$ 6,202	\$23,281
Industrial use . . .	104,629	125,389	151,651	155,257	110,660
Secondary recovery .	18,629	19,389	46,651	45,257	22,660
Net consumption . .	86,000	106,000	105,000	110,000	88,000

Canada.—Output of silver of all forms totalled 13,382,036 oz. in the first half of 1955.

Mexico.—This country, the world's leading silver producer, had an output of 829,380 kilos (metal content) in the first half of 1955. (F. E. H.; B. B. M.)

Singapore. Singapore is a British island colony off the southern end of the Malay peninsula, with Christmas Island dependency in the Indian ocean. Area: Singapore and adjacent islets 224.5 sq.mi.; Christmas Island 62 sq.mi. Pop.: Singapore Island (1947 census) 938,144; (1954 est.) 1,165,129, including 76% Chinese, 12% Malays, 8% Indians. Christmas Island (1947 census) 866; (1954 est.) 1,929. Capital, Singapore city, pop. (1954), 830,615. Governors in 1955: Sir John Nicoll and (from June 30) Sir Robert Black. Chief minister (from April 6, 1955), David Marshall. Singapore is chief port for Malaya.

The U.K. commissioner-general in southeast Asia, with responsibility for the co-ordination of policy in Malaya, Singapore, Sarawak, North Borneo and Brunei, has his headquarters

in Singapore. Commissioners-general in 1955: Malcolm MacDonald and (from September) Sir Robert Scott.

History.—The outstanding event of 1955 was the inauguration of the new constitution, providing for a legislative assembly of 32 members, presided over by a speaker and including 25 members elected by the secret ballot of all resident British subjects over 21 (300,199 in number), 4 unofficial members nominated by the governor and 3 official members. A council of ministers of 6 unofficial and 3 official members presided over by the governor was collectively responsible to the assembly. The governor's reserved powers included foreign affairs, defense and internal security. A coalition government of Labour Front and the Malay-Chinese alliance was formed with David Marshall, Labour Front leader, as chief minister. With 2 nominated seats allotted on his recommendation, the government had 18 votes against a party-splintered opposition of 14.

Its first months were stormy. Arising out of a strike in a Chinese-owned bus company, there was serious rioting on May 12 in which strikers and students of Chinese schools took part and during which four were killed, including two policemen and a U.S. journalist. The two largest Chinese schools were closed and the curfew reimposed.

The government passed a revised labour code, providing for a 44-hour week; set up commissions on the Malayization of the civil service, on local government, on Chinese education, on a minimum standard of living and on social security legislation; and appointed Sir Sydney Caine, vice-chancellor of the University of Malaya, as economic adviser. In November, the \$231,000,000 budget was passed by 19 votes to 13 in spite of secession of two Labour Front members.

On Aug. 20 the colonial secretary opened Singapore's new \$37,000,000 international airport with its 8,000-ft. runway.

(G. G. TN.)

Education.—(1954) Registered schools (government maintained, aided and private) 563, teachers 6,307. Pupils: primary 156,762; secondary 21,196 (including 2 junior technical schools, pupils 356, teachers 34). One government teachers' training college and several centres and courses; teachers in training 1,723. University of Malaya (Oct. 1954): students 1,043, teaching staff 161.

Finance.—Monetary unit: Malayan dollar, equal to 2s. 4d. sterling and valued in 1955 at 32.66 U.S. cents. Budget (1955 revised est.; 1956 est. in parentheses): revenue M\$201,000,000 (M\$208,400,000); expenditure M\$198,800,000 (M\$231,150,000). Foreign trade (1954): imports M\$2,330,100,000; exports M\$2,054,300,000 (excluding trade with the Federation of Malaya, totalling M\$1,099,000,000). Main source of imports: Indonesia 34.1%; U.K. and commonwealth 22.7%; main destination of exports: Europe 19%; U.K. and commonwealth 28.5%. Main exports: rubber (including transshipment) 38.2% (555,295 tons); tin 9.6% (33,276 tons); motor spirit 11.9%.

Shipping.—(1954) Vessels entered 19,739 (including 6,188 foreign trade ships of more than 75 tons); total tonnage 49,100,000 net; cargo handled (1954) 5,400,000 metric tons loaded; 9,324,000 metric tons unloaded.

Skating: see ICE SKATING.

Skiing. Olympic tests added colour to a heavy competitive program in the United States during the winter of 1954-55. Combined with a number of national and international events, trials were held at Franconia and North Conway, N.H., Stowe, Vt., and Ishpeming, Mich. Ensign Tom Corcoran, U.S. navy, won the giant slalom tryout that opened a three-day meet at Franconia on March 11. On the second day Chiharu Igaya, Japanese student at Dartmouth college, Hanover, N.H., tied Bill Beck of the U.S. army for the national downhill title, the leaders being caught in identical times of 1 min. 55.3 sec. Sixty-five competitors from the U.S. and Canada saw action on the third day when Ralph Miller, U.S. army, won the slalom. A little less than 2 sec. behind was Brooks Dodge of the army. Igaya, who placed third in the slalom, retained national combined honours.

The scene shifted to Stowe on March 18 for international.



AIR-BORNE TROLLEY CAR placed in operation on ski slopes at St. Moritz, Switz., in 1955

national and Olympic trial races. Andreas Molterer of Austria carried off the slalom prize for men as Mrs. Andrea Mead Lawrence of Parshall, Colo., led the women. The same two topped their respective groups in the international giant slalom. Wallace (Bud) Werner, 19-year-old Denver (Colo.) university freshman, grabbed the spotlight on March 20 when he captured the American international downhill in 2 min. 07.5 sec. to better the Stowe course record of 2 min. 16.7 sec. set by Ernie McCulloch, Canada, two years before.

Mrs. Lawrence, skiing for the Aspen (Colo.) Ski club, just missed a sweep of titles when she was tied by Madeleine Berthold of Switzerland at 2 min. 08.7 sec. in the downhill test for women. However, she did take combined honours. Dorothy Modenese, Seattle, Wash., had a bad fall, suffering a fractured pelvis and two broken ribs. Named to the U.S. Olympic team were Brooks Dodge; Tom Corcoran; Bud Werner; Ralph Miller; Marvin Moriarty, Stowe; Marvin Melville, Salt Lake City, Utah; Les Streeter, Northfield, Vt.; Dick Mitchell, U.S. air force. Bill Beck and Ken Lloyd, Reno, Nev., were picked as alternates. Chosen for the women's squad were Mrs. Lawrence; Katy Rodolph, Reno; Gladys (Skeeter) Werner, Steamboat Springs, Colo.; Dorothy Modenese; Betsy Snite, Norwich, Vt. The two alternates were Penny Pitou, Gilford, N.H., and Jeanette Burr Bray, Seattle, Wash.

Jumping trials were held at Iron Mountain, Mich., and Rudy Maki, 19-year-old youth from nearby Ishpeming, dominated the meet. On Feb. 25 Maki made the longest jump ever recorded east of the Rockies when he soared 300 ft. Two other young athletes, Dick Rahoi, 19, of Iron Mountain and Roger Ulland, 17, of Seattle, were chosen for the Olympic team along with Roy Sherwood, Salisbury, Conn.; Art Devlin, Lake Placid, N.Y.; and Billy Olson. Alternates were Coy Hill, Ishpeming, and Len Johnson, Duluth, Minn. Maki's performances gave him the central U.S. championship to add to the national laurels he won earlier in February.

Denver won the national intercollegiate championship as well as the Rocky Mountains team title. Middlebury was Eastern team champion.

Among the major champions of 1955 were the following:

United States

Jumping—Rudy Maki, Ishpeming, Mich.
Downhill—Chiharu Igaya, Hanover, N.H., and Bill Beck, Mount Mansfield, Vt., tied
Slalom—Ralph Miller, U.S. army
18-km. cross-country—Tauno Pulkkinen, Finnish Ski club, New York city
30-km. cross-country—Tauno Pulkkinen
Alpine combined—Chiharu Igaya
Giant slalom—Ralph Miller
Women's giant slalom—Jeannette Burr Bray, Seattle, Wash.
Women's downhill—Mrs. Andrea Mead Lawrence, Parshall, Colo.
Women's slalom—Mrs. Lawrence
Women's alpine combined—Mrs. Lawrence
Veterans' giant slalom—Fred Pinkham, Glendale, Calif.
Women veterans' giant slalom—Edna Dercum, Dillon, Colo.
Junior girls' slalom—Penny Pitou, Gilford, N.H.
Junior boys' slalom—Frank Brown, McCall, Ida.

North American

Jumping—Ansten Samuelstuen, Steamboat Springs, Colo.
Downhill—Ralph Miller and Bill Beck, tied
Slalom—Ralph Miller
Alpine combined—Ralph Miller
Cross-country—Sven Johansson, Anchorage, Alsk.
Women's downhill—Cathy Carey, Denver
Women's slalom—Skeeter Werner, Steamboat Springs
Women's Alpine combined—Skeeter Werner

Canadian

Slalom—Art Tommy, Ottawa, Ont.
Women's slalom—Monique Langlois, Quebec City, Que.
Downhill—Ralph Miller
Women's downhill—Carlyn Kruger, Montreal, Que.

U.S. Intercollegiate

Jumping—Bill Olson, Denver
Downhill—Chiharu Igaya, Dartmouth
Slalom—Chiharu Igaya
Cross-country—Larry Damon, Vermont
Nordic combined—Erik Berggren, Idaho
Alpine combined—Chiharu Igaya
Jumping team—Middlebury
Downhill team—Dartmouth
Slalom team—Dartmouth
Cross-country team—Denver
Alpine combined team—Dartmouth
Nordic combined team—Denver
Over-all team—Denver

(T. V. H.)

Skin Diseases: *see* DERMATOLOGY.

Sloan Foundation, Inc., Alfred P.: *see* SOCIETIES AND ASSOCIATIONS, U.S.

Slum Clearance: *see* HOUSING.

Smithsonian Institution. This institution located on the Mall in Washington, D.C., was established in 1846 through a bequest from James Smithson, an English scientist. It is governed by a board of regents, composed of the vice-president of the United States, the chief justice of the United States, three senators, three representatives and six citizens from various parts of the country. The executive officer is the secretary, who in 1955 was Leonard Carmichael. The institution has ten branches: United States National museum, Bureau of American Ethnology, Astrophysical observatory, National Collection of Fine Arts, Freer Gallery of Art, National Air museum, National Zoological park, Canal Zone Biological area, International Exchange service and the National Gallery of Art (with separate board of trustees).

The most important event of the year 1955 was the authorization by congress of a \$35,000,000 Museum of History and Technology of the Smithsonian, to be erected on Washington's Mall area and to house all the national collections that record and illustrate the political, cultural, industrial and military development of the United States. Congress appropriated \$2,288,000 for the immediate planning of this new museum.

During 1955 the institution continued its scientific investigations, chiefly in the fields of anthropology, astrophysics, biology



PRES. AND MRS. EISENHOWER at an exhibit of First Ladies' gowns opened at the Smithsonian exhibition in May 1955. The gown on the left is the one worn by Mrs. Eisenhower at her wedding to the president July 1, 1916

and geology. Several field expeditions were in progress in the interests of these researches, resulting in much new information and in large collections of valuable specimens.

The National museum collections were increased by approximately 7,600,000 specimens, bringing the total catalogue entries to 42,864,645. In the museum's program of exhibit modernization two new halls were formally opened to the public—a hall exhibiting the gowns of the first ladies of the White House in period settings and the American Indian hall.

The National Gallery of Art received 842 accessions. It held six special exhibitions. The National Collection of Fine Arts sponsored 14 special exhibitions and the Smithsonian Traveling Exhibition service circulated 68 exhibitions, 57 in the United States and 11 abroad. The Freer Gallery of Art acquired many choice specimens of Chinese, Persian, Japanese, Indian, Iraqi and Turkish art and decoration.

Anthropologists on the staff of the Bureau of American Ethnology continued their researches, particularly on Panamanian and Mexican archaeology and arctic anthropology. The River Basin surveys, a unit of the bureau, continued its archaeological work at sites threatened by dam and reservoir construction, particularly in the Missouri valley.

Solar radiation studies of the Astrophysical observatory were continued at the observatory's two high-altitude stations—Montezuma in northern Chile and Table mountain in southern California. In its division of radiation and organisms, studies were made on the photocontrol of the processes of plant growth and on the mechanism of action of the plant hormone auxin in the control of growth. Effective July 1, Fred L. Whipple, of Harvard university, was appointed director of the Astrophysical observatory, succeeding L. B. Aldrich, retired after 46 years with the institution. At the same time, headquarters of the observatory were changed to Cambridge, Mass.

The National Air museum completed the moving of its stored materials from Park Ridge, Ill., to Suitland, Md. Included in the year's 117 added specimens for the museum's aeronautical collections was the midget racing plane "Buster," built in 1931 and flown in more than 50 races.

The Langley gold medal, established in 1908 for "specially meritorious investigations in connection with the science of aerodromics and its application to aviation," was awarded by the institution on April 14 to Jerome C. Hunsaker.

The collection of animals in the National Zoological park numbered 3,410. Noteworthy among the year's accessions were

a pair of baby gorillas, several young chimpanzees and two Goeldi's marmosets; emperor, Adelie and Humboldt penguins; two rare Mona Island iguanas and a horn-nosed iguana; and a domestic donkey. In all, 280 creatures were born or hatched at the zoo during the year.

The International Exchange service handled 1,146,972 packages (weighing about 813,000 lb.) of scientific and governmental publications, serving as the United States agency for the interchange of such material with other countries.

At the Canal Zone Biological area, Barro Colorado Island Panamá, more than 600 visitors were recorded, 43 of whom were scientists using the station's facilities to further their researches, particularly in biology and photography.

Outstanding among the institution's publications during the year were the following: "The Material Culture of Pueblo Bonito," by Neil M. Judd; "The Black Flies of Guatemala and Their Role as Vectors of Onchocerciasis," by Herbert T. Dalmat; "Checklist of North American Recent Mammals," by Gerrit S. Miller, Jr., and Remington Kellogg; "Frogs of South-eastern Brazil," by Doris M. Cochran; "The Horse in Blackfoot Indian Culture," by John C. Ewers; "A Ceramic Study of Virginia Archeology," by Clifford Evans; "Masters of the Air," by Glenn O. Blough; volume 7 of the *Annals of the Astrophysical Observatory*; and volume 1 of the new series "Ars Orientalis." The Smithsonian library, including its various branches, numbered in 1955 approximately 951,400 volumes.

The year's recorded visitors to the Smithsonian buildings reached a total of 8,186,533, including the main Smithsonian building, the Natural History building, the Arts and Industries building, the Aircraft building, the Freer Gallery of Art, the National Gallery of Art and the National Zoological park.

(L. CAR.)

Smog: see LOS ANGELES.

Soaring: see GLIDING.

Soccer. The Eintracht 11 of Astoria, N.Y., won the top U.S. prize in the sport in 1955 when it set back the Los Angeles (Calif.) Danes, 2-0, at Los Angeles to gain United States open laurels. In advancing to the Challenge cup final, Eintracht eliminated the Philadelphia (Pa.) Uhris in the eastern play-offs while Los Angeles was subduing the Simpkins team of St. Louis, Mo., in the concluding western division contests. The national amateur cup was captured by the Heidelberg Tornados of Pittsburgh, Pa., when they turned back the Chicago (Ill.) Eagles in the ultimate play-offs. The Uhris gained the American league championships and went on to win top honours in the long competition for the Lewis cup. The Philadelphians downed Brookhattan-Galicia of New York, five goals to three in the final two-game series for the Lewis award. The New York Lithuanians won the New York state cup; the German-Hungarians of New York triumphed in the German-American league and New York's Ukrainians led the National league. The Maritimo 11 of Newark carried off the New Jersey state league title.

The U.S. season was brightened by the visits of a number of teams from other countries, including the Nuremberg team of Germany which twice attracted more than 15,000 spectators for contests in New York. The records of the touring teams are shown in the table.

Records of Various Soccer Clubs While Visiting the U.S., 1955

Clubs	Games	Won	Lost	Tied
Sunderland, England	9	5	0	4
Huddersfield, England	9	5	1	3
Nuremberg, Germany	7	5	1	1
Wacker, Austria	1	1	0	0
Sochaux, France	2	2	0	0
Grasshoppers, Switzerland	3	3	0	0
Occidente, Mexico	3	2	0	1

(See also FOOTBALL.)

(T. V. H.)

Socialism. Socialists during 1955 served as prime ministers in the governments of Belgium, Denmark, the Netherlands, Norway and Sweden in Europe, of Israel in the middle east and of Burma in Asia. In India the Congress party, led by Prime Minister Jawaharlal Nehru, declared itself during the year in favour of a "socialistic pattern of society."

In the Americas, Socialists in 1955 were dominant forces in the governments of Jamaica in the West Indies, of Costa Rica in Latin America and of the province of Saskatchewan in Canada. The Socialist and Labour parties had likewise minority representation in the coalition cabinets of Austria, Italy and Switzerland; continued throughout most of the year with the largest parliamentary representation of any party in Finland and France; and were the chief opposition parties in Great Britain, Germany, Australia and New Zealand.

In all these countries Socialists were vigorously engaged during 1955 in the task of strengthening labour and social legislation and spearheading the fight against both conservatism and communism.

Great Britain and Commonwealth.—The British Labour party continued during the year as the leading party in the Socialist international. In the parliamentary elections of May 26, British Labour elected 277 members to the house of commons, 18 fewer than in 1951, and obtained 12,405,246 votes, a drop of 1,500,000, or 46.3% of the total as contrasted with 48.8% in 1951. On the other hand, the Conservative party returned to the house of commons 345 of its representatives, a gain of 24, with a popular vote of 13,336,182, a drop of 381,356 from the previous election.

In the October annual conference of the Labour party, Hugh Gaitskell was elected treasurer over Aneurin Bevan, leader of the left wing of the party. The delegates defeated a number of pro-Soviet and anti-U.S. resolutions. At the same time, they reaffirmed Labour's position in favour of the admission of Communist China to the United Nations and the withdrawal of Chiang Kai-shek from Formosa. They likewise voiced "strong disapproval" of South Africa's racial policy. (See also POLITICAL PARTIES, BRITISH.)

In Australia and New Zealand the Labour parties remained the chief opposition. The most publicized intraparty controversy during the year in Australia concerned itself with the influence within the party of "the movement," an anticommunist organization formed by Catholic Action within the trade unions which its opponents charged with trying to further Catholic domination over the Labour party and trade unions.

The Labour party of Victoria was defeated in the Victoria state election in its contest with a Liberal and Country party coalition. The election followed the defeat of Labour Premier John Cain on a vote of confidence on April 20 after Labour members of the state parliament had broken away to form a new, strongly anti-Communist party.

In India differences arose during the year within the Indian Praja-Socialist party as to what should be the party's relation with the Congress party headed by Prime Minister Jawaharlal Nehru. Nehru's party, in its January convention at Madras, favoured social planning in India "with a view to the establishment of a socialistic pattern of society in which the principal means of production are under social ownership or control, production is progressively speeded up, and there is equitable distribution of the national wealth." On the other hand, it declared that large sectors of industry should remain private.

In Singapore the Labour front, a socialist party, won 10 of the 25 elected seats in an assembly of 32 in the elections on April 2, and obtained 27% of the total vote. Support from the British governor and from various organizations gave to David Marshall, leader of the Labour front, a majority of one in the

assembly, and he formed the government of Singapore as its chief minister, with the declared intention of creating a social order "free from the exploitation of man by his fellowman" and dedicated to the establishment of a "democratic welfare state."

In Canada the Co-operative Commonwealth federation, that country's Socialist party, continued in control of the province of Saskatchewan under the premiership of T. C. Douglas, and had a representation of 24 in the dominion house of commons.

Scandinavian Countries.—Socialists during 1955 remained in control of the governments of Denmark, Norway and Sweden. In Norway the government established stricter controls over imports and capital investments with a view of creating a better balance between imports and exports. Sweden expanded its social welfare program to include general health insurance and began to plan for a system of general pension insurance which would give all income earners a pension at the age of 67.

On Sept. 15 the ministers of social affairs of the northern countries—Denmark, Finland, Iceland, Norway and Sweden—signed a Scandinavian convention under which citizens of any of the five countries who took up residence in any one of the others would be entitled to the same social benefits as the citizens of the second country. Old-age and other pensions would be provided to persons who had lived in the same country for five years.

Germany.—The German Social Democratic party, with a membership of 600,000 and a parliamentary representation of 151, remained during the year as the chief opposition to the government. In several local elections the party increased its votes over those received in the preceding elections. On Jan. 11 Otto Suhr, Socialist, became mayor of west Berlin after his party's victory in the house of deputies elections.

In the elections in Lower Saxony on April 24, Social Democrats polled 35.2% of the votes as against 30% in 1953. Together with its ally, the Refugee party, it won 76 members of the state parliament as against 74 for the Christian Democratic party and its allies. On Oct. 9 the Social Democrats obtained sweeping gains in elections in the city-state of Bremen, polling 47.8% of the popular vote and winning 52 of the 100 seats in the parliament against 43.2% of the votes and 44 seats in parliament for the opposition parties. In these campaigns, the Social Democrats opposed immediate rearmament of Germany out of fear that such rearmament would lead the U.S.S.R. to oppose reunification and strengthen nazi-minded forces in western Germany.

France.—In France the Socialist party, with the largest parliamentary representation in that country (103), remained throughout the year outside the coalition governments. In late February, following the fall of the Pierre Mendès-France cabinet, when Christian Pineau, Socialist, was asked to form a coalition cabinet, he submitted to the assembly a program of action which included the speedy ratification of the Paris accords for the armament of west Germany; internal autonomy in Tunisia; and end of terrorism in Morocco; the restoration of order in Algiers; and, at home, extensive measures to increase production and improve social conditions. He urged that the powers given to Mendès-France to effect economic reforms by decree be extended to him for three months. Pineau, however, was unable to obtain a majority of votes, and the premiership passed to other hands.

Belgium.—In Belgium the Liberal-Socialist coalition government, headed by the Socialist leader, Premier Paul Henri Spaak, was involved during the year in a vigorous controversy with the Catholic Church. In early 1955 the Catholic bishop, angered at the government's decision to reduce state subsidies to Catholic schools and to impose restrictions on the use of these funds,

launched a campaign against the Socialist movement.

Socialists declared that their aim was to restore a fair equilibrium between public and denominational education, while the Catholics' aim was church domination over the schools.

The Netherlands.—In the Netherlands the coalition Catholic-Socialist government, headed by Willem Drees, leader of the Dutch Labour party, gave much attention to the enactment and enforcement of anti-inflation measures. Differences over measures for rent rises and tax reduction led to a government crisis in mid-May. On Feb. 22 Catholic and non-Catholic members of the Labour party joined at the party conference in a demonstration of solidarity against the 1954 decree of the Roman Catholic bishops forbidding Catholics to join the Labour party, attend its meetings or read its literature.

Italy.—In Italy the democratic Socialist forces in 1955 remained weak in comparison with the Christian Democrats and the Left Socialists and Communists. In the coalition cabinet formed in July the Saragat Socialists obtained 4 posts out of 21. Giuseppe Saragat, the party leader, was reappointed vice-premier, remaining in that position throughout the year. Socialist trade unions during the year won many workers away from the Communist-controlled unions.

Israel.—The Mapai, the socialist party of Israel, remained the dominant force in the government of that country during 1955. David Ben-Gurion, former prime minister, returned to Premier Moshe Sharett's cabinet as minister of defense after an absence of more than a year.

In the July 26 parliamentary elections the Mapai received 32% of the vote, compared with 37% in the *knesset* (parliament) elections of 1951. Ben-Gurion later became prime minister in a coalition cabinet.

Japan.—In the elections of Feb. 27 the right-wing Social Democrats won 67 seats out of 467 in the lower house of the diet, a gain of 6, and the left-wing Social Democrats 89, a gain of 15. Combined, they thus became the second parliamentary force in the diet, the Democrats having won 185 seats. The two branches of the party merged in October. In local elections on April 24 Socialists improved their relative position in the prefectural assemblies, but they were still fourth in party strength.

United States.—In the United States the Socialist party functioned during 1955 largely as an educational movement, running candidates in only a few cities. Socialist educational work was also engaged in by the Social Democratic federation, the Union for Democratic Socialism, the Socialist Verband and other groups. Jasper McLevy, leader of the Connecticut Socialist party (unaffiliated with the national party) was elected in November mayor of Bridgeport, Conn., for his 12th term. Frank P. Zeidler, Socialist, continued as mayor of the city of Milwaukee, Wis.

Latin America.—Pres. José Figueres of Costa Rica, leader of the National Liberal party, a democratic socialist party, continued the second year of his presidency and introduced additional reform measures. In Argentina, following the demise of the Perón regime, a number of Socialist leaders accepted offices in the succeeding cabinets and assisted in wresting the labour movement from the control of the followers of Perón. In the presidential election in Brazil the Socialist party supported Gen. Juarez Tavora, who ran unsuccessfully on a platform of land reform and efficient, honest administration.

International.—The fourth congress of the Socialist international met during the year in Caxton hall, London, Eng., on July 12. It was attended by delegates and consultants from 30 countries in four continents and gave considerable time to the consideration of economic and social aid to undeveloped countries, to the relations between Israel and the Arab world and to the differences between the French Socialist and British Labour

viewpoints on the organization of Europe. The Asian Socialist conference continued to function among the Asian countries as an information and consultative centre with headquarters in Rangoon, Burma. (See also DEMOCRACY.) (H. W. L.; N. T.)

Socialist Soviet Republics: see UNION OF SOVIET SOCIALIST REPUBLICS.

Social Security. There was considerable activity in the field of social security during 1955, as some countries began operations under new programs, enacted new legislation or revised their laws governing programs already set up.

Finland was among the countries adopting new legislation in the first half of 1955; under a disability assistance law, cash payments are made to permanently disabled persons who are needy and not eligible for insurance. Canada's program to provide assistance to totally and permanently disabled persons, established by earlier legislation, began operating; and the German system of child allowances became fully effective. France extended the social insurance provisions to four *départements*—Guadeloupe, French Guiana, Martinique and Réunion. In Great Britain, many of the benefits and contributions under the national insurance and industrial injuries programs were increased.

United States.—Little legislation directly affecting social security or related programs was enacted by congress in 1955. The operations of the old-age and survivors insurance and public assistance programs reflected, however, the sweeping changes made by the 1954 amendments to the Social Security act. Some of these amendments were immediately effective, becoming operative in Sept. 1954. Others were effective Jan. 1, 1955.

The provision of employee benefits continued to be important in industry. Health, welfare and pension plans were included in at least half the collective bargaining agreements between management and labour in the first six months of 1955. Because of the continued growth of these plans, congress conducted studies to provide a basis for legislation designed to protect the interest of the employees covered. There was a further increase in the provision in industry plans of life insurance and hospitalization insurance for employees after retirement.

Social Insurance and Related Programs.—The federal old-age and survivors insurance program, administered by the Social Security administration of the department of health, education and welfare, provides monthly benefits related to previous earnings to insured workers and self-employed persons upon retirement at age 65 or later and supplementary benefits to their dependent, minor children; to their wives if aged or having such entitled children in their care; and to the dependent aged husbands of women workers. The program also pays survivor benefits to the widows and children; to dependent, aged parents; and dependent, aged widowers of deceased, insured workers; as well as lump-sum death payments. As of June 30, 1955, the average monthly benefit for a retired worker was \$61.03 and for an aged widow or widower it was \$46.61.

These averages reflected not only the increases voted by congress in 1954 to all beneficiaries under the program, but also the higher amounts resulting from the dropout provision in the amendments. Under this provision, workers coming on the rolls after Aug. 1954 and meeting certain requirements may have up to four years of lowest earnings ignored in the determination of their benefit amount; if they have 20 quarters of coverage they may have five years of low earnings dropped.

The amendments also protect the benefit rights of disabled workers. A person with a prolonged total disability who meets specified conditions may have his wage record frozen for the

period of the disability. When the time comes for computing the monthly benefit, the years that he was unable to work because of disability will not be counted against him. Retired workers who were currently receiving benefits and who applied for the "freeze" before July 1957 would receive any increase retroactively to July 1955—the first month for which the increased benefits could be paid.

Beneficiaries aged 72 may receive their benefits, regardless of any income from earnings. Before that age, persons earning more than \$1,200 a year lose one month's benefit for each \$80 or fraction thereof in excess of \$1,200, but they lose no benefits for months in which they do not earn \$80 or render substantial service in self-employment.

The 1954 amendments made coverage of old-age and survivors insurance practically universal; at the beginning of 1955 about nine out of ten of the nation's jobs were covered. Still excluded were self-employed lawyers, physicians, dentists and members of several other medically related professions, most federal civilian employees, members of the armed forces, and policemen and firemen covered by a state or local government retirement system.

The program is financed by contributions from employers and employees and from the self-employed on the basis of their taxable earnings up to a maximum of \$4,200. For the employer and employee the contribution rate was 2% each in 1955; it was scheduled to rise to 2½% in 1960, to 3% in 1965 and to 3½% in 1970, and it would be 4% in 1975 and thereafter. For the self-employed the rate of contributions is 1½ times the employee rate. At the end of June 1955, almost 7,600,000 old-age and survivors insurance beneficiaries were receiving benefits at a monthly rate of \$384,000,000.

Monthly retirement, long-term disability and survivor benefits were also being paid under other public programs. In June 1955 such benefits were going to 612,800 persons under the railroad retirement program, to 3,823,000 under the veterans' programs, and to 295,600 under the federal civil service. Programs for state and local government employees were paying retirement, disability and survivor benefits to a large group of beneficiaries. For temporary disability that was not work-connected, benefits were being paid in four states and in the railroad industry. For work-connected disability, workmen's compensation programs were in effect for workers in all states and for federal employees.

The state-federal system of unemployment insurance pays benefits to qualified unemployed workers. The programs are financed by employer contributions and, in two states, employee contributions. The federal aspects of the program are administered by the department of labour. In June 1955 a weekly average of 1,056,200 unemployed workers drew benefits; total benefits in the month were \$108,861,000. Workers in 11 states had their weekly benefits supplemented by small allowances for their dependents. Under the Railroad Unemployment Insurance act about \$3,468,000 was paid in June 1955 to an average (in a 14-day period) of 31,600 unemployed railroad workers.

Assistance and Welfare.—Four special types of public assistance were established by the Social Security act—old-age assistance, aid to dependent children, aid to the blind and aid to the permanently and totally disabled. These programs are administered by the states or the local communities or both; the federal government shares in the costs within certain maximum amounts. Expenditures, federal, state and local, for assistance and administration of the four programs during the year ended Dec. 31, 1954, totalled about \$2,562,000,000. In June 1955, 2,548,600 needy persons aged 65 or over were receiving old-age assistance (the average payment was \$52.30); 2,239,500 persons, including 1,691,700 children, in 620,300 families were

receiving aid to dependent children (average payment per family, \$86.78); 103,900 persons were receiving aid to the blind (average payment, \$57.41); and 236,800 persons in 43 states were receiving aid to the permanently and totally disabled (average payment, \$54.93). About 310,000 cases (720,000 persons) were receiving general assistance, financed by states and localities without federal funds; the average payment per case was \$53.78.

The Social Security act also authorizes federal grants to the states to extend and improve their maternity services for mothers and their health and welfare services for children, including services for crippled children. These grants are administered by the children's bureau.

During the year ended June 30, 1955, \$11,919,292 was paid to the states for maternal and child health services. Typical services were prenatal clinics, child-health conferences, immunizations, public health nursing services, and health services for children of school age by physicians and dentists. Federal payments to the states for services for crippled children totalled about \$10,613,701; the programs provided diagnostic, medical and surgical services and hospital and convalescent care. Federal payments of about \$6,725,553 were made to help the states, through their child welfare programs, protect and care for homeless, dependent and neglected children and children in danger of becoming delinquent. (C. I. S.)

Canada.—The federal-provincial disability allowances program was commenced during 1955. Under this scheme, allowances of up to \$40 monthly, as under the old-age assistance and blindness allowance programs, are paid to totally and permanently disabled persons aged 18 and over. The program is administered provincially with the costs of the allowances shared equally by the federal government.

The Blind Persons act was amended by reducing the age of eligibility from 21 to 18 years and by a liberalization of the means test. The Unemployment Insurance act was extensively revised to effect changes in the contribution structure, to decrease the maximum duration of benefit and to increase the minimum duration.

A federal-provincial conference was convened in the spring and again in October to consider the sharing between the federal and provincial governments of the costs of unemployment assistance (for persons outside the coverage of unemployment insurance) and to discuss health and welfare matters, including possible federal-provincial co-operation in the launching of a nation-wide system of health insurance.

Agreements were in the process of being worked out with those provinces desiring to enter into a sharing arrangement with the federal government on unemployment assistance costs. Arising out of the October conference, there was established an intergovernmental committee of ministers of health and finance to study a variety of proposals and alternatives for introducing health insurance by stages as soon as a majority of the provinces, representing a majority of the Canadian people, indicated their readiness to proceed. (G. Cy.)

Great Britain.—Changes in the national insurance scheme in 1955 raised the standard rates of unemployment benefit, sickness benefit and of the retirement pension at minimum pension age to 40s. a week for a single person and to 65s. for a married couple. Widow's pension was increased to 40s. a week and widow's allowance (for the first 13 weeks of widowhood) to 55s. The allowance for the first or only dependent child was increased to 11s. 6d. a week and for each other child to 3s. 6d. a week. Maternity grant became £10, home confinement grant £4 and maternity allowance 40s. a week. Guardian's allowance rose to 18s. a week. Benefits under the industrial injuries scheme were also increased. Industrial injury benefit rose to 67s. 6d.

a week for a single person and 92s. 6d. for a married couple. Disablement pension rose to 67s. 6d. a week for 100% disability, with proportionate increases for smaller assessments. Maximum disablement gratuity was raised to £225. Unemployment supplement was increased to 40s. a week; maximum rate of constant attendance allowance to 30s. (60s. in exceptionally severe cases) and maximum weekly rate of special hardship allowance to 27s. 6d. Weekly rates of contributions for national insurance and industrial injuries rose by 1s. for both employers and employed men and women, with correspondingly increased rates for self-employed and nonemployed. It was estimated that the contribution increases for national insurance, including an additional £23,000,000 from exchequer supplements, would produce about £116,000,000 a year with little variation over the next 25 years. Extra expenditure on benefits for the first full year was expected to be about £112,000,000 (of which £80,000,000 would go for retirement pensions), increasing in 25 years to £176,000,000 (£155,000,000 for retirement pensions). It was estimated that the cost of retirement pensions would rise from £436,000,000 out of a total expenditure of about £852,000,000 in 1955-56 to about £600,000,000 out of £1,095,000,000 in 25 years' time. Income would remain constant at about £650,000,000 to £675,000,000 a year.

National assistance rates were increased, bringing the normal scale for a single person living alone or as a householder, and as such indirectly responsible for rent and household necessities, up to 37s. 6d. a week and a married couple to 63s. a week. The regulations provided for a normal addition of payments in respect of rent. The personal allowance of a pensioner or recipient of national assistance in a residential establishment or in a hospital was increased to 7s. 6d. a week.

The report of the ministry of pensions and national insurance for 1954 showed that there were fewer persons receiving unemployment and sickness benefit. There were about 4,400,000 retirement pensioners. The total expenditure on all national insurance benefits during the year ended March 31, 1954, was £485,000,000, an increase of about £18,000,000 over the previous year. About 40% of pensions were awarded to men who had just reached 65 years and about 23% to men attaining or within three months of the age of 70. An inquiry into the reasons for retirement or staying at work showed that more than a quarter of the men had been retired by their employers or discharged although they considered themselves still fit for work. Of all the men taking retirement pensions 21% were still working at the age of 70.

The report of the national assistance board for 1954 showed that about 80,000 unemployed persons were receiving allowances. The total net expenditure of the board was about £130,000,000 of which about £104,000,000 was for national assistance grants and about £20,000,000 for noncontributory old-age pensions.

The report on war pensions for 1954 was published jointly by the minister of pensions and national insurance, the minister of health and the secretary of state of Scotland. The number of war pensions fell during the year by 30,882 to 900,141. Of these 494,826 related to World War II and later service, and 405,315 to World War I and earlier wars. More than 52,000 war pensioners sought the advice of welfare officers stationed at the ministry's offices.

Other Countries.—In the German Federal Republic provision was made for the payment of child allowance at 25 DM. a month to persons in employment, and to self-employed persons provided that they had three or more children and were insured or belonged to one of the professions exempted from compulsory insurance. The allowances were payable until a child completed his 18th year, or over 18 if he had not completed his

25th year and was maintained at the expense of the claimant while being trained for an occupation. In Italy new regulations were made prescribing the relations between doctors and the National Sickness Allowances institute. Where hospital treatment was provided the hospital doctor received remuneration for each patient under a fixed scale. In Greece provisions to assist persons suffering from tuberculosis were instituted. In Sweden a new scheme provided for a transition from the voluntary health care scheme covering 60% of the population to a compulsory scheme with almost universal coverage. Every person was required to be enrolled with a local sick fund.

In New Zealand increases of £6 10s. were made in the basic rates of social security benefits, bringing the maximum up to £182 a year. Orphans' pensions were increased to £84 10s. a year and mothers' allowances to £123 a year for a widow with one dependent child and to £149 10s. a year for a widow with two or more dependent children. There were also improvements generally in the schemes of social security operating in Belgium, Canada, Italy and France. In Argentina provision was made for compulsory insurance of self-employed persons, independent employers and professional workers. Reciprocal arrangements were brought into force between the Netherlands and the German Federal Republic. (See also BUDGET, NATIONAL.)

(J.N. M.)

Social Service: see CHILD WELFARE; SOCIAL SECURITY.

Societies and Associations, U.S. The following is a selected list of U.S. societies and associations, with date of founding, membership, officers and chief activities during 1955.

(See also the separate articles on RED CROSS; VETERANS' ORGANIZATIONS, U.S.; etc.)

Alcoholics Anonymous.—Alcoholics Anonymous is a fellowship of men and women organized in 1935 to help the alcoholic recover. The only requirement for membership is stated to be "an honest desire to stop drinking." In 1955 there were 131,619 members in 5,927 groups throughout the world. The organization publishes the book *Alcoholics Anonymous*, the monthly *The A.A. Grapevine* and various other books and pamphlets. Officers' names are not given because of the organization's tradition of anonymity. It is supported solely through voluntary contributions. The general service board of Alcoholics Anonymous, formerly known as the Alcoholic Foundation, Inc., is the general service headquarters for the organization. Headquarters: P.O. Box 459, Grand Central Annex, New York 17, N.Y.

Altrusa International, Inc.—Founded and incorporated in 1917, this organization's purpose was to provide a main channel through which professional and executive women in diversified occupations might join forces to work for community and world improvement. Membership, 1955: 13,700 in 350 clubs located in the U.S., Canada, Great Britain, Guatemala, Mexico, Bermuda and Puerto Rico. In 1955 the organization carried out projects in public affairs, vocational information and international relations, and awarded grants to Latin American women graduates, who were in the U.S. for higher study, to assist them in finishing their training in chosen vocations. Publication: *International Altrusan*. Officers (1955) included: Mrs. Erma B. Christy, president; Mrs. Edith W. Nelson, president-elect. Headquarters: 332 S. Michigan Ave., Chicago 4, Ill.

American Academy of Arts and Letters.—The purpose of the academy, founded in 1904, is "furthering the interests of literature and the fine arts in America." In 1955 the academy consisted of 47 members chosen from the 250 members of its parent organization, the National Institute of Arts and Letters. On May 25, 1955, the joint annual ceremonial with the National Institute of Arts and Letters was celebrated. There were many exhibitions, notably the manuscript exhibition showing the development of American poetry since 1912. Publications include *Proceedings*, an annual, and *Yearbook of the National Institute and the American Academy*. Officers during 1955 were: Archibald MacLeish, president; Mark van Doren, chancellor; Douglas Moore, secretary; Deems Taylor, treasurer. Headquarters: 633 W. 155th St., New York 32, N.Y.

American Academy of General Practice.—The academy was founded in 1947 to promote high standards in the general practice of medicine and surgery, to encourage medical students to qualify for and establish themselves in general practice, to assure the right of the general practitioner to engage in medical and surgical procedures for which he is qualified and to develop postgraduate study programs for general practitioners. Membership, which is open to all physicians engaged in the general practice of medicine and surgery, numbered 19,883 in 1955. The Annual Scientific assembly of postgraduate training was held. A national survey of the scope of general practice was conducted. The academy has no endowment, its activities being supported by membership fees. Publication: *"GP"* (monthly). Officers (1955) included John R. Fowler, president; M. F. Cahal, Kansas City, Mo., executive secretary. Headquarters: 40 W. 34th St., Kansas City 11, Mo.

American Academy of Political and Social Science.—Founded in 1889 and incorporated in 1891, this organization acts as a forum for the discussion of social, political and economic questions through meetings and publications. The general topic of the annual meeting of the academy, held April 1–2, 1955, was "Internal Security and Civil Rights." Membership in 1955 was 15,384. Publication: *The Annals*, a bimonthly journal. Officers (1955) included: Thorsten Sellin, acting president; Raymond T. Bowman, secretary. Headquarters: 3937 Chestnut St., Philadelphia 4, Pa.

American Association for the Advancement of Science.—Founded in 1848, this association seeks to further the work of scientists, facilitate co-operation among them and improve public understanding of the importance of science in human progress. Its membership in 1955 was 48,660. During 1955 the annual national meeting was held in Atlanta, Ga. Publications: *Science*, weekly; *Scientific Monthly*; and others. Officers (1955) included: George W. Beadle, president; Dael Wolfe, administrative secretary. Headquarters: 1515 Massachusetts Ave., N.W., Washington 5, D.C.

American Association of University Professors.—This organization of college and university teachers was founded in 1915 to promote discussion and action on problems affecting education in institutions of higher learning, and to provide means for expression of its membership. Its membership in 1955 was 43,615. Publication: the *Bulletin*, a quarterly journal. Officers (1955) included: William E. Britton, Hastings College of Law, president; Ralph Fuchs, general secretary. Headquarters: 1785 Massachusetts Ave., N.W., Washington 6, D.C.

American Association of University Women.—This organization was founded in 1882 as the Association of Collegiate Alumnae for "the uniting of the alumnae of different institutions for practical educational work." Maintenance of high standards of education and more effective participation of college women in the processes of democracy. Membership in 1955 totalled more than 137,000. Its principal activity of 1955 was a study-action program in the fields of education, international relations, social studies, status of women, the arts and legislation. Publications: *Journal*, quarterly, the *General Director's Letter*, handbooks, study guides and bibliographies. Endowed funds totalled \$1,316,000 in 1955. Officers (1955) included: Anna L. Rose Hawkes, president; Helen D. Bragdon, general director. Headquarters: 1634 I St. N.W., Washington 6, D.C.

American Bankers Association.—Founded in 1875, the primary objective of this organization is to promote the general welfare and usefulness of banks and financial institutions. In 1955 it had a membership of 17,140 banks and banking offices. It is the parent organization of the American Institute of Banking for bank employees and the Graduate School of Banking for bank officers. In 1955 the association's program was devoted to the support of sound money and, through sound credit policies, to the stemming of inflationary pressures. The educational program was expanded to provide for executive development. During 1955 officers included: Fred F. Florence, Republic National Bank of Dallas, Tex., president; Erle Cocke, The Fulton National Bank, Atlanta, Ga., vice president; George R. Boyles, Merchants National Bank, Chicago, Ill., treasurer. Headquarters: 12 E. 36th St., New York 16, N.Y.

American Bar Association.—Founded in 1878 to advance the science of jurisprudence and promote the administration of justice in the U.S., the association had a membership of more than 58,000 in 1955. In 1955 the association put into operation its first nation-wide group life insurance program and began, through the American Bar Foundation, a major research study of the administration of criminal justice in the U.S. Its publications include the *American Bar Association Journal*, monthly, an annual volume of reports and proceedings, and various pamphlets. Officers (1955) included: E. Smythe Gambrell, Atlanta, Ga., president; John D. Randall, Cedar Rapids, Ia., chairman of the house of delegates; Joseph D. Stecher, secretary; Harold H. Bredell, treasurer. Headquarters: 1155 E. 60th St., Chicago 37, Ill.

American Bible Society.—Founded in 1816, the society encourages the wider circulation and use of the Holy Scriptures without note or comment and without purpose of profit. During 1955 translations of the Bible were being made in a number of languages, and there was much activity in revisions. Volumes issued from the Bible House in New York City in 1954 set a new record for the society of 15,391,171 volumes. Works for the blind were distributed in 40 languages and systems. Membership (1955): about 200,000. Publication: *The Bible Society Record*. Officers (1955) included: Eric M. North and Robert T. Taylor, general secretaries; William F. Asbury, recording secretary; Gilbert Darlington, treasurer. Headquarters: 450 Park Ave., New York 22, N.Y.

American Cancer Society.—Founded in 1913, the organization is devoted to cancer control in the U.S. by means of public and medical education, service to patients and research to discover causes and cures for cancer. The society operates through a national organization and 60 chartered divisions in the U.S., District of Columbia and Alaska, and ten metropolitan areas. In 1955 more than 3,000 active units were served by about 1,250,000 volunteers. In 1955 the society sponsored a clinical fellowship program for advanced training of physicians; alerted the public to threat of cancer by campaigns; and aided patients through hospital clinics. For the 1955–56 research year 466 grants and fellowships totalling \$5,923,804 were awarded 153 universities and scientific institutions. Publications: *Cancer News*, quarterly; *Cancer*, bimonthly; *CA*, bimonthly medical digest; *Annual Report*. The funds of the society are secured through public contributions. Officers (1955): Howard C. Taylor, Jr., president; Lane W. Adams, treasurer; and Granville Whittlesey, Jr., secretary. Headquarters: 521 West 57th Street, New York 19, N.Y.

American Chemical Society.—Founded in 1876 to encourage the advancement of chemistry in all its branches, this organization endeavours to promote "research in chemical science and industry" and to maintain high standards among its members. In 1955 membership totalled 74,342. The association held two national meetings during 1955 and conferred 13 medals for outstanding accomplishments in chemistry. Publications include *Journal of the American Chemical Society*; *Chemical Abstracts*; *Industrial & Engineering Chemistry*; *Chemical and Engineering News*; *Journal of Physical Chemistry*; *Journal of Organic Chemistry*; *Journal of Agricultural and Food Chemistry*; *Analytical Chemistry*. Officers

(1955) included: Joel H. Hildebrand, president; Alden H. Emery, executive secretary. Headquarters: 1155 16th St., N.W., Washington 6, D.C.

American College of Dentists.—The association was formed in 1920 to advance the standards and efficiency of dentistry, stimulate graduate study in dentistry, confer fellowships in recognition of meritorious achievement especially in dental science, art and literature and improve public understanding of oral health service. Membership in 1955 was 2,100. Activities throughout 1955 included Teacher's Training Fellowship award grants for graduate study and committee studies of various problems relating to dental health service. Publication: *Journal of the American College of Dentists* (quarterly). Officers (1955): James H. Ferguson, Jr., Baltimore, Md., president; C. V. Rault, Washington, D.C., vice-president; Otto W. Brandhorst, St. Louis, Mo., secretary. Headquarters: 4221 Lindell Blvd., St. Louis, Mo.

American College of Hospital Administrators.—Founded on Feb. 13, 1933, for the purpose of improving the care of the sick through the elevation of standards for hospital administration, the association conducts and promotes educational training, promotes adherence to a code of ethics and provides recognition for noteworthy service in the field of hospital administration. The 21st annual meeting was held in Atlantic City, N.J., Sept. 17–19, 1955. In 1955 membership totalled approximately 3,000. Publications: *ACHA News*, monthly; *Roster*, annual. Officers (1955): A. C. Kerlikowske, president; D. Conley, executive director. Headquarters: 620 N. Michigan Ave., Chicago 11, Ill.

American College of Life Underwriters.—Founded in 1927 to establish an educational standard for the profession of life underwriting and to encourage sound life insurance education in colleges and universities, the college grants the Chartered Life Underwriter (C.L.U.) designation to candidates who pass five examinations in subjects related to life insurance (such as economics, government, social problems, law, taxes, trusts, etc.) and meet the college's requirements of experience and character. A total of 5,755 persons had attained the designation, and 8,097 had earned partial credit toward the designation by passing from one to four of the examinations. At the 28th conferment in Aug. 1955, 407 successful candidates became C.L.U.'s. In June 1955, 3,630 candidates took 4,524 examinations in 158 university locations. Publications: *Announcement*, *Annual Report*, *C.L.U. Annual Review*, brochures and material for teachers and candidates. Officers (1955–56): Julian S. Myrick, chairman of the board; Davis W. Gregg, president. Headquarters: 3924 Walnut St., Philadelphia 4, Pa.

American College of Physicians.—This society was founded in 1915 to bring together physicians of high standing for the maintenance and advancement of medical education, practice and research. Activities in 1955 included the 36th annual session at Philadelphia, Pa., April 25–29, plus 32 regional state or multistate meetings and participation in many joint endeavours with other medical associations. The college also awarded 6 research fellowships and 13 Latin-American fellowships for training Latin-American men for teaching and research in their homelands. Membership in 1955 totalled approximately 8,919. Publications include a directory and *Annals of Internal Medicine*, monthly. Endowment funds totalled \$441,215.45. Officers (1955) included: George F. Strong, Vancouver, B.C., Can., president; William D. Stroud, Philadelphia, Pa., treasurer; Richard A. Kern, Philadelphia, Pa., secretary-general; Edward R. Loveland, Philadelphia, Pa., executive secretary. Headquarters: 4200 Pine St., Philadelphia 4, Pa.

American College of Surgeons.—Founded in 1913 to advance the science of surgery, the organization held its 41st annual clinical congress in Chicago, Ill., Oct. 31–Nov. 4, 1955. Membership of the college in 1955 was 20,750. Publications: *Surgery, Gynecology and Obstetrics*, a monthly scientific journal and the *Bulletin*, a bimonthly. Officers (1955) included: Alfred Blalock, president; Warren H. Cole, president-elect; Michael L. Mason, secretary. Headquarters: 40 E. Erie St., Chicago 11, Ill.

American Correctional Association (formerly American Prison Association).—Founded in 1870 and incorporated in 1871, this association works for the improvement of laws governing public offenders, studies the causes of crime and the nature of offenders and their social surroundings, works for the improvement of penal institutions, and is concerned with the care of and provision of jobs for former prisoners. In 1955 the association sponsored the 85th annual congress of correction. Membership in 1955 was about 2,000, consisting of court, crime-enforcement and penal officials and citizens interested in crime problems. Publications: *American Journal of Correction* (formerly *Prison World*), bimonthly, *Directory of State and National Correctional Institutions*, annual, *Manual of Correctional Standards*, *Manual of Criminal Statistics*, and others. Officers (1955): Kenyon J. Scudder, president; E. R. Cass, general secretary; John L. Schoenfeld, treasurer. Headquarters: 135 E. 15th St., New York 3, N.Y.

American Dental Association.—Founded in 1859 "to encourage the improvement of the health of the public and to promote the art and science of dentistry," this professional association numbered 84,497 members as of Oct. 31, 1955. It continued support of measures to add fluoride salts to community water supplies to reduce incidence of tooth decay, and by Sept. 1955, more than 1,100 U.S. cities and towns were fluoridating their water supplies. The association in February sponsored its annual national children's dental health day. The 96th annual session of the association was held in San Francisco, Calif., Oct. 17–20, 1955. Publication: *Journal of the American Dental Association*. Officers (1955–56): Bernard C. Kingsbury, president; Harold Hillenbrand, secretary; H. B. Washburn, treasurer. Headquarters: 222 E. Superior St., Chicago 11, Ill.

American Dialect Society.—This organization was founded at Harvard university in 1889 to collect, study and publish material on the English language, especially dialect as found in North America, together with other languages influencing it or influenced by it. Eight research committees were later formed to study the following: regional speech and localisms, place names, linguistic geography, usage, non-English dialects, new words, semantics and proverbial sayings. Membership in 1955 was 514. The annual meeting was held in Chicago, Ill. Publication: *Publication of the American Dialect Society*. Officers (1955) included: James B. McMillan, president; Thomas Pyles, secretary-treasurer. Headquarters: University of Florida, Gainesville, Fla.

American Economic Association.—This association, which in 1955 had 7,800 members and 2,900 library, corporate and individual subscriptions, was founded in 1885 to encourage economic research and freedom of economic discussion, and to issue publications on economic subjects. The annual meeting was held in New York, N.Y., Dec. 28-30, 1955. Publications include the *American Economic Review*, quarterly; *Papers and Proceedings* of the annual meeting. Officers (1955) included: John D. Black, Harvard university, president; James Washington Bell, Northwestern university, secretary-treasurer and editor of the annual proceedings; Bernard F. Haley, Stanford university, managing editor of the quarterly. Headquarters: Northwestern university, Evanston, Ill.

American Geographical Society.—This organization was founded in 1852 to promote geographical research and exploration and to disseminate geographical knowledge. During 1955, the research activities of the society centered on medical geography; mathematical geography with respect to map projections; glacial investigations; preparations of a series of geographical handbooks on strategic areas; and a new planning-scale map of Africa and Europe in four sheets. Publications include *Geographical Review*, quarterly, and *Focus*. Membership (1955): about 4,500. Officers (1955) included: Richard Upjohn Light, president; Charles B. Hitchcock, director. Headquarters: Broadway at 156th St., New York 32, N.Y.

American Historical Association.—This association of professional and nonprofessional students of history, founded in 1884, was organized "for the promotion of historical studies, the collection and preservation of historical manuscripts, and for kindred purposes in the interests of American history. . . ." It was incorporated by act of congress in 1889. The association's membership in 1955 was 6,135, and its endowment was about \$600,000. Publications include the *American Historical Review*, *Annual Report*, and selected historical monographs. Officers (1955) included: Lynn Thorndike, president; Boyd C. Shafer, executive secretary and managing editor. Headquarters: Study Room 274, Library of Congress Annex, Washington 25, D.C.

American Institute for Property and Liability Underwriters, Inc.—Founded in 1942, the purpose of this organization is to establish and administer an educational standard for the profession of property and casualty insurance underwriting. Examinations are conducted annually in June at more than 115 locations. Those who successfully pass the examinations and fulfill the experience and ethical requirements are awarded the designation Chartered Property Casualty Underwriter (C.P.C.U.). By 1955 1,268 persons had received the C.P.C.U. designation. The institute receives financial support from property and casualty insurance companies and organizations. Publications: *Announcement*, annual, and *C.P.C.U.—Its Purpose and Meaning*. Officers (1955): S. S. Huebner, chairman of the board; Guy T. Warfield, president; Harry J. Loman, dean; A. C. Goerlich, secretary. Headquarters: 3924 Walnut St., Philadelphia 4, Pa.

American Institute of Accountants.—A national professional society of certified public accountants, founded in 1887 to maintain high professional and ethical standards, to develop accountancy education and to provide for the examination of candidates for membership. In 1955 the institute had a membership of 26,345. The year's activities included the preparing of the uniform C.P.A. examination given in 48 states, and the issuing of bulletins on accounting procedure and case studies in auditing procedure. The annual meeting was held Oct. 22-27, 1955. Publications: *Journal of Accountancy* and *Certified Public Accountant*, both monthly; *The C.P.A. Handbook*; *Accounting Trends and Techniques in Corporate Annual Reports*; and others. Officers (1956) included: John H. Zebley, Jr., president; J. L. Carey, executive director. Headquarters: 270 Madison Ave., New York 16, N.Y.

American Institute of Architects.—The objects of this organization, founded in 1857, are "to promote the aesthetic, scientific and practical efficiency of the architectural profession; to advance the standards of architectural education, training and practice; and to co-ordinate the building industry and the profession of architecture." Membership in 1955 was 10,200. Publications: *Journal*, monthly; *Bulletin*, bimonthly; and *Memo*, biweekly. Officers (1955) included: George B. Cummings, president; Edward L. Wilson, secretary; Leon Chatelain, Jr., treasurer. Headquarters: 1735 New York Ave. N.W., Washington 6, D.C.

American Institute of Chemical Engineers.—This organization was founded in 1908 for the advancement of chemical engineering in theory and practice and the maintenance of a high professional standard among its members. As of May 1955, the membership was 14,700. Publications: *Chemical Engineering Progress*, monthly; *Journal*, quarterly. Officers (1955) included: Barnett F. Dodge, president; F. J. Van Antwerpen, secretary. Headquarters: 25 W. 45th St., New York 36, N.Y.

American Institute of Electrical Engineers.—This association was founded in 1884 to advance the theory and practice of electrical engineering and of allied arts and sciences and to maintain a high professional standing among its members. Its 1954-55 activities included four general meetings with 9,250 persons in attendance, three district meetings and 22 special technical conferences. The institute participated in many engineering activities with other societies and there was also much activity in the technical divisions and technical committees in advancing developments in the fields of science and art. Membership in 1955 was 49,664. Endowment funds as of 1955: \$1,250,000. Publications: *Electrical Engineering*, monthly; *Transactions*, annually; *Preprints* and special publications, published irregularly. Officers (1955): M. D. Hooven, president; N. S. Hibshman, secretary. Headquarters: 33 W. 39th St., New York 18, N.Y.

American Institute of Mining and Metallurgical Engineers.—This society was founded in 1871 to promote the arts and sciences connected with the economic production of minerals and metals and the welfare of the individuals employed in these industries. The regular annual meeting was held in Feb. 1955. In 1955 there were 22,290 members and 1,762 student associates. Publications: *Mining Engineering*, *Journal of Metals* and *Journal of Petroleum Technology*, all monthly. The institute's endowments totalled \$1,185,268 in 1955. Officers (1955) included: H. DeWitt Smith, president, and E. O. Kirkendall, secretary. Headquarters: 29 W. 39th St., New York 18, N.Y.

American Iron and Steel Institute.—In 1908 this organization was founded to promote the interests of the iron and steel industry, distribute information and promote discussion of problems relating to the industry.

During 1955 the organization was active in research, public relations, statistics, engineering and industrial relations, including health and safety. Its 1955 membership included 2,500 active, associate, honorary and emeritus members, and 95 company members. Publications: *Steelways* and *Steel Facts*, both bimonthly, and numerous booklets and pamphlets. Officers (1955) included: B. F. Fairless, president; Max D. Howell, executive vice-president; George S. Rose, secretary. Headquarters: 350 Fifth Ave., New York 1, N.Y.

American Law Institute.—Founded in 1923, the purpose of this organization is to promote the clarification and simplification of the law and its better adaptation to social needs. In 1955 the committee on continuing legal education conducted and sponsored numerous courses and lectures throughout the country, and started *The Practical Lawyer*, a periodical. Work continued in 1955 on the drafting of a federal income, estate and gift tax statute and further drafts of a five-year project to draft a code of substantive criminal law were completed. In 1955 there were 1,315 elected members. Officers (1955) included: Harrison Tweed, president; Herbert F. Goodrich, director and secretary; Bernard G. Segal, treasurer. Headquarters: 133 S. 36th St., Philadelphia 4, Pa.

American Mathematical Society.—This organization was established in 1888 to further the interests of mathematical scholarship and research. Publications: *Bulletin of the American Mathematical Society*; *Proceedings of the American Mathematical Society*; *Transactions of the American Mathematical Society*; and *Mathematical Reviews of the American Mathematical Society*. Membership in 1955 was approximately 5,000. Officers (1955) included: R. L. Wilder, president; E. G. Begle, secretary. Headquarters: 80 Waterman St., Providence 6, R.I.

American Medical Association.—This federation of constituent state and territorial medical associations was founded in 1847 to promote the science and art of medicine and the betterment of public health. Activities during 1955 included the evaluation of new drugs, foods, physical medicine devices and techniques; the approval of medical schools; the evaluation and registration of hospitals for internship and residency training programs; the provision of two postgraduate training meetings for physicians. Publications: *The Journal of the American Medical Association*; *American Medical Directory*; *Today's Health*, a monthly magazine; and special publications. Membership in 1955 was approximately 153,000. Officers (1955): Elmer Hess, Erie, Pa., president; Dwight H. Murray, Napa, Calif., president-elect; George F. Lull, Chicago, Ill., secretary and general manager. Headquarters: 535 N. Dearborn St., Chicago 10, Ill.

American Optometric Association.—Founded in 1897, this organization's purpose is to promote the visual welfare of America and serve the professional interest of optometrists. During 1955 the association engaged in public information programs; produced a motion picture "Adventures in Seeing"; held the annual congress at Milwaukee, Wis.; and held seminars on children's vision, occupational vision and motorists' vision. Membership in 1955 totalled 11,000. The association sponsored "National Save Your Vision Week" Mar. 6-12, 1955. Publication: *Journal of the American Optometric Association*, published monthly. Officers (1955) included: Norman B. Hays, president; H. Ward Ewalt, treasurer; E. H. Kiekenapp, secretary. Headquarters: 4030 Chouteau Ave., St. Louis 10, Mo.

American Society of Agricultural Engineers.—This organization was organized in 1907 to promote the science and art of engineering in agriculture, to encourage original research and to co-operate with other groups in broadening the usefulness of agricultural engineering. In 1955 it had 4,600 members. Publications were *Agricultural Engineering* (monthly) and *Agricultural Engineers Yearbook*. Wayne H. Worthington was president in 1955; Raymond Olney, treasurer. Headquarters: 420 Main St., St. Joseph, Mich.

American Society of Civil Engineers.—Founded in 1852 as the first national engineering group, the society's sphere of influence encompasses technical advances in the profession as well as the professional advancement of its membership. In 1955 the society membership was 38,737. Organized for the purpose of advancing the sciences of engineering and architecture, the society directs professional activities from its headquarters in New York city, through 74 local sections and student chapters in 132 engineering colleges; also the 13 following technical divisions: air transport, city planning, construction, engineering mechanics, highways, hydraulics, irrigation and drainage, power sanitary engineering, soil mechanics and foundations, structural, surveying and mapping and waterways. Publications: *Proceedings*, monthly; *Transactions*, yearly; *Civil Engineering*, monthly; a *Directory* (membership list); and a *Register* (organization details). Officers (1955): W. R. Glidden, president; William H. Wisely, executive secretary. Headquarters: 33 W. 39th St., New York 18, N.Y.

American Society of Composers, Authors and Publishers (ASCAP).—Founded in 1914, the society, a voluntary, nonprofit unincorporated association, collects performing right royalties for allocation to members whose copyrighted musical works are used in public performances for profit. In 1955 3,300 writers and 700 publishers were members. Officers (1955) included: Stanley Adams, president; Louis Bernstein and Otto A. Harbach, vice-presidents; John Tasker Howard, secretary; Saul H. Bourne, treasurer. Headquarters: 575 Madison Ave., New York 22, N.Y.

American Society of Heating and Air-Conditioning Engineers.—This society, whose purpose is to improve the science of heating, ventilating cooling and air-conditioning, was incorporated as the American Society of Heating and Ventilating Engineers. It changed its name in 1955. The organization maintains a research laboratory which, from its inception in 1919 to 1955, had spent about \$2,000,000 on research activities. Membership in 1955 was approximately 10,096. Publications: *Transactions*, annual, *Heating, Piping and Air Conditioning*, monthly, and *Heating Ventilating and Air Conditioning Guide*. Officers (1955) included: John E. Haines, president; E. R. Queer, treasurer; and A. V. Hutchinson, executive secretary. Headquarters: 62 Worth St., New York 13, N.Y.

American Society of Mechanical Engineers.—This organization was founded in 1880 to promote the art and science of mechanical engineering, to encourage original research, to foster engineering education, to advance the standards of engineering and to promote interchange of ideas among engineers themselves. In 1955 the society held five national meetings

commemorating its 75 years of existence, climaxed by the annual meeting in Chicago, Ill., Nov. 13-18. In addition, meetings were held by the 83 local sections, 12 subsections and the 137 student branches. Membership totalled 40,000 in 1955. Publications: *Mechanical Engineering and Applied Mechanics Reviews*, both monthly; *Journal of Applied Mechanics*, quarterly; *ASME Mechanical Catalog and Directory*, annual. Officers (1955): David W. R. Morgan, president; C. E. Davies, secretary; J. L. Kopf, treasurer. Headquarters: 29 W. 39th St., New York, N.Y.

American Sunday-School Union.—The purpose of this organization, founded in 1817 as the Sunday and Adult School union, is "to organize and maintain Sunday schools in the rural areas of the United States and to publish and circulate Christian literature." During 1955, 1,538 vacation Bible schools were held with an enrolment of 46,140. More than 2,200 rural Sunday schools enrolled 88,550, and 112 Young People's Bible conferences were attended by more than 8,000 rural youths. The Pioneers for Christ, organized in 1952 for rural boys and girls of high school age, made rapid progress. Publications included a full line of Sunday-school periodicals. The work is supported largely by contributions and a small endowment. Officers (1955): James F. Shrader, president; Lester E. Spencer, secretary of missions; William J. Jones, editor of publications. Headquarters: 1816 Chestnut St., Philadelphia 3, Pa.

Arthritis and Rheumatism Foundation.—Founded in 1948 to formulate and carry out a national program of research and education in the rheumatic diseases, discover their causes and develop methods of prevention; and provide systematic rehabilitation for the disabled. In 1955 the foundation awarded 20 basic research fellowships, and distributed about 50,000 publications about arthritis to physicians. In 1955 there were 41 chapters which provided care to arthritics through foundation-supported facilities. Publications: *Bulletin on Rheumatic Diseases*; *Manual for Arthritis Clinics*; pamphlets and booklets. The foundation is supported by voluntary contributions. Officers (1955) included: Gen. George C. Kenney, president; James G. Blaine, secretary; Hayden N. Smith, executive committee chairman. Headquarters: 23 W. 45th St., New York 36, N.Y.

Boy Scouts of America.—This nation-wide youth organization with activities for boys of eight years and older was organized in 1910 and chartered by congress in 1916. Objectives are to teach patriotism and citizenship, character development and the importance of religion in daily life. In 1955 the 45th annual meeting of the national council was held in St. Louis, Mo. Membership as of April 30, 1955, was 2,800,177 boys and 1,020,759 adults in 52,659 scout troops, 34,397 cub packs, and 13,293 explorer units. Publications include *Scouting Magazine*, *Boys' Life* and *The Scout Executive*. Headquarters: New Brunswick, N.J.

Brookings Institution.—A nonprofit organization dedicated to public service through research and education in economics and government, the institution was incorporated on Dec. 8, 1927, and is supported by income from its own endowment, grants from foundations and the sale of publications. During 1955 the following studies were published: *Proposal for Changes in the United Nations*, by Francis Wilcox and Carl Marcy; and *The United Nations and the Maintenance of International Peace and Security*, by Leland M. Goodrich and Anne P. Simons. Officers (1955) included: Robert D. Calkins, president; Elizabeth H. Wilson, secretary; Mildred Maroney, treasurer; William R. Biggs, chairman of the board. Headquarters: 722 Jackson Place N.W., Washington 6, D.C.

Buhl Foundation.—Established in 1927, the foundation had by 1955 granted to existing (or especially established) agencies a total of \$9,807,000 for the promotion of nationally significant programs in the Pittsburgh district—in education, health, historical research and publication, and research in natural sciences. During the year ground was broken for a third unit of the foundation's Chatham Village, internationally known demonstration of a large-scale planned residential community built for long-term investment. The Buhl Planetarium, built and maintained as a memorial to the founder, had conducted a program of popular science education, from elementary school to adult level, since 1939. Foundation assets in 1955 were, book value, \$13,494,000. Director: Charles F. Lewis; headquarters: Farmers Bank Building, Pittsburgh 22, Pa.

Camp Fire Girls, Inc.—This youth organization, founded in 1910, aims "to perpetuate the spiritual ideals of the home" and "to stimulate and aid in the formation of habits making for health and character." In 1955 Camp Fire Girls observed Birthday week (theme: "Let Freedom Ring!"), March 13-20, and conducted a membership drive, Sept. 15 through Nov. 30. In 1955 more than 392,000 girls were enrolled in its three groups: Blue Birds, 7 to 9 years old; Camp Fire Girls, 10 to 15 years old; and Horizon club members, of senior high school age. Publications: *Book of the Camp Fire Girls*; *The Camp Fire Girl*, monthly; and others. National officers (1955) included: Mrs. Harold H. Hartman, president; John J. Wolkerstorfer, chairman of the board; Mrs. W. Harvey Young, secretary; Martha F. Allen, national director. Headquarters: 16 E. 48th St., New York 17, N.Y.

Carnegie Trusts.—Six autonomous and separately administered agencies in the U.S. were established by Andrew Carnegie for various philanthropic purposes; in addition, there are four Carnegie trusts in Great Britain, and Carnegie Hero funds operate in nine European countries.

Carnegie Corporation of New York (1911), with a basic endowment of \$135,000,000, had in 1955 assets of more than \$178,000,000; the income from \$12,000,000 of this is applicable in the British dominions and colonies. Its purpose is the advancement and diffusion of knowledge and understanding among the people of the U.S. and the British dominions and colonies. The primary interest is in the advancement of the social sciences and in the improvement of teaching. Grants totalling \$6,000,000 were awarded to institutions of higher education and organizations engaged in research and public education in 1955. President (1955), John W. Gardner; secretary, Florence Anderson. Headquarters: 589 Fifth Ave., New York 17, N.Y.

Carnegie Institute of Pittsburgh (1896) includes a department of fine arts, a music hall and a museum of natural history; to it are closely related the Carnegie Library of Pittsburgh, the Carnegie Library school and the Carnegie Institute of Technology. President (1955), James M. Boardman. Headquarters: 4400 Forbes St., Pittsburgh 13, Pa.

Carnegie Institution of Washington (1902), with assets exceeding \$48,-

000,000 in 1955, conducts fundamental scientific investigation, particularly in astronomy, terrestrial magnetism, geophysics, archaeology, plant biology, embryology, genetics and historical research. President (1955), Vannevar Bush; secretary, Paul A. Scherer. Headquarters: 1530 P St. N.W., Washington 5, D.C.

Carnegie Hero Fund Commission (1904), with assets in 1955 of approximately \$10,000,000, was established to recognize by medals and monetary awards heroic acts performed in the peaceful walks of life. President (1955), Thomas S. Arbutnot; manager, M. H. Floto. Headquarters: Oliver Building, Pittsburgh 22, Pa.

Carnegie Foundation for the Advancement of Teaching (1905) was established to provide retiring pensions for college teachers and to advance higher education. In addition to an original grant from Carnegie of \$13,000,000, by 1955 it had received sums amounting to more than \$33,000,000 from the Carnegie corporation for pension purposes and educational studies. President (1955), John W. Gardner; secretary, Florence Anderson. Headquarters: 589 Fifth Ave., New York 17, N.Y.

Carnegie Endowment for International Peace (1910) uses the income from its \$10,000,000 endowment to further friendly understanding among nations. President (1955), Joseph E. Johnson; secretary, Leslie Paffrath. Headquarters: United Nations Plaza at 46th St., New York 17, N.Y.

Catholic Community Service, National.—This service organization was founded on Nov. 13, 1940, to assist in meeting the religious, social and welfare needs of members of the armed forces, of workers and their families in defense industry areas and of patients in Veterans administration hospitals. During 1955 the service conducted volunteer work in 171 Veterans administration hospitals, staffed clubs of the U.S.O., and also published and distributed more than 500,000 religious publications. Publications: *NCCS News*; *NCCS-VA Hospital News*; several religious pamphlets; and *Greetings*, a pamphlet for young men about to be inducted into the armed forces. Thomas D. Hinton was executive director in 1955, and the Most Rev. Karl J. Alter was president. Headquarters: 1312 Massachusetts Ave. N.W., Washington 5, D.C.

Catholic Organizations for Youth.—The National Council of Catholic Youth is sponsored by the National Catholic Welfare conference. Its purpose is to foster the spiritual, cultural, social and physical activities, and to represent in the U.S. and abroad, all Catholic youth organizations. The College and University section includes the National Federation of Catholic College Students, reaching students in Catholic colleges, and the Newman Club federation, reaching Catholic students in nonsectarian colleges. The Diocesan section reaches Catholic organized youth who are outside the college and university field. Parish youth organizations throughout the country affiliate with the council through their Diocesan youth directors; eight national organizations also are affiliated with the Diocesan section. The national organizations include: Catholic Kolping Society of America, Catholic War Veterans of U.S.A., National Catholic Camping Association, Columbian Squires, Daughters of Isabella, Junior Catholic Daughters of America, The Queen's Work and the Catholic Total Abstinence union.

The total number of young persons reached by the various programs in 1955 was about 7,000,000. Publications include *Youth*, a magazine, and *Program Service*, a bi-monthly activities suggestion publication. Director: Msgr. Joseph E. Schieder. Headquarters: 1312 Massachusetts Ave. N.W., Washington 5, D.C.

Catholic Welfare Conference, National.—This organization was founded in 1919 to organize and co-ordinate the Catholic residents of the U.S. in works of education, social welfare, immigrant aid and other activities. It acts as a clearing house of information regarding activities of Catholic men and women. The National Council of Catholic Men produced in 1955 the weekly radio programs "Catholic Hour," "Christian in Action," and "Faith in Our Time" and the television programs "Catholic Hour-TV," "Look Up and Live" and the Catholic portion of "Lamp Unto My Feet." The membership of the conference was composed of the 209 archbishops and bishops of the U.S. and more than 16,000 affiliated lay societies. Officers (1955) included Karl J. Alter, archbishop of Cincinnati, O., chairman; Joseph E. Ritter, archbishop of St. Louis, Mo., secretary. The general secretary was the Msgr. Howard J. Carroll. Headquarters: 1312 Massachusetts Ave. N.W., Washington 5, D.C.

Chamber of Commerce of the United States.—A federation of businessmen's organizations founded in 1912, the chamber was organized "to promote a better understanding of the functions of American business enterprise and of the contribution of business to public well-being and to serve as a clearinghouse of business opinion on economic issues."

In 1955 the national chamber sponsored a number of national conferences on current issues such as national security; improvement of living standards; community development; economy and taxes; labour relations; education; and increasing the effectiveness of America's business organizations. In 1955 there were 3,138 organization members (state and local chambers of commerce and trade and industrial organizations), with an underlying membership of more than 1,600,000.

Publications: *Washington Report*, weekly; *Nation's Business*, monthly; newsletters; and special reports, papers, studies, etc. Officers (1955): A. Boyd Campbell, president; Richard L. Bowditch, chairman of the executive committee; Clem D. Johnston, chairman of the board. Headquarters: 1615 H St. N.W., Washington 6, D.C.

Charles Hayden Foundation.—This organization was established in 1937 under the will of Charles Hayden to assist young men to "receive proper training in boyhood and youth . . . in the manner of right and proper living." Its activities are devoted mainly to aiding boys' clubs, boys' camps and similar projects for underprivileged boys, especially those of the New York, N.Y., and Boston, Mass., areas. By Sept. 30, 1955, the foundation had contributed \$28,243,220 for these purposes, and there was approximately \$54,366,755 in the fund. Officers: Edgar A. Doubleday, president, secretary and treasurer; Erle V. Daveler, chairman of the board. Headquarters: 25 Broad St., New York 4, N.Y.

Civitan International.—This organization was founded in 1920 and its purpose is best explained by its motto, "Builders of Good Citizenship." During 1955 principal activities included work on the March of Dimes, Cancer Crusade, and Red Cross Campaigns, safety projects, and essay contests in high schools. Membership in 1955 was about 20,000. Publica-



SHRINERS parading down Michigan Ave., Chicago, Ill., during their 1955 national convention

tion: *The Civitan* magazine, edited monthly; informational booklets. Officers (1955) included: Roy M. Abagnale, president; Rudolph T. Hubbard, secretary. Headquarters: 1523-28 Comer Bldg., Birmingham 3, Ala.

Commonwealth Fund.—Established in 1918 by Mrs. Stephen V. Harkness "to do something for the welfare of mankind," and increased by other bequests, the fund amounted to approximately \$85,500,000 at the end of the fiscal year 1954-55. Appropriations for that year were \$3,469,973. The major concern of the fund in 1955 was helping medical schools to reorient medical education to the student and medical care to the patient, by better integration and increased attention to the relation between the patient and his environment. Grants for medical education, including fellowships in medicine and allied fields, amounted to \$2,370,721; for experimental health services \$137,750; and for medical research \$887,926. During the academic year 1955-56 57 persons were resident in the U.S. under Commonwealth fund fellowships, including 43 scholars, journalists and civil servants from Great Britain and other parts of the British Commonwealth and 14 scholars from western European countries. The fund publishes an annual report. Malcolm P. Aldrich was president in 1955. Headquarters: 1 E. 75th St., New York 21, N.Y.

Daughters of the American Revolution.—The National Society of the Daughters of the American Revolution was founded in 1890 for historical, patriotic and educational purposes. The society in 1955 had 179,920 members in 2,775 chapters. During the year it operated two schools and provided financial assistance to others; conducted programs for good citizenship; operated Junior American Citizens clubs; maintained a genealogical library; presented awards for citizenship qualifications in accredited high schools. Publications: *Daughters of the American Revolution Magazine* and *Press Relations Digest*. Gertrude S. Carraway was president general in 1955. Headquarters: 1776 D St. N.W., Washington 6, D.C.

Duke Endowment.—By an indenture executed Dec. 11, 1924, by James B. Duke, the Duke endowment was established as a common-law trust "to make provision in some measure for the needs of mankind along physical, mental and spiritual lines." The fund allocates payments to educational institutions, including Duke university, Durham, N.C., and also distributes funds to help support hospitals, orphanages and the Methodist Church in rural areas. The amount distributed from Dec. 11, 1924, to Dec. 31, 1954, was \$14,822,345.75. The fund is supervised by a self-perpetuating board of 15 trustees. Officers (1955) included George G. Allen, chairman; Alex H. Sands, Jr., vice-chairman; Walter C. Parker, treasurer. Headquarters: Power building, Charlotte 1, N.C.

Elks, Benevolent and Protective Order of.—Founded in 1868, this service organization in 1955 had 1,170,000 members in its more than 1,700 lodges. Its purpose is to practise charity, justice, brotherly love and fidelity; to promote the welfare and enhance the happiness of its members; to quicken the spirit of American patriotism and cultivate good fellowship. During 1955 the organization donated funds for scholarships, infantile paralysis, cerebral palsy and other similar purposes. It emphasized its rehabilitation program in the Veterans Administration hospitals in the country, and in establishing fraternal centres for members of the armed forces. Publication: *The Elks Magazine*. Officers (1955): John L. Walker, Roanoke, Va., grand exalted ruler; L. A. Donaldson, Chicago, Ill., grand secretary; 2750 Lakeview Ave., Chicago 14, Ill., is the national headquarters.

Falk Foundation, Maurice and Laura.—This foundation was established in 1929 with the broad purpose of the advancement of human welfare. During 1955 grants totalling \$360,162.50 were made to finance research studies of economic problems affecting the domestic economy of the U.S., and to further the efforts of colleges and universities to prepare their students for citizen participation in politics. An allotment of \$100,000 was made to the Brookings Institution in support of a research study of the impact of union policies upon industrial management. Grants outside the foundation's major fields of interest included an allotment of \$40,000 to the Child Guidance Center of Pittsburgh. Funds as of Dec. 31, 1954, were \$14,200,792.75. Officers (1955) included: Leon Falk, Jr., chairman; Eugene B. Strassburger, secretary; J. Steele Gow, executive director. Headquarters: Farmers Bank building, Pittsburgh 22, Pa.

Ford Foundation.—The Ford foundation was founded in 1936 to receive and administer funds for scientific, educational and charitable purposes, all for the public welfare. During the fiscal year ended Sept. 30, 1955, it approved grants totalling \$49,438,558 in support of activities devoted

toward advancement of world peace and economic well-being, strengthening freedom, democracy and education, and increasing knowledge of human behaviour. The total assets of the foundation as of Sept. 30, 1954, amounted to \$493,213,842. On Dec. 12, 1955, the foundation announced grants to colleges, universities and hospitals throughout the nation totalling \$500,000,000, to be paid out during the following 18 months. Officers (1955) included: Henry Ford II, chairman; H. Rowan Gaither, Jr., president; Joseph M. McDaniel, Jr., secretary; and Ernest J. Perry, acting treasurer. Office: 477 Madison Ave., New York 22, N.Y.

Franklin Institute of the State of Pennsylvania.—This nonprofit institution was founded in 1824 for promotion of the mechanic arts. It devotes itself to interpreting science for nontechnical persons and to research for the benefit of industry and government. Activities include maintenance of the Benjamin Franklin memorial, a museum of science and industry, including Fels planetarium; a technical library of more than 250,000 volumes; lectures and exhibits on a wide variety of subjects; honour awards for distinguished achievements in science and technology; publication of the *Journal of the Franklin Institute*; the Franklin Institute Laboratories for Research and Development; the Bartol Research foundation; and the Biochemical Research foundation. In 1955 the institute conducted laboratories for research and development with divisions of mechanical engineering, electrical engineering, solid state physics, and chemistry and physics. Income is derived from dues of 6,923 members, museum and planetarium admissions, bequests and gifts, and industrial sponsorship of research and exhibits. Officers (1955): S. Wyman Rolph, president; Henry B. Allen, executive vice-president and secretary. Headquarters: Benjamin Franklin parkway at 20th St., Philadelphia 3, Pa.

Freemasonry.—Said to be the oldest and largest fraternal organization in the world, the Masonic fraternity is nonsectarian and nonpolitical and has no benefit or insurance provisions. Its purpose is the moral and spiritual elevation of its members and, through them, of mankind. Since the 18th century its lodges have been joined together in grand lodges, mostly on a territorial basis, each grand lodge being independent. Masonic organizations based on lodge membership include the Royal Arch, the Knights Templar and the Scottish Rite. There are 49 grand lodges in the U.S., three in the British Isles, one each in Canada and Australia. There are many lodges in other parts of the world, except in the totalitarian countries. Masonic membership in the U.S. in 1955 was 3,965,000 in 15,687 lodges; world membership was in excess of 5,000,000. Publications: annual transactions by all grand lodges and many of the related organizations; weekly, monthly and quarterly periodicals by some organizations and individuals.

Future Farmers of America.—Founded Nov. 20, 1928, this is a national organization of boys studying vocational agriculture in public secondary schools under the provisions of the national vocational education acts. The chief of the agricultural education service of the U.S. office of education is chairman of an adult national advisory council. The purpose of the Future Farmers is to develop agricultural leadership, co-operation and citizenship. Membership in 1955 was more than 371,000. Publications: *National Future Farmer*, quarterly, and various pamphlets. Officers (1955) included: William D. Gunter, national president, and Philip Brouillette, student secretary. Headquarters: U.S. Department of Health, Education and Welfare, Office of Education, Washington 25, D.C.

Girl Scouts of the United States of America.—The purpose of this organization, founded in 1912 by Juliette Low, is "to help girls realize the ideals of womanhood as a preparation for their responsibilities in the home and as active citizens in the community and in the world." In 1955 the 33rd National Girl Scout convention was held Nov. 1-4, in San Francisco, Calif. On June 30, 1955, 2,580,543 girls and adults, including brownie, intermediate and senior scouts, were members. Publications: *Girl Scout Leader*; *American Girl*; and various handbooks. Officers (1955): Mrs. Roy F. Layton, president; Mrs. Charles H. Ridder, secretary; Dorcas Campbell, treasurer. Headquarters: 155 E. 44th St., New York 17, N.Y.

Grange, National.—This farmers' organization, founded in 1867, is said to be the largest farm fraternity in the world. Representing the voice and influence of farmers in all segments of the national economy, the organization sought in its 1955 program to advance legislation on local, state, and national levels. Membership in 1955 totalled approximately 900,000 in 8,000 local units. Publication: *The National Grange Monthly*. Officers (1955): Herschel D. Newsom, master; Harry A. Caton, secretary. Headquarters: 744 Jackson Pl. N.W., Washington 6, D.C.

International College of Surgeons.—This organization was founded in 1935 to create a common bond among the surgeons of all nations and to promote the highest standards in surgery throughout the world without regard to nationality, creed or colour. In 1955, the 20th anniversary meeting was held in Geneva, Switz., May 23-26; and the 20th annual assembly of the U.S.-Canadian section was held in Philadelphia, Pa., Sept. 12-15. Membership was about 11,000. Publication: *The Journal of the International College of Surgeons*. Officers (1955) included: Rudolph Nissen (Switzerland), president; Carlos Gama (Brazil), president-elect; Max Thorck, international secretary general. Headquarters: 1516 Lake Shore Drive, Chicago 10, Ill.

Jewish Welfare Board, National.—Founded in 1917, this agency is authorized by the U.S. government to serve the religious, welfare and morale needs of Jews in the U.S. armed forces at home and abroad and in Veterans administration hospitals. In 1955 it had 241 community armed services committees. It recruited and served 344 full-time and part-time Jewish chaplains, and represented the U.S. Jewish community in the United Service organizations, on whose behalf it operated 30 clubs and area operations. Since 1921 it had also been the national association of Jewish Community centres and Young Men's and Young Women's Hebrew associations. Its 1955 membership included 348 centres with 552,000 members. Officers (1955) included: Charles Aaron, president; Frank L. Weil, honorary president; S. D. Gershovitz, executive vice-president. Headquarters: 145 E. 32nd St., New York 16, N.Y.

John Simon Guggenheim Memorial Foundation.—Founded in 1925, the foundation "offers Fellowships, to further the development of scholars and artists by assisting them to engage in research in any field of knowledge and artistic creation in any of the fine arts including music, under the

freest possible conditions." Fellowships are offered to citizens of the United States of America, all other American republics, the Republic of the Philippines, Canada and of the British Caribbean. Endowment (1955): \$43,519,000. Officers (1955): Mrs. Simon Guggenheim, president; Henry Allen Moe, secretary. Headquarters: 551 Fifth Ave., New York 17, N.Y.

Kellogg Foundation.—The W. K. Kellogg foundation was established in 1930 to promote the health, education and welfare of mankind, principally of children and youth without regard to race, sex, creed or nationality. It functions through the divisions of agriculture, dentistry, education, medicine and public health, hospitals, nursing and the international division. It is administered by a board of nine trustees, and its assets totalled \$124,257,200 in 1955. Officers (1955): Emory W. Morris, president; Orville L. DeBolt, treasurer; Leonard L. White, secretary. Headquarters: 250 Champion St., Battle Creek, Mich.

Kiwanis International.—Founded Jan. 21, 1915, in Detroit, Mich., this service organization operates through community Kiwanis clubs, comprised of business and professional men. During 1955 it sponsored with the U.S. Air Force the seventh annual National Kids' day; served as coordinating agency for first annual observance of "Farm City Week"; sponsored programs aimed at increasing religious interest; helped underprivileged children; and promoted agricultural and conservation projects; and vocational guidance programs. Membership in 1955 included more than 241,000 in more than 4,000 clubs of the U.S., Canada, Alaska, Hawaii and the Yukon territory. Publications: *Kiwanis Magazine* and *The Keynote*, official organ of the Kiwanis-sponsored Key clubs for outstanding high school youths. Officers (1955-56) included: J. A. Raney, president; O. E. Peterson, secretary; Reed C. Culp, treasurer. Headquarters: 520 N. Michigan Ave., Chicago 11, Ill.

Knights of Columbus.—This organization of Catholic men was founded in 1882 for the mutual help of its members. Later its purposes were broadened to include the conduct of educational, charitable, religious, social and relief work. Its program of advertising the facts concerning the Catholic religion in newspapers and magazines, begun in 1948, was being continued during 1955, resulting in 1,876,837 inquiries concerning the Catholic religion and the enrolment of 188,971 persons for instruction in the Catholic religion. Also its work of microfilming historic documents at the Vatican library for deposit at St. Louis university (Mo.), where they would be available for study by scientists and scholars, was progressing. Membership in 1955 was 937,217. Publication: *Columbia*, a monthly. Luke E. Hart was supreme knight. Headquarters: Columbus Plaza, New Haven, Conn.

League of Women Voters of the United States.—Founded in 1920, to promote informed and active participation of citizens in government, the membership in 1955 was 127,000 in 985 local leagues in 48 states, the District of Columbia, Alaska and Hawaii. In 1955 the league held discussions and published material on measures concerning support of U.S. trade policies, and development of the relationship between individual liberty and the public interest. The organization is not endowed. Publications: *The National Voter*, newsletter issued 16 times a year; and *Report from the Hill*, issued monthly during sessions of congress. Officers (1955) included: Mrs. John G. Lee, president; Mrs. W. J. Blanchard, secretary; Mrs. E. Boyne, treasurer. Headquarters: 1026 17th St. N.W., Washington 6, D.C.

Lions Clubs, International Association of.—The purpose of this organization, founded in 1917, is "to recognize community needs and develop means of meeting them, either through the clubs' own efforts or in co-operation with other agencies." In 1955 Lions clubs completed more than 161,000 activities for the betterment of communities, states and nations. These activities included projects in agriculture, education, and health and welfare. In 1955 there were more than 11,000 Lions clubs in 58 countries. Membership in 1955 was more than 519,000. Publication: *The Lion*, monthly. Officers (1955) included: Monroe L. Nute, president; R. Roy Keaton, director general. Headquarters: 209 N. Michigan Ave., Chicago 1, Ill.

Milbank Memorial Fund.—A membership corporation under the laws of the state of New York, this organization was founded in 1905 to improve the physical, mental and moral condition of humanity and generally to advance charitable and benevolent objects. In 1955 the fund appropriated funds to support activities and projects in the field of public health and medicine. Total funds (Dec. 31, 1954) amounted to \$14,347,065.76. Publications: *Milbank Memorial Fund Quarterly*; *Annual Report*. Officers (1955): Samuel R. Milbank, president; Frank G. Boudreau, executive director. Headquarters: 40 Wall St., New York 5, N.Y.

Moose, Loyal Order of.—Founded in 1888, the purpose of this organization is "to unite in the bonds of fraternity, benevolence, and charity all acceptable . . . persons of good character; to educate and improve their members . . . to encourage tolerance of every kind . . . and to serve aged members and their wives. . ." In 1955 the organization continued operations of its institutions at Mooseheart, Ill. (caring for children who had lost one or both parents), and Moosehaven at Orange City, Fla. (for dependent elderly persons). Membership in 1955 numbered 1,070,073. Publications: *Moose Magazine*; *Moose Docket*. Officers (1955): Paul P. Schmitz, director general; George Eubank, supreme secretary. Headquarters: Mooseheart, Ill.

National Academy of Sciences-National Research Council.—Founded in 1863, by act of congress, the academy's purpose is to advise the government on any subject of science or technology; stimulate research in science and its application to national welfare; and promote co-operation in research in the U.S. and internationally. During 1955 it held its 92nd annual meeting in Washington, D.C., April 25-27; undertook studies of the effects of atomic energy radiation on life; and planned a new study of highway construction. Membership in 1955 was 554; there were 256 members of the National Research council (founded 1916). Publications: *Proceedings of the National Academy of Sciences*; *News Report*; periodicals; numbered series of technical publications reviewing research. It is endowed by the Carnegie Corporation of New York. Detlev W. Bronk was president of the academy in 1955, and William J. Robbins was treasurer. Headquarters: 2101 Constitution Ave. N.W., Washington 25, D.C.

National Association for the Advancement of Colored People.—Founded

in 1909, this organization directed its 1955 activities toward implementing the U.S. supreme court decisions banning segregation of races in public schools; abolishing segregation in private and public housing; and ending terrorist acts against Negroes who attempt to register or vote. Membership in 1955 was approximately 250,000. Publications: *Crisis*, a monthly magazine. Officers (1955) included: Arthur B. Spingarn, president; Roy Wilkins, executive secretary. Headquarters: 20 W. 40th St., New York 18, N.Y.

National Association of Manufacturers.—The N.A.M. was founded in 1895 to promote the industrial interests of the U.S., foster domestic and foreign commerce, improve employer-employee relations, protect individual liberty and the rights of employer and employee and support legislation in furtherance of those principles. Its activities in 1955 concentrated on creation of an atmosphere which inspires public confidence and faith in the future. Membership in 1955 was approximately 20,000. Publications: *Memo to Members*, biweekly; *The Washington Bulletin*, weekly; *Program Notes*, monthly; *Economic Chart Service*, monthly; and others. Officers (1955) included: Harold C. McClellan, chairman of the board; Henry G. Riter, III, president; Thomas M. Brennan, secretary. Headquarters: 2 E. 48th St., New York 17, N.Y.

National Association of State Libraries.—This association was founded in 1889 "to develop and increase the usefulness and efficiency of the state libraries and other agencies performing library functions at the state level." Its 1955 membership included 225 institutional, individual and associate members. Publications include check lists of collected public documents, legislative journals, session laws and statutes and the *Newsletter*, quarterly. Officers (1955) included: Walter T. Brahm, state librarian, Columbus, O., president; Helene H. Rogers, Springfield, Ill., secretary-treasurer. Headquarters: Illinois State Library, Springfield, Ill.

National Council of the Churches of Christ in the United States of America.—The purpose of this non-profit organization, founded in 1950, is to express practically the unity of spirit and purpose which Christian people have because of their common loyalty to Christ. It serves as a co-operative instrument of 30 nationwide Protestant and Eastern Orthodox communions, whose aggregate membership in 1955 was about 35,500,000. In 1955 the organization furthered its teachings via home and foreign missions, radio, television, educational films and the press. Publications include: *The National Council Outlook*; *The Church Woman*; *International Journal of Religious Education*. The budget for 1955 was more than \$9,000,000. Officers included: Eugene C. Blake, president; Charles E. Wilson, treasurer; Roy G. Ross, general secretary. Headquarters: 297 Fourth Ave., New York 10, N.Y.

National Education Association of the United States.—This organization was founded in 1857 "to elevate the character and advance the interests of the teaching profession and to promote the cause of education throughout the country." In 1955 the association continued construction of a new \$5,000,000 education centre in Washington, D.C., and held major meetings in 32 states. In 1955 the membership was 600,000; membership of affiliated state associations was more than 1,000,000. Publications include the *NEA News*; *NEA Journal*; and a *Research Bulletin*. Officers (1955-56) included: John L. Buford, president; Gertrude E. McComb, treasurer; William G. Carr, executive secretary. Headquarters: 1201 16th St. N.W., Washington 6, D.C.

National Foundation for Infantile Paralysis, Inc.—Founded in 1938 by Franklin D. Roosevelt for the purpose of combating infantile paralysis (polio), the organization does this by treating patients, extending fellowships and scholarships to train medical personnel in polio treatment methods and financing research into prevention and treatment. In 1955 there were 3,100 chapters in the U.S., its territories and administered areas. During 1955, the foundation continued grants-in-aid to 14 regional respirator centres in hospitals. It also proceeded with its plans to provide enough vaccine to inoculate all children in the first and second grades of school. The organization's monthly publication is *National Foundation News*. Support is derived by voluntary contributions to the annual March of Dimes in January. Officers (1955): Basil O'Connor, president; Raymond H. Barrows, executive director. Headquarters: 120 Broadway, New York 5, N.Y.

National Recreation Association.—Founded in 1906 to "help assure every child in America a place to play in safety and every person, young and old, an opportunity to find the best and most satisfying use of his expanding leisure time," this association in 1955 had 1,300 affiliate (agency) members, 2,784 associate (individual) members and 16,000 contributing members. Publication: *Recreation* magazine. Officers (1955): Otto T. Mallory, chairman of the board; Joseph Prendergast, executive director. Headquarters: 8 W. Eighth St., New York 11, N.Y.

National Science Foundation.—The National Science foundation is an independent agency of the federal government, established by congress in May, 1950, "to promote the progress of science; to advance the national health, prosperity, and welfare; to secure the national defense; and for other purposes." The foundation consists of the National Science board and a director. Its principal activities are the development of national science policy; the support of basic research; and the furtherance of education in the sciences through the award of graduate fellowships and by other means. Chester I. Barnard was chairman of the board in 1955 and Alan T. Waterman was director.

During 1955 the foundation awarded 558 grants, or a total of \$7,857,395, in the biological, mathematical, medical, physical and engineering sciences. The foundation awarded a total of 785 fellowships for the academic year 1955-56, including 715 predoctoral awards and 70 postdoctoral awards. During 1955 the foundation continued a comprehensive survey of science in the U.S., which included research and development in industry; research and development at nonprofit organizations; and studies of scientific manpower. Headquarters: 1520 H St. N.W., Washington 25, D.C.

National Society for Crippled Children and Adults, Inc.—Founded in 1921, this organization is also called the Easter Seal society. Its purpose is to help crippled children and adults by providing care and treatment services; to conduct a public educational program; and to encourage research into causes, prevention and treatment of crippling conditions. In 1955 the society maintained hundreds of facilities and programs, in-

cluding diagnostic clinics, rehabilitation centres, employment programs and outpatient treatment-training centres. In 1955 there were state member societies in 52 U.S. states and territories, including District of Columbia, Hawaii, Alaska and Puerto Rico. Publications: *Crippled Child Magazine*; *Bulletin of the National Society*; *Bulletin on Current Literature*. Funds derived from the 1955 annual Easter Seal campaign totalled \$8,441,500. Officers (1955) included: Edgar Kobak, president; Lawrence J. Linck, secretary. Headquarters: 11 S. LaSalle St., Chicago 3, Ill.

National Temperance League, Inc.—This federation of state temperance organizations was formed by the merger in 1950 of the Temperance League of America and the National Temperance Movement, Inc. In 1955 the league sought action by congress to ban liquor advertising in interstate commerce, and sponsored highway safety, particularly with respect to national and state laws to minimize deaths and injuries caused by drinking drivers. The official publication is the *American Issue*. Officers (1955) included: president, Duke K. McCall; secretary, the Rev. James Swedenburg. Headquarters: 131 Independence Ave. S.E., Washington 3, D.C.

Parents and Teachers, National Congress of.—This organization, founded in 1897 as the National Congress of Mothers, had in 1955 a membership of 9,409,282 parents, teachers and other citizens organized in 40,322 local associations. Its purpose is to promote the welfare of children; raise the standards of home life; secure laws for care and protection of children and youth; bring the home and school into closer relationship; and develop plans for joint action along these lines by educators and the general public. The year 1955 saw the national headquarters building in Chicago, Ill., dedicated; special promotion of high school P.T.A.'s; and an extended publications program (pamphlets, etc.). Publications include: the *National Parent Teacher*; the *P.T.A. Magazine*; *National Congress Bulletin*; and *National Congress Proceedings*, annual. Officers (1955) included: Mrs. Rollin Brown, national president; Mrs. L. W. Alston, national secretary. National Headquarters: 700 N. Rush St., Chicago 11, Ill.

Research Libraries, Association of.—Founded in 1931, this association of 45 institutions seeks "by co-operative effort to develop and increase the resources and usefulness of the research collections in American libraries." In 1955 it sponsored a co-operative plan for the acquisition of foreign newspapers in a national pool, and promoted a study and conference on research library costs. Publications include *Problems and Prospects of the Research Libraries*, edited by E. E. Williams; *Doctoral Dissertations accepted by American Universities*, an annual. R. A. Miller was executive secretary in 1955, and headquarters were at the Indiana University library, Bloomington, Ind.

Rockefeller Foundation.—Founded in 1913 "to promote the well-being of mankind throughout the world," the foundation during 1955 made grants to institutions or agencies such as universities, research institutes or governmental agencies. Its program for the advancement and application of knowledge to human interest was concentrated in certain specific fields of medical education and public health, biological and medical research, agriculture, social sciences, and humanities. The 21 trustees are the 21 members of the corporation. Assets, Dec. 31, 1954, totalled \$161,044,933 (book value). Officers (1955): Dean Rusk, president; Edward Robinson, treasurer; Flora M. Rhind, secretary. Headquarters: 49 W. 49th St., New York 20, N.Y.

Rotary International.—Founded Feb. 23, 1905, this organization sponsors a program to encourage and foster the "ideal of service." By 1955, 711 Rotary fellowships for graduate study for one year in foreign countries, averaging \$2,500 each, had been awarded to students from 57 countries. There were 8,900 Rotary clubs with a membership of 420,000 business and professional executives in 92 countries and geographical regions. In 1955, Rotary International observed its golden anniversary. The 1956 convention was to be held in Philadelphia, Pa., June 3-7. Publications: the *Rotarian* (English) and *Revista Rotaria* (Spanish), monthly magazine; numerous pamphlets. Officers (1955) included: A. Z. Baker, president; George R. Means, secretary. Headquarters: 1600 Ridge Ave., Evanston, Ill.

Russell Sage Foundation.—This foundation was established in 1907 by Mrs. Russell Sage for "the improvement of social and living conditions in the U.S." Its 1955 program consisted of varied research and consultation projects, designed to advance the use of the social sciences in the fields of health, education, philanthropy, professions and professional training, the child and the family and intergroup and cultural relations. Publications of 1955 included *Studying Your Community*, by R. L. Warren; and *Health, Culture, and Community*, edited by B. D. Paul. Assets of the foundation, Sept. 30, 1955, totalled \$21,000,000. Officers (1955): Donald Young, president; E. W. Debevoise, chairman of the board; Dave H. Morris, Jr., treasurer; Ralph G. Hurlin, secretary. Headquarters: 505 Park Ave., New York 22, N.Y.

Seeing Eye, Inc.—A national philanthropy founded in 1929 and supported through annual memberships, public contributions and bequests. The society's purposes include securing and training dogs to guide blind persons, teaching instructors the technique of training the guide dogs and training the blind in proper use of their guide dogs. During 1955, 161 blind persons were provided with dog guides. Membership was about 20,000; 3,180 persons had received Seeing Eye dogs since the organization's inception. Publications: *The Seeing Eye Guide*, published quarterly for the members of The Seeing Eye, and printed booklets. Officers (1955): Henry A. Colgate, president; James Carey, treasurer; Dorothy S. Atkinson, secretary. Headquarters: Morristown, N.J.

Sloan Foundation, Inc., Alfred P.—Founded in 1934, the foundation is a nonprofit corporation established for educational, scientific and related purposes. The foundation's grants during 1955 went largely to established projects in medicine, especially cancer and ophthalmological research, scholarship and fellowship projects in leading colleges and universities, and popular educational projects. Major activity of 1955 was the allocation of \$5,000,000 for the promotion of research in pure science in U.S. research institutions and universities. For the first half of the year these grants were made at an annual rate of more than \$2,500,000. The market value of the foundation's investments as of May 1, 1955, was approximately \$60,960,000. Officers (1955): Alfred P. Sloan, Jr., president; Raymond P. Sloan, vice-president; James F. Kenney, secretary and treasurer; Arnold J. Zurcher, vice-president and executive director. Head-

quarters: 30 Rockefeller Plaza, New York 20, N.Y.

Sodality of Our Lady.—This international Catholic body was founded in 1563 to foster devotion to Mary, the Mother of God. During 1955 seven weeks of leadership training were given in seven cities of the U.S. A total of 12,902 persons attended. U.S. membership in 1955 comprised 18,019 affiliated units. The seventeenth annual meeting of Diocesan Sodality directors was held in St. Louis, Mo. Publications include *The Queen's Work*, *Action Now!*, *Junior Sodalist* and books and pamphlets. Officers included a number of priests of the Jesuit order. U.S. headquarters: 3115 S. Grand Blvd., St. Louis 18, Mo.

Twentieth Century Fund.—Founded in 1919 by Edward A. Filene, this is a nonprofit, nonpartisan foundation for research and public education on current economic problems. In 1955 the fund completed studies on farm problems; U.S. needs and resources; economic development; economic needs of older people; and U.S. imports, etc. Research projects in progress included studies of recent agricultural policies of the U.S.; the influence of military considerations on national policy; distribution costs and methods; antitrust policies and enforcement; the effects of technological changes on the economy; and a survey of economic, social and political conditions in tropical Africa. During 1955 the fund published *Newsletters* and *Newsbriefs* to keep its activities before the public. Total assets, Dec. 31, 1954: \$12,134,162. Officers (1955): A. A. Berle, Jr., chairman of the board; Francis Biddle, vice chairman of the board; J. Frederic Dewhurst, executive director; H. C. Sonne, treasurer. Headquarters: 330 W. 42nd St., New York 36, N.Y.

United States Junior Chamber of Commerce.—The purpose of this organization, founded in 1920, is to help make every community (and the country) a better place in which to live through the promotion of constructive civic projects, and to help develop civic leadership. In 1955 the chamber sponsored projects such as traffic safety, civil defense and disaster relief, sports, and raising funds for the U.S. Olympic team, and was active in such fields as agriculture, public health, fire prevention, voter registration, international relations and youth welfare. Membership in 1955 was 160,421 in 2,500 chapters. Publications: *Future and Action*, both monthly. Officers (1955) included: Hugh F. McKenna, president; Charles W. Johnson, treasurer. Headquarters: 21st St. and Jaycee Blvd., Tulsa, Okla.

Woman's Christian Temperance Union, National.—The W.C.T.U., founded in 1874, is an organization of Christian women banded together to disseminate information as to what alcohol is and what it does, and the impact which the use of alcoholic beverages has upon the social and economic life of the nation. Membership, about 400,000; publications include the *Union Signal*, weekly, and the *Young Crusader*, monthly for children. Officers (1955): Mrs. Glenn G. Hays, president, Mrs. H. E. Mielke, corresponding secretary, Mrs. H. F. Powell, treasurer. Headquarters: 1730 Chicago Ave., Evanston, Ill.

Women's Clubs, General Federation of.—Founded in 1890, this organization aims at uniting women's clubs throughout the world to promote education, philanthropy, public welfare, moral values, civics and fine arts. During 1955 emphasis was placed upon a special project of removing crime, sex and horror comic books from newsstands. Membership in 1955 included 867,566 individual paying members, with a total in affiliated organizations of about 11,000,000 in the U.S. and 54 other countries. Publication: *General Federation Clubwoman*, monthly. Officers (1955): Mrs. Theodore S. Chapman, president; Mrs. R. I. C. Prout, first vice-president; Chloe Gifford, second vice-president. Headquarters: 1734 N St., N.W., Washington 7, D.C.

World Council of Churches.—Founded in 1948, this association's purpose, "through ecumenical fellowship and work and study programs, is to promote better understanding between churches and encourage them in their will toward Christian unity." The program of the Council is co-ordinated through three main divisions: studies, ecumenical action, and inter-church aid and service to refugees. The council maintains contact with the United Nations through the Commission of churches on international affairs. The year 1955 saw the inauguration of a three-year study dealing with the church's responsibility in world areas of rapid social change. Member churches, in 1955, totalled 164 in 46 countries, representing more than 160,000,000 persons. Publications: *Ecumenical Review* (quarterly); *Ecumenical Press Service* (weekly); *Ecumenical Courier* (bimonthly). In 1955 the basic budget was \$441,000. Council activities are guided by a central committee which met in 1955 in Davos, Switz. Headquarters: 17 Route de Malagnou, Geneva, Switz.; U.S. office: 156 Fifth Ave., New York, N.Y., Samuel McCrea Cavert, executive secretary.

Young Men's Christian Association.—Founded in London, Eng., in 1844, this is a world-wide fellowship seeking to improve the spiritual, social, recreational and physical lives of young people. During 1954 (latest data available in 1955) there were 1,802 Y.M.C.A.'s operating in cities and rural areas, with memberships of 3,086,137. About 171,229 clubs, classes, teams, special-interest groups and councils met regularly with programs emphasizing physical, educational, social and religious features, plus emphasis on citizenship and world affairs. Among high school youth, 10,018 Hi-Y clubs for boys and 4,816 Tri-Hi-Y clubs for girls were functioning. Publications included *National Council Bulletin* and *YMCA Year Book* for 1955. Endowments totalled \$57,695,200. Officers (1955): James C. Donnell II, president; Jay A. Urice, general secretary. Headquarters: 291 Broadway, New York 7, N.Y.

Young Women's Christian Association of the United States of America.—This organization was founded in England in 1855 and in the U.S. in 1858 to build a fellowship of women and girls devoted to the pursuit of Christian ideals in personal and social living. During 1955 more than 3,000,000 women and girls participated in its activities in the United States. Publications: *The Bookshelf* and *YWCA Magazine*. Officers (1955) included: Miss Lilace R. Barnes, president; Mrs. F. Beardsley Foster, vice-president; Mrs. A. Hudson Sealy, secretary. Headquarters: 600 Lexington Ave., New York 22, N.Y.

Zonta International.—A service organization of executive women in business and the professions, founded in 1919, this organization encourages high ethical business and professional standards, the improvement of the legal, political, economic and professional status of women, and interna-

tional understanding through a world fellowship of executive women. Membership in 1955 included 325 clubs with approximately 11,500 members in the U.S. and 12 other countries. Publication: *Zontian* (magazine). Officers (1955-56) included: Dorothea Radusch, Minneapolis, Minn., president; Ellen Fireoved, Chicago, Ill., executive secretary. Headquarters: 59 E. Van Buren St., Chicago 5, Ill.

Sociology. The year 1955 saw nothing startlingly new in sociology and specialties closely related to it, but there were several minor developments of interest.

The lack of new vogues perhaps reflected the fact that readjustments, already evident the previous year, were still continuing. Cancellation or termination of research contracts by the armed services sharply limited the amount of large-scale team research, simultaneously releasing a considerable number of younger men for regular academic work.

Not only was there a lack of new vogues, but a number of old vogues continued to wane. For example, the psychoanalytic influence, once so popular in sociology, social psychology and social and cultural anthropology, affected far fewer specialists in these fields with the possible exception of the last. Even here the earlier excesses of the child-training enthusiasts and the "national character" impressionists had begun to encounter somewhat more outspoken criticism than had hitherto been evident. Social psychology continued to be popular in the United States, and in Germany the *Cologne Journal of Sociology* added *and Social Psychology* to its title, but it was nevertheless clear that more resistance to all-inclusive sovereignty was being encountered. Structural-functional sociology was still much advocated, but it had begun to become plain that structure and function had long been sociological household recipes, so to speak, under less grandiose names. Small group studies, as in the half-dozen years previous, had many aggressive practitioners; nevertheless, there were noticeably fewer band-wagon jumpers.

One exception to the decline of old vogues should be noted, although it was in a certain sense an index of the decline of another vogue not yet mentioned; this was the transfer of the journal *Sociometry* to the American Sociological society and the prompt addition of a subtitle, *a Journal of Research in Social Psychology*. Sociometry apparently waned whereas social psychology waxed. Inspection of the list of editors and subeditors showed, however, that no new names appeared; all those responsible for the new journal had long been identified with social psychology, and some of them had been consistent advocates of limited claims. Sociometry, moreover, retained its distinctive psychotherapeutic emphasis in other publications not transferred, although it was probably true that it no longer attracted as much attention even in that field as it had ten years before.

The absence of new and the decline of old vogues was accompanied, as might perhaps have been expected, by a lack of response to challenging issues. For example, although in 1952 and for a short time thereafter there had been some signs of strong reaction to A. H. Hobbs's forthright attacks on sociologists for their real or supposed lack of objectivity and scientific probity, by 1955 these signs had almost wholly disappeared. The attacks, in other words, remained unanswered.

Another issue, repeatedly although not sensationally raised, was the failure of sociologists, in the United States in particular, to make effective use of the data of history. In spite of the widespread public interest in A. J. Toynbee's *A Study of History*, for instance, few sociologists took the trouble, so it seemed, to acquaint themselves with his work, much less to conduct similar investigations. W. J. Cahnmann had tried for several years and especially in 1955 to get a place on the annual program of the American Sociological society for a group of sociologists interested in the interrelations of sociology and history,

but without success.

A hopeful note was introduced, however, by the successful continuation of *Sociological Abstracts*, a journal that for a time had seemed unlikely to survive; it reached its third volume in 1955. The wide range of articles and books abstracted might eventually, it was thought, broaden the horizons of its readers. The same was true of *Current Sociology*, a bibliographical journal published under the auspices of the United Nations Educational, Scientific and Cultural organization, likewise in its third year. Further, the attention of sociologists was called to the *Journal of Social History*, beginning publication in Amsterdam in 1955, and having sociologists among the sponsoring board and the contributors to the first number.

Still another hopeful development was the new policy of the Ford foundation with regard to research grants in the "behavioural sciences"—sociology, social psychology, social and cultural anthropology. Most Ford grants, in earlier years, had been for large-scale team research projects. In 1955 requests were solicited for grants-in-aid of projects of any kind; the researcher to whom the grant was made was given sole authority for the expenditure of the amount (\$4,500) in any way he saw fit. This meant that many researchers previously reluctant to apply for team research projects now felt that individual enterprise had some likelihood of recognition.

A new and apparently worthwhile trend also appeared in conjunction with the Society for the Study of Social Problems. Doubts had previously been apparent about the policy of the society and of its publication, *Social Problems*, for it was felt that a certain lack of scientific detachment and impartiality prevailed. In 1955, however, the society announced a competition for the Helen DeRoy award, to be granted for the best paper on some social problem, this paper to be published in the society's journal. The contest judges were about as free from commitments to favourite causes as any persons having any interest in social matters were likely to be, and the award, divided because of their equal merit, was granted to two papers that were models of objectivity. One, on the sociology of work groups, was by Robert Dubin; the other, by Melvin Seeman, was on the creativity of marginal personalities. Many of the other papers submitted in the competition manifested similar objectivity; it was evident that the study of social problems was reaching a new and higher scientific level.

A meeting held at Fisk university, Nashville, Tenn., early in April 1955 was likewise strikingly objective. The meeting was for the dedication of the Robert E. Park Memorial Social Science building at Fisk, and the occasion coincided with the lively popular interest in Negro-white relations stimulated by the desegregation decision of the U.S. supreme court a short time before. Under the guidance of Charles S. Johnson, president of Fisk, a number of Negro and white speakers representing the social sciences participated in the dedication addresses, and the tone of their remarks was almost uniformly sober and restrained.

Sociology in countries other than the United States continued to forge ahead, but at uneven rates. In Israel the work of S. N. Eisenstadt, Uriel G. Foa and Louis H. Guttman was outstanding. Turkey showed strong interest, setting up plans for an Institute of Sociological Research at the University of Ankara and endeavouring to secure lecturers from abroad to supplement regular staff. In France sociological activity was everywhere evident, but was somewhat dominated by schools of thought and too diffuse. The sheer volume of publication, however, was impressive. Germany accomplished a good deal during the year, but continued to be handicapped by the dearth of properly trained personnel and the curious ignoring of much of the significant work done in the 1920s, the "classic" period of German

sociology. Britain continued the advances evident earlier; there was still, however, a notable lack of recognition of sociology in other than the red-brick universities. Japan was very active, with a strong group of younger men who launched Japanese researches independently of hampering traditions and American occupation influence alike; Kunio Odaka was one of the most vigorous. Norway, Sweden and Denmark made notable progress; the latter country brought out a new periodical, *Acta Sociologica*, the first issue of which was devoted to the work of Theodor Geiger of the University of Aarhus. The one exception to the generally hopeful picture was Italy, where except for Franco Ferrarotti and his associates little was being done that represented any marked departure from the older and basically sterile period immediately prior to World War II.

Popular interest in sociology in the United States was enormously stimulated by a special feature in *Time* magazine, devoted to the work of David Riesman, a University of Chicago sociologist whose book, *The Lonely Crowd*, was a stimulating analysis of changes in American character. His types of "other-directed," "inner-directed" and "autonomous" personalities were refreshing departures from the orthodox Freudian models that had previously monopolized the field. In a little-known book, edited by John Doby, *Introduction to Social Research*, John C. McKinney of Michigan State university, East Lansing, contributed the best analysis of the entire procedure of type construction to be found in English. Lacking the appeal of Riesman's book, it nevertheless provided a rationale for types of all kinds—of personality, social group, value system and so on—that Riesman's brilliant but impressionistic treatment did not include.

The 1955 annual meeting of the American Sociological society, under the presidency of Donald Young of the Russell Sage foundation, took place at Washington, D.C., in early September. At that time it was decided to hold the 1956 meeting in Detroit, Mich., again in early September. (H. BEC.)

Sodality of Our Lady: see SOCIETIES AND ASSOCIATIONS, U.S.

Softball. The Raybestos Cardinals of Stratford, Conn., were winners in the 1955 world tournament of the Amateur Softball association played at Clearwater, Fla. In giving the northeastern section of the United States the title for the first time since 1940 the victors captured six of their seven contests. The Clearwater (Fla.) Bombers, the defending champions, placed second in the final standing with a record of six won and

two lost. After dropping a 1-0 decision to Stratford, Clearwater came back to shut out the Connecticut club, 2-0, and force the competition into a play-off game. Howie Weiland held the Bombers to two hits in the play-off and doubled to drive in Nick Santo, who had tripled, to win his own game in the tenth inning.

Twenty-four teams competed in the third annual slow-pitch tournament at Pittsburgh, Pa., and Langs Pet Shop of Covington, Ky., came through as champion. The Covington team beat the Cincinnati (O.) Comets, 19-13, in a single play-off to take the crown.

The Orange Lionettes of Orange, Calif., behind the stellar pitching of Bertha Ragan, regained the women's world championship. The Lionettes went undefeated in five games in the annual tourney at Portland, Ore. Miss Ragan hurled four shut-outs and then beat the Phoenix (Ariz.) Ramblers, 4-1, in the final for the best pitching performance in the history of the title event. Carole Nelson of the Fresno (Calif.) Rockets was chosen as "Miss Softball of 1955." (T. V. H.)

Soil Conservation. Increases in land area treated for soil and water conservation and solution or partial solution of some of the more difficult and obscure soil problems were outstanding features of this world movement in 1955. It was estimated that during the year, in all countries, modern farming and grazing land practices designed to improve and safeguard soil resources and increase yields were applied on nearly 100,000,000 ac. of agricultural land not previously treated. The largest areas covered were in North America, parts of Africa and Australia, but considerable progress was made also in spreading conservation methods in several parts of South and Central America, in small countries bordering the Mediterranean and on the land of island nations such as the Philippines and Indonesia. Contouring, strip cropping, terracing, grazing-land improvement by use of better forage plants and controlled grazing and water diversion and storage facilities were the most widely adapted practices. Planting of trees on eroded land was an important activity in many parts of the world.

A few details of conservation accomplishments in various world regions are given in the following:

United States.—Major emphasis was given to speeding up the rate of application of complete conservation plans, including all needed practices, to the land of farms and ranches. This involved vigorous programs in all states, and in soil conservation districts and watershed protection areas within states, to inform the people of the advantages of such plans. It involved also intensive training by the soil conservation service of conservation technicians, especially in the field of engineering, in order to provide personnel required to assist farmers and ranchers and watershed groups in applying basic conservation plans and in preparing work plans for watersheds containing a large number of farms and municipalities.

Favourable results were apparent in fiscal-year reports from all parts of the country. There were 2,674 organized conservation districts covering approximately 1,485,000,000 ac. and including 4,884,490 farms and ranches. The work of planning and applying conservation measures to the land was in progress in all but the seven most newly organized districts. In addition, operations to apply water management and flood-control measures, in addition to soil conservation plans on farmland, were proceeding according to schedule in 59 pilot watershed areas, subwatersheds of 11 major watersheds and in 103 watershed protection projects established by local groups under authority of the Watershed Protection and Flood Prevention act of 1954.



CLOSE PLAY AT THIRD BASE in an exhibition softball game by girls' teams of Atlanta, Ga., in 1955

During the fiscal year, nearly 136,000 farmers and ranchers operating 42,000,000 ac. in soil conservation districts took the first steps toward complete conservation land use on their land. This made a cumulative total of 1,552,336 farmers and ranchers, operating 454,427,009 ac., who had adopted conservation plans and methods as a basis for season to season production. Of this number, 1,034,530 farmers using more than 286,500,000 ac. were working in an advanced stage of complete conservation; and 164,673 farmers had applied all measures needed for permanent conservation use of their soil and water resources.

There was wide public interest during the year in the watershed protection and flood prevention phase of the program. Given below are works accomplished in 1955 in 11 major watersheds and 58 small upstream pilot watershed projects, with technical assistance and cost-sharing by the soil conservation service of the U.S. department of agriculture:

Floodwater retarding structures	129
Stabilization and sediment control structures	1,044
Silt and debris basins	38
Outlet construction	12 mi.
Grassed waterways	165 mi.
Channel stabilization and improvement	211 mi.
Water diversion construction	67 mi.
Levees and dikes	12
Roadside erosion control	425 mi.
Revegetation with grasses and legumes, woody plants	27,798 ac.

The state legislatures moved during the year to authorize state and local agencies to assume their new responsibilities for initiating and carrying through with the watershed protection and flood prevention projects where they were needed. During 1955, 20 states passed new or amendatory legislation to further co-operation between state and local agencies and the U.S. department of agriculture in watershed activities. In all, 37 different laws were passed in the 20 states. This response of the states appeared to be a record for legislative action in a single year directed toward co-operation with the federal government in a soil and water conservation and development program.

Thousands of farmers and ranchers sought technical assistance in the engineering phases of soil and water conservation problems. This was largely because of drought and the need to make better use of water available for agriculture. In the normally humid states east of the Mississippi river, the spread of irrigation facilities for use in periods of dry weather was greater than ever before. The soil conservation service assisted more than 10,000 farmers with planning and installing sprinkler irrigation systems during the year.

Other water conservation and use practices newly applied on farms throughout the country during 1955 were:

86,574 ponds constructed
6,902 mi. of water diversion channels
45,806 mi. of terracing for runoff control
1,713,618 ac. benefited by improved irrigation water application
493,907 ac. levelled for new irrigation systems
1,553,562 ac. of wet land drained

The following practices involving crop production and revegetation methods were applied on farm and range land:

Contour farming	3,146,889 ac.
Cover cropping	4,506,673 ac.
Strip cropping	947,611 ac.
Tree planting	313,209 ac.
Seeding range and pasture	3,134,634 ac.
Wildlife area planting and improvement	525,051 ac.
Windbreak planting	1,224 mi.
Hedgerow planting	705,466 rods
Stubble mulching	4,199,916 ac.
Crop residue utilization for soil fertility	7,949,445 ac.

Europe.—Modern soil conservation methods were being introduced into the agriculture of most European countries. Even where there was no government-authorized program, scientists connected with agricultural colleges or other institutions were

making an effort to complete necessary land studies and adapt conservation practices to different land types.

In Poland, a level or gently undulating and well-watered country, surveys revealed that soil erosion was reaching serious proportions in loess soils, with formation of gullies and annual losses in the humus strata of the soil of lands used for crop production. Demonstration areas, established in the vicinity of Lublin, displayed contour strip cropping, waterways strengthened by a fascine fence and terraces formed by using the rotary plow with ridges planted to grasses. Several excellent publications on soil conservation methods were issued in Poland.

In Spain a Soil Conservation law was passed and an agency organized in the Ministerio de Agricultura to develop a program. Training of soil conservation technicians, surveys and practical demonstrations and information and education programs to acquaint the people with the needs and objectives of the work were launched simultaneously during the year. The secretary of agriculture of Spain visited the department of agriculture of the United States to study its soil and water conservation program for gradual adaptation in Spain.

In Greece the land improvement section of the ministry of agriculture, established in 1954, launched an over-all program including research, demonstrations and educational features similar to that of Spain. Very serious problems faced both countries because of large areas of severely eroded land.

Scientists of the department of soils, Agrochemical institute, Budapest, Hung., reported results of experiments and investigations to determine the effects of soil erosion on nutrients in different soils, with special reference to the root-zone horizon. Brown forest soil, steppe soil, Rendzina soil, clay soil and alluvial sand were studied. Under identical topographic and climatic conditions, the greatest losses in organic substances and total nitrogen are suffered by Hungarian steppe soils. The brown forest soils, especially the B horizon, were found to be most resistant to water erosion. In all instances, the changes in nutrient content caused by erosion manifested themselves in crop yields and the general development of vegetation. Plans were made to adapt crops and legume-grass pasture and hay production to farmland areas to increase humus content, prevent further erosion and leaching and increase field yields.

Mediterranean Areas.—The most pressing problems in North African and Asian countries bordering the Mediterranean sea were pointed out as follows by groups studying these areas: needed legislation to launch and support over-all soil and water conservation programs; immediate steps to protect good lands and forests; and afforestation on denuded hills. In Libya tree planting was started during the year, with demonstration plots to be used as nurseries to produce planting materials for reforestation and dune fixation. Work had been started to plant sand dunes to heavy growing grasses on a grid system with trees in the centre. The object was to reclaim dunelands for wheat growing.

Desert control measures were considered of paramount importance in these countries. Goat grazing control laws were passed in both Jordan and Lebanon. Water spreading was introduced in the Jordan desert, with the object of making use of cloudburst runoff. Two crops of hay a season, one ton per acre, were realized from use of this method.

Preliminary studies showed a serious water conservation problem in Egypt. It was determined that the country loses yearly in flood season, as drainage water and in the Sudd region, enough water to cultivate 10,000,000 ac. In Morocco, where outstanding vegetation studies had been completed, a start was made under the Morocco Forest fund to plant 14,900 ac. to fast-growing arid-land trees such as acacia and eucalyptus in combination with native cork oak, pines, junipers and cedars.

New Zealand.—The "aerial farming" device to control erosion, improve exhausted soils and deteriorating pastures in the hill country was proving successful. In five years 500,000 tons of phosphate, 1,000,000 lb. of clover and grass seed, 13,000,000 lb. of rodent poison and 1,000,000 lb. of fencing and supply materials had been dropped from aeroplanes for use by hill farmers. Top-dressing and oversowing of pastures from the air had doubled carrying capacity and controlled erosion in all grazing areas where controlled grazing was practised. Land capability surveys and conservation farm planning, as used in the United States, had been adopted by the New Zealand Soil Conservation and Rivers Control council for use in the 14 soil conservation reserves, all the demonstration and experimental farms and also in the 8 large catchment districts.

Australia.—A policy for protection of costly flood control dams and reservoirs was developed in New South Wales. The lands draining directly into reservoirs are placed under management of the state's soil conservation service, and this agency is responsible for control of erosion and siltation. Some of the practices essential to protection of such areas are revegetation of all land, fencing with rabbitproof fence and rabbit eradication, mechanical control works including stock-water ponds, silt traps, gully control structures, control of noxious weeds and provision and maintenance of access roads.

Large per acre yield increases were reported in New South Wales as the direct result of conservation farming.

Canada.—An excellent conservation program had been developed to protect the land and water resources of Ontario. Nineteen conservation authorities, based on watershed limits, had been organized and their land, water and vegetation resources surveyed in detail. Work of applying conservation plans had begun in all authorities which included 11,976 sq.mi. and 287 municipalities.

South America.—In Argentina progress during the year included development of a conservation plan for the central pampas, where erosion and soil depletion had reached serious proportions. Work was started to establish 2,470,000 ac. of shelter belts to combat wind erosion.

Soil and land capability surveys covering ten large areas had been completed and findings made available for conservation purposes.

In Peru, in the region of Cuzco, some old Inca terraces which had been overgrown with vegetation were being cleared and brought into use. Also, in the same region, an interesting high-altitude cropping system which had been developed locally over a period of years was proving successful; contour bands of valuable eucalyptus trees were planted and cultivated for maximum production, with strips of high-producing maize and barley between and below the trees.

These plantings were at altitudes of 11,000 ft. to 12,500 ft., and were of considerable interest to conservationists working in eroded Andean areas.

In Venezuela the department of soils of the ministry of agriculture had covered 2,965,200 ac. in its soil survey and land capability program. Both new lands and land long in farms were included in these land studies. At the same time findings of important experiments to determine soil absorption changes resulting from loss of organic matter from tropical soils were reported.

The results showed absorption decreases of 30% in soils low in organic matter.

(See also DAMS; IRRIGATION.)

(DD. A. W.)

Solar System: see ASTRONOMY.

Solomon Islands: see PACIFIC ISLANDS, BRITISH; TRUST TERRITORIES.

Somalia. This Italian trust territory in East Africa is bounded southeast by the Indian ocean, west by Kenya and northwest by Somaliland protectorate and Ethiopia. Area: 198,275 sq.mi. Pop. (1954 est.): 1,269,000, including 30,000 Arabs, 1,000 Indians and 5,000 Italians. Chief Somali tribal groups: Darot, Hawiya, Rahanuin, Dighil, Dirr and Tunni, nomadic or seminomadic pastoralists. Religion: Sunni (Shafi) Moslem. Capital, Mogadishu, pop. (1952 est.) 50,000. Administrator in 1955, Enrico Martino.

History.—With the granting on Oct. 12, 1954, of a national flag to Somalia, the Italian administration underlined the considerable progress the country had made during the first five years of the trusteeship. By 1960 young Somalis were to be prepared to take over the reins of government now held by Italians. Although the latter had serious doubts about the country's ability to "go it alone" economically, they credited the young Somalis with great will and ability to pick up the essentials of government. About 70 Somalis, ranging in age from 17 to 30, were undergoing a three-year course at a special school of political administration. In 1955 Somalia had a total school population of more than 23,000 as compared with 3,000 in 1949.

Total civilian expenditure for 1955 was estimated at 67,632,000 somali and total revenue at 31,800,000 somali, the deficit being covered by direct grant from Italy and the subsidized market for bananas, Somalia's principal export, also provided by Italy. (See also TRUST TERRITORIES.)

Education.—Schools (1954-55): primary (including nursery and adult) 232, pupils 23,346, teachers 420; secondary (including 1 teachers' training school with 37 students; other vocational in parentheses): 23 (13), pupils 1,328 (575), teachers 119 (65, excluding Italian commercial school); 1 institute of legal, economic and social studies, students 19 (of which 14 Somalis), 1 professor.

Finance.—Monetary unit: somalo (=14 cents U.S.). Budget (July 1953-Dec. 1954, actual; 1955 est. in parentheses): revenue 132,896,177 somali, including 81,703,000 somali grant-in-aid from Italy (87,232,000 somali, including 55,432,000 somali grant-in-aid from Italy); expenditure 132,207,031 somali (87,232,000 somali).

Foreign Trade.—(1954) Imports 81,893,400 somali; exports 62,252,000 somali (bananas 43,586,700 somali; hides and skins 6,118,000 somali; cotton 2,284,500 somali).

Somaliland, British: see BRITISH EAST AFRICA.

Somaliland, French. This overseas territory of the French union in the Gulf of Aden is bounded north, northwest and southwest by Ethiopia and southeast by the Somaliland Protectorate. Area: 8,494 sq.mi. Pop. (1952 est.): 61,625, including 27,360 Somalis, 25,202 Danakils, 6,007 Arabs, 2,357 Europeans; (1954 est.) 63,000. Capital, Jibuti, pop. (1953 est.) 27,723. Governor in 1955, René Petitbon.

History.—The governor made two visits in the course of 1955: one, in January, to the emperor of Ethiopia; the other, in February, to the imam of Yemen. Railway and harbour rates were lowered, to facilitate competition with the Assab route, which was attracting Ethiopian traffic. (HU. DE.)

Education.—Schools, 1953: primary 14, pupils 1,501; secondary (including teacher training) 4, pupils 88; vocational 5, pupils 196.

Foreign Trade.—(1954) Monetary unit: Jibouti franc=1.64 metropolitan francs. In 1955, U.S. \$1=350 metropolitan francs. Imports 2,231,000,000 Jibouti fr., including 764,000,000 Jibouti fr. from France; exports 2,653,000,000 Jibouti fr., including 2,475,000,000 Jibouti fr. for ships' provisions.

South Africa, British: see BRITISH SOUTH AFRICAN TERRITORIES.

South Africa, The Union of. A realm of the Commonwealth of Nations, the Union of South Africa extends from the southernmost point of the African continent northward to the Limpopo, Molopo and western Orange rivers. The mandated territory of South-West Africa is administered by South Africa. (See also TRUST TER-

Province	Area (sq. mi.)	Population (1951 census)*	Capital (total and European pop., 1951 census)†
Cape of Good Hope	278,839‡	4,426,726	Capetown (571,638; 242,493)
Natal	33,578	2,415,318	Pietermaritzburg (74,399; 31,512)
Orange Free State	49,866	1,016,570	Bloemfontein (109,130; 47,856)
Transvaal	110,450	4,809,145	Pretoria (283,148; 149,614)
Total, Union of South Africa	472,733§	12,667,759||	
South-West Africa	317,725	414,601¶	Windhoek (20,490; 10,246)

*Revised figures. †Revised preliminary figures. ‡Including Walvis Bay (374 sq. mi.) an enclave of Cape province administered with South-West Africa. §Excluding Marion Island (about 85 sq. mi.) and Prince Edward Island (about 18 sq. mi.), subantarctic dependencies. ¶European 20.9%, African 67.5%, Asian 2.9% (mainly in Natal), Coloured (mixed) 8.7% (mainly in Cape). ¶Including 48,588 Europeans.

RITORIES.)

Total pop. (1954 est.): Union, 13,393,000; South-West Africa 447,000. Official languages (1946 census, Europeans only): 69% spoke Afrikaans and English, 17% English only, 14% Afrikaans only; Africans, generally Bantu (Xhosa, Zulu, Swazi, etc.).

Adherence to the most important religious groups at the 1946 census was as follows:

	European (%)	Coloured (%)	African (%)
Dutch Reformed	53.8	31.5	3.4
Anglican	15.8	20.0	7.1
Methodist	7.6	9.7	12.9
Roman Catholic	5.0	6.0	4.3

Also: Europeans 4.4% Jewish; Coloureds 10.8% Congregational; Africans 9.7% members of native separatist churches, 5% Lutherans; Asians 63.2% Hindu, 21.5% Moslem. Of non-Europeans, 51% were Christian.

Capetown is the seat of the legislature, Pretoria that of the government and Bloemfontein that of the supreme court. Other principal towns (total pop. and European pop., 1951 census): Johannesburg (880,014; 359,539); Durban (475,026; 150,826); Port Elizabeth (188,617; 78,529); Germiston (149,982; 65,978); Springs (119,351; 31,513); East London (90,978; 43,807). Queen, Elizabeth II. Governor general in 1955, Ernest George Jansen. Prime minister, J. G. Strijdom.

History.—Of the members of J. G. Strijdom's cabinet, constituted in Dec. 1954, the minister of posts and telegraphs and minister of social welfare, J. J. Serfontein, and the minister of labour, Senator J. de Klerk, were newcomers. The governor general, E. G. Jansen, was reappointed for a further five-year period of office.

Legislation.—Vigorous controversy marked the passage of the Senate act introduced late in the parliamentary session. The act enlarged the senate from 48 to 89 members. By abolishing the previous system of proportional representation and by increasing the number of senators nominated by the government, the act ensured that in the reconstituted senate, the present government would have 77 members and the opposition only 8 (the latter all elected from Natal). The purpose of this was to assure the government of a two-thirds majority when both houses of parliament sat together to remove the Cape coloured voters from the common electoral roll, a step anticipated in 1956. This measure was passed in the face of strong opposition from the English-speaking minority who saw in it a breach of the constitution. Even some Afrikaners, led by a small group on the staff of Pretoria university, opposed the bill. They were supported by protests, widely signed, from members of the staff in all four English-speaking universities. A women's movement and a new body, the covenant, were formed to continue public protests in defense of the constitution. The government claimed that as the necessity of altering the coloured franchise had been endorsed by the electorate the legal means (as required by the supreme court) to effect this aim had to be devised. A sharp difference of opinion developed within the United party over the question whether, if and when it was returned to power, the party would restore the coloured voters to the common roll. Holding that the party was pledged to do so, Bernard Friedman, a liberal member, resigned his seat and contested the ensuing by-election in the Hillbrow division of Johannesburg as an independent, but he was defeated.

Another measure that aroused controversy was the bill to enlarge the appellate division of the supreme court from five to eleven judges. The bill also provided that the full court must sit in all future cases in which the validity of an act of parliament was challenged. The Johannesburg bar attacked the bill and there was criticism within the legal profession of the government's nominations to the enlarged court. Other important measures passed during the session included: a bill making it a criminal offense to leave the Union without a passport or (in the case of holders of non-Union passports) an official permit; a bill to extend the powers of the police; bills to tighten the laws relating to racial zoning in group areas and to the residence of African servants in blocks of urban flats.

Economic Position.—In March the new minister of finance, Eric Louw, introduced his first budget. The year 1954–55 yielded a surplus of £10,000,000, thanks to inland revenue producing £6,200,000 more than had been expected. This surplus was transferred to loan account. Expenditure in the coming year was estimated at nearly £240,000,000. There was a new tax of 5s. in the pound on undistributed profits of public and private companies and also a new tax on donations designed to prevent tax evasion, both subject to certain concessions. Louw continued the policy adopted by his predecessor of making provision out of current revenue for a part of the loan expenditure by taking £15,000,000 from revenue as a contribution to the loan account. The Union's satisfactory financial position was confirmed in August when the governor of the South African reserve bank, M. H. de Kock, made his annual survey. The balance of payments showed an improvement over recent years. The Union's reserves had increased from £75,000,000 at the end of 1953 to £88,400,000 at the end of June 1955. Of the latter amount, gold accounted for £75,000,000 and dollars for £13,000,000. The special arrangement for the sale of gold to the United Kingdom lapsed by mutual agreement because the United Kingdom was again in a position to acquire the major portion of South African gold in open competition with the rest of the world. The total national income of the Union rose by a further £95,000,000 to £1,521,000,000, i.e., by 6.5% more than the previous year, while the average wholesale and retail price indexes rose by only about 1.4%. The bank rate was raised from 4% to 4½%. The phenomenal rate of economic expansion that the country had experienced in the past eight years was bound to decline, notably in the tempo of private development. For that reason the need to restrain new development had become less urgent. The shortage of labour was still felt but it was met to some extent by intensive recruiting both within and outside the Union. A determined effort to meet the mounting transport requirements of the country was made by the railways and harbours administration which undertook an extensive program of capital expenditure reaching the record total of £60,000,000. Second only to gold as an export commodity, 295,000,000 lb. of wool were sold for £60,000,000. A record total of 6,350,000 cases of oranges—three-quarters of the whole crop—were exported. The maize crop was so large as to cause anxiety about the disposal of the surplus.

Race Relations.—In this field the position was quieter than in recent years. The application of the Bantu education act, providing for government control of former mission schools and institutions, was resisted. On the Witwatersrand an organized boycott of the African schools was effective in some centres. It was broken when the minister of native affairs decided to expel all children whose parents kept them away, but later this decision was modified on certain conditions. The University College of Fort Hare was closed for two months because of the alleged recalcitrant behaviour of the African students. A commission of inquiry reported the situation as serious, finding faults in both students and the authorities. Contrary to general

expectation, the removal of 60,000 Africans from the western urban areas of Johannesburg was, in its first stages, completed without trouble in the presence of large police and defense forces. A new African township at Meadowlands was opened to accommodate those removed from the western areas. At Klip-town near Johannesburg in June a "congress of the people," having aroused widespread interest among non-Europeans, was attended by 3,000 delegates who adopted a "charter of freedom" setting forth a series of far-reaching demands for racial equality and other fundamental economic and social changes in South African society. The police raided the gathering at its conclusion.

International Affairs.—An exchange of letters between the Union government and the United Kingdom government announced the transfer of the naval base at Simonstown, near Capetown, by Great Britain to South Africa, not later than March 31, 1957. It was agreed that the British navy would continue to have facilities at the base. The Union government undertook to maintain the base in a state of efficiency not inferior to that existing at the time of transfer, and to pay to the United Kingdom £750,000 for the property. South Africa also agreed not to require U.K. admiralty personnel on loan to learn the Afrikaans language. A further condition stated that there would be no racial discrimination in employment at the base. The pact was welcomed in both countries by all political parties. The Union government decided to expand the South African navy in the next eight years. Six frigates and ten coastal minesweepers would be purchased. An extensive radar network was also planned at a cost of more than £5,000,000. In announcing the Simonstown agreement, the prime minister declared that in the event of war between Communist countries and the western powers, South Africa "will have no choice but will simply be dragged into such a war by circumstances, whether we want to or not. Alone we could not protect our long coastline or the points of entry into our country. For this reason we must seek co-operation and contact with other countries who share our interest in Africa."

The United Nations again discussed the treatment of Indians in South Africa and also the administration of the former mandated territory of South-West Africa, but the Union declined to participate in further discussion on these subjects.

(See also UNITED NATIONS.)

(Ju. L.)

Education.—European schools under provincial control (1955): primary 2,170, intermediate 18, high schools 141, secondary and all age schools 344; pupils (1950) 1,514,847; teachers (1950) 47,002. Vocational: European state vocational schools (1955) 42, pupils 58,500; technical institutes 11; agricultural colleges 5. Teacher training colleges (European, 1955) 13, (non-European, 1948) 55; students (all races, 1950) 7,294. Non-European schools (1953) 5,346, pupils (1955) 900,000. Private schools (all levels, 1950): European 284, non-European 672. Universities (1955) 9, students (including external) 24,703. Nonwhite students 1,068. University College of Fort Hare (for Bantu), 374 students.

Finance and Banking.—Monetary unit: South African pound at par with the pound sterling and with an exchange rate of £(S.A.)0.359 to the U.S. dollar. Budget (1955-56 est.): revenue £(S.A.)259,100,000; expenditure £(S.A.)259,000,000. Total public debt (March 1954) £(S.A.)884,900,000, of which £(S.A.)61,700,000 external. Currency circulation (June 1954) £(S.A.)94,000,000, (Jan. 1955) £(S.A.)95,600,000. Bank deposits (June 1954) £(S.A.)318,100,000, (Oct. 1954) £(S.A.)338,900,000. Gold and foreign exchange (Aug. 1954) U.S. \$325,000,000, (May 1955) U.S. \$345,000,000.

Foreign Trade.—(1954) Imports £(S.A.)443,300,000; exports £(S.A.)317,700,000. Main sources of imports: U.K. 34%; U.S. and Canada 23%; continental European Payments union countries 17%. Main destinations of exports: U.K. 27%; other sterling area 23%; France 6%; other continental E.P.U. 19%; U.S. and Canada 6%. Main exports: wool 22%; diamonds (1953) 4%.

Transport and Communications.—Roads (1955): 316,640 km. Motor vehicles in use (1953): cars 538,000; commercial vehicles 145,000. Railways (1954): 21,600 km.; freight, ton-km. 22,960,000,000. Shipping: merchant vessels of 100 gross tons and over (July 1954): 149; total tonnage 129,000. Air transport (1954): passenger-km. 329,786,000; cargo, ton-km. 8,139,000; km. flown (1953) 10,514,000. Telephones (March 1954): 606,152. Radio receiving sets (1953): 665,000.

Agriculture.—(On farms and estates only, except as indicated.) Main crops (metric tons, 1954): wheat (total crop) 535,000; maize (corn)

3,315,000; barley 61,000; sorghum (total crop) 145,000; oranges and tangerines 279,000; grapefruit 14,000; lemons 3,000; (1953): potatoes (total crop) 184,000; groundnuts (peanuts) 197,000; sunflower seed 46,000; tobacco 18,200; (1952): dry beans 40,000; raisins 10,000; grapes 456,000. Livestock (Sept. 1953): cattle 11,655,000; sheep 35,992,000; pigs 537,000; poultry 15,725,000; horses (Sept. 1951) 676,000; goats (1951) 5,400,000. Production (metric tons, 1954): sugar, raw value 752,000; wool 63,000; meat 374,400 of which beef and veal 282,000; butter 37,000; cheese 12,240; milk (1953) 2,019,000; wine (1953) 288,000. Fisheries (catch landed, 1953): 374,000 metric tons.

Industry.—Industrial establishments (1951-52) 15,564, employing 254,877 Europeans and 544,105 non-Europeans. Index of employment (1954: 1948=100) 125, (1953) 123. Fuel and power (1954): coal 29,317,000 metric tons; electricity 14,634,000,000 kw.hr. Raw materials (metric tons, 1954): iron ore (60%-65% metal content) 1,893,000; pig iron 1,196,700; crude steel 1,431,000; copper (smelter) 40,980; (1953): asbestos 85,260; gold 11,940,616 fine oz.; diamonds 2,717,600 metric carats; ores (metal content, 1953): chrome 323,800; tungsten 231; antimony 2,730; manganese 332. Cement (1954) 2,162,100. New dwellings completed in 18 principal urban areas (1954) 11,868 metric tons.

South America: see ARGENTINA; BOLIVIA; BRAZIL; BRITISH GUIANA; CHILE; COLOMBIA; ECUADOR; FRENCH GUIANA; PARAGUAY; PERU; SURINAM; URUGUAY; VENEZUELA.

South Carolina. A south Atlantic state of the United States, eighth of the original 13 to ratify the constitution, South Carolina is known as the "Palmetto state." Area: 31,055 sq.mi. (750 sq.mi. inland water). Population: (July 1, 1955, est.) 2,226,000; (1950 census) 2,117,027; 61.1% white, 38.9% nonwhite (almost entirely Negro), 63.3% rural. Capital: Columbia, pop. (1950) 86,914. Chief cities (with 1950 population): Charleston, 70,174; Greenville, 58,161; Spartanburg, 36,795; Rock Hill, 24,502; Florence, 22,513; Sumter, 20,185.

History.—How to maintain racial segregation in public schools in spite of the 1954 supreme court declaration of unconstitutionality continued in 1955 to be the problem of greatest public concern. As the state anxiously awaited the result of further court hearings on how and when to desegregate, the legislature adopted with slight dissent the proposals of the Gressette committee previously established to suggest legal methods of circumventing the court. These included repeal of the compulsory attendance law, the law regulating school terms, and a law which gave a taxpayer the right to send his child to any school in any county where he paid taxes. Authority of local boards of trustees was increased by giving them the exclusive authority to operate or not operate schools, power to lease school property, and the right to transfer pupils from one school to another. It was also decreed that appropriations should cease for any school when any pupil was transferred to or from that school pursuant to a court order.

Subsequent to the May 31 directive of the supreme court that lower federal courts proceed with reasonable speed to enforce desegregation, a three-judge court ordered the trustees involved in the original Clarendon county case to proceed "with all convenient speed" but no time limit was set, and the trustees remained determined to close the school if necessary to prevent biracial attendance. Meanwhile there were organized in various communities pro-segregation "Citizens Councils" which in some cases exerted effective economic pressures on Negroes who had signed desegregation petitions or otherwise identified themselves with the movement. At the end of the year segregation continued in all public schools.

Constitutional amendments legalizing increased travel allowance for legislators and removing from the state oath of office the pledge against duelling received final approval. Significant legislation included a law for suspension of a motor vehicle driver's licence upon the accumulation of 12 demerit points assessed for traffic law violations, a law co-ordinating the state retirement system with federal old-age and survivors insurance, and an act requiring maximum penalties for third offense felonies. Investigations were ordered for the office of the state

insurance commissioner and for the state-owned Santee-Cooper hydroelectric power company. A Fiscal Survey commission was created to study the increasingly urgent problem of state finance.

Chief state officers in 1955 were: George B. Timmerman, Jr., governor; Ernest F. Hollings, lieutenant governor; O. Frank Thornton, secretary of state; Jeff B. Bates, treasurer; T. C. Callison, attorney general; Eldridge C. Rhodes, comptroller general; Jesse T. Anderson, superintendent of education; D. Gordon Baker, chief justice.

Education.—Continued progress was made in the sales tax supported program of 1951 to improve and equalize white and Negro school facilities. The legislature raised the school construction debt limit from \$100,000,000 to \$137,500,000 and by Oct. 18 the Educational Finance commission had approved (since the inauguration of the program) projects costing \$148,780,887 of which about 55% was for Negro schools. For the year ended June 30 current expenditures for public schools totalled \$79,747,890. Enrolment in white elementary schools was 213,932; in Negro elementary schools, 184,206; in white high schools, 99,000; in Negro high schools, 55,811. Elementary teachers numbered 6,858 white and 5,192 Negro; high school teachers, 4,225 white and 1,794 Negro.

Social Insurance and Assistance, Public Welfare and Related Programs.—In the year ended June 30, 1955, public expenditures for relief of needy persons amounted to \$24,941,376 of which \$18,221,676 were federal funds. The total of 96,403 persons receiving assistance included 48,996 aged, 2,168 blind, 34,165 dependent children, 9,011 totally disabled and 2,063 needing general assistance. The average weekly number of persons receiving unemployment compensation was 13,185 and the amount paid in benefits during the year was \$12,328,026. On June 30 the funds available for unemployment compensation totalled \$68,784,756. Patients in the state hospital for mentally diseased, June 30, numbered 6,038; in the school for feeble-minded, 1,645. On the same date there were 1,884 in the state penitentiary, 213 in the Negro boys' reformatory, 267 in the white boys' reformatory, 60 in the Negro girls' reformatory, 96 in the white girls' reformatory.

Communications.—Highway mileage in the state system on June 30 was 24,633 of which 18,432 was paved; mileage of rural county roads was 25,843, largely unpaved. State highway department receipts for the fiscal year were \$50,384,895 and expenditures were \$50,122,417. Railroad mileage was 3,343. For the year ended June 30 the value of exports through the south customs district was \$122,500,000; of imports, \$64,200,000.

Banking and Finance.—On June 30, 1955, there were 27 national banks with 51 branches, 112 state banks with 23 branches, 14 cash depositories, and 1 military facility. Capital, resources and deposits were, respectively: national, \$35,463,000, \$526,570,000, \$487,032,000; state, \$30,968,391, \$323,549,938, \$291,399,861. Resources of the 37 state building and loan associations were \$88,342,767; of 38 federal associations, \$251,884,743. During the year ended June 30, 1955, the state operated under a general appropriations and surplus spending budget of \$171,530,620 and showed a general fund deficit at the end of the year of \$1,801,883. Total state receipts and expenditures were, respectively, \$301,276,346 and \$303,960,556. For the year begun July 1 the general appropriations act totalled \$171,570,517. The June 30 funded debt was \$146,298,792 of which \$99,198,000 was for public schools and colleges, and \$45,482,000 for highways. Federal internal revenue collected amounted to \$242,192,063; customs collections, \$5,646,830.

Table I.—Principal Crops of South Carolina

	Indicated 1955	1954	Average, 1944-53
Corn, bu.	30,940,000	11,718,000	25,972,000
Wheat, bu.	3,059,000	3,081,000	3,040,000
Oats, bu.	22,456,000	23,846,000	17,184,000
Hay, tons	404,000	262,000	412,000
Peanuts, lb.	10,725,000	5,700,000	14,876,000
Soybeans, bu.	2,250,000	910,000	589,000
Irish potatoes, bu.	1,102,000	1,595,000	1,979,000
Sweet potatoes, bu.	2,400,000	1,495,000	4,145,000
Tobacco, lb.	195,880,000	148,050,000	154,874,000
Cotton, bales	555,000	501,000	692,000
Pecans, lb.	650,000	2,800,000	3,357,000
Peaches, bu. . . . .	...	3,350,000	3,592,000

Source: U.S. Department of Agriculture.

Agriculture.—The official Oct. 24 estimate of total 1955 value of field and commercial truck crops was \$322,189,000, about 22% more than in 1954 when value was down (because of drought) to \$264,350,000 from 3,784,000 harvested acres. The 1955 peach crop was destroyed by a late March freeze. Cash farm income in 1954 was \$321,936,000 distributed as follows: crops, 227,894,000; livestock and products, \$91,261,000; government payments, \$2,781,000.

Manufactures.—The value of products manufactured in 2,003 establish-

ments during the year ended June 30, 1955, was \$2,410,165,766, an increase of \$140,160,332 over the previous year. Total manufacturing capital was \$1,227,541,810, an increase of \$79,288,861. Employees numbered 188,999, an increase of 2,564. Wages paid industrial workers totalled \$494,201,499. (C. E. CN.)

Table III.—Mineral Production of South Carolina

Mineral	(In short tons)		1953	
	Quantity	Value	Quantity	Value
Clays	947,000	\$4,675,000	964,000	\$4,802,000
Sand and gravel	1,048,000	892,000	2,976,000	2,564,000
Stone	2,915,000	3,881,000	2,914,000	3,976,000
Other minerals . . . . .	...	5,083,000	...	6,429,000
Total . . . . .	...	\$14,531,000	...	\$17,771,000

Mineral Production.—Table III shows the tonnage and value of those mineral commodities produced in South Carolina in 1952 and 1953 (preliminary) whose value exceeded \$100,000. In 1953, South Carolina was first among the states in output of kyanite, second in vermiculite and ranked 43rd in the value of its mineral output, with 0.12% of the U.S. total.

South Dakota. A north central state of the United States, admitted to the union in 1889. Descriptive title: "Land of Infinite Variety." Area: 77,047 sq.mi., of which 511 sq.mi. are water. Population: (est. July 1, 1954) 659,000; (1950 census) 652,740, one-third urban, two-thirds rural. In 1950 the state had 23,334 Indians and 727 Negroes. Capital: Pierre, population (1950) 5,715. Principal cities: Sioux Falls, 52,696; Rapid City, 25,310; and Aberdeen, 21,051.

History.—The full output of a hard-working legislature which met for a sixty-day session in early spring was approved by Governor Joe Foss. Despite a record budget, the only new tax enacted was an additional 1% sales tax to finance a \$7,500,000 bonus for Korean veterans. Some governmental reorganization, particularly of state boards and commissions, was provided for in legislation recommended by a "Little Hoover Committee."

Most hotly debated of all legislation was a recodification of state school laws, fostering reorganization of school districts, and the establishment of directors of assessment on the county level instead of the township level. Opponents of both measures submitted petitions which would have suspended application of the laws pending referral to the voters in 1956. The petitions were, however, ruled invalid in the district court as improperly drawn.

By repeal of a 1936 law the legislature sought to halt further expansion of the fifteen Hutterite colonies in the state. Action was precipitated by Hutterite purchase of 6,080 ac. in the James river valley for the establishment of additional communal settlements, necessitated by a heavy birth rate. Sentiment against the proposed colonies was largely local and based upon a feeling that the existence of such communities detracted from towns in the area and that members did not contribute their proportionate share of taxes. Hutterites acted in violation of the statute in August to invite court review of the law.

Starting July 1 all persons paid from public funds were required to sign a loyalty oath.

Uranium activity was stepped up considerably in 1955. A new carnotite ore body was discovered in the Black Hills, where construction of an ore processing plant was begun June 24. Extensive deposits of lignite in the northwestern corner of the state, long known to be uraniferous, attracted prospectors who staked claims over the entire area. Whether these ores were of current commercial value remained in question. In September the Atomic Energy commission announced that prospects for a satisfactory metallurgical process were good.

Along the Missouri river work continued on the Oahe dam, largest of the main stem dams planned by the federal government, and on Gavins Point dam, the smallest. The river was closed off at the Gavins Point site on July 31. Congressional appropriations made in 1955 were designed to enable the corps of engineers to install the last two generators at Ft. Randall and

Table II.—Value of Principal Industrial Products of South Carolina

Industry	Year ending June 30, 1955	Year ending June 30, 1954
Textiles (including knitting)	\$1,604,691,784	\$1,493,400,618
Lumber products (barrels, boxes, baskets, veneering, paper and pulp, furniture, woodwork)	187,120,267	186,630,853
Clothing	123,761,684	113,567,846
Electricity	88,350,622	81,859,230
Fertilizers	35,388,557	36,663,609
Textile supplies	33,487,363	35,129,840

Source: South Carolina Department of Labor.

to bring Oahe to 18% and Gavins Point to 85% completion during the year ending July 1, 1956.

Elective state officers of South Dakota in 1955 were: governor, Joe Foss; lieutenant governor, Roy Houck; attorney general, Phil Saunders; secretary of state, Geraldine Ostroot; state treasurer, Ed Elkins; state auditor, Lawrence Mayes.

Education.—There were 271 public high schools maintained in South Dakota in the 1954-55 school year, with 2,028 teachers and 31,393 students. Public elementary enrollment was 100,784 students, with 5,451 teachers. In the 1952-53 school year 351 districts out of 3,400 provided educational facilities for two-thirds of all public grade school children and practically all public high school pupils. Schools were not operated in 844 rural districts. Total expenditures for public education (1954-55) were \$39,134,679. Harold S. Freeman was superintendent of public instruction.

Social Insurance and Assistance, Public Welfare and Related Programs.—Total disbursements by the state for all penal and charitable purposes during the fiscal year ended June 30, 1955, were \$3,214,700; total for social services, \$9,930,633. The department of public welfare distributed \$5,862,893 in old-age assistance, \$2,768,042 as aid to dependent children, \$348,438 for disabled, and \$104,395 for the needs of blind persons. Average payment (May, 1955) for 10,814 aged was \$44.74; for 9,380 recipients of aid to dependent children, \$24.76; for 675 disabled, \$46.44; for 202 blind, \$43.68. Unemployment benefits for the fiscal year were \$1,384,338 to a total of 5,844 individuals; there were 56 new veterans' claims; total payments to all veterans were \$492,644. The state maintained one prison and one training school; expenditures during the fiscal year amounted to \$815,002. There were 423 inmates at the prison on June 30, 1955.

Communications.—In the year ended June 30, 1955, the state maintained a highway system of 6,470 mi.; county highway systems totalled 20,394 mi., other rural roads 61,356 mi. Total disbursements from the state highway fund during the year were \$28,089,417, the largest single item in the budget. There were 4,619 mi. of railroad in operation at the end of 1954 and a total of 170,975 telephones.

Banking and Finance.—There were 136 state banks in operation as of June 30, 1955, with resources of \$295,025,720 and total deposits of \$270,887,851; 35 national banks with resources of \$316,435,000 and deposits of \$294,790,000. Eight state building and loan associations reported total assets of \$14,231,594; five federal savings and loan associations had total assets of \$17,773,000.

Total receipts of state agencies for the year ended June 30, 1955, \$79,472,099; total disbursements, \$90,899,281, including retirement of the last \$9,000,000 of rural credit bonds dating from the 1920s. This left the state free of all bonded indebtedness.

Table I.—Principal Crops of South Dakota

Crop	Indicated 1955	1954	Average, 1944-53
Corn, bu.	83,140,000	115,913,000	108,013,000
Wheat, bu.	28,325,000	27,008,000	43,157,000
Oats, bu.	105,380,000	113,772,000	98,658,000
Barley, bu.	9,386,000	9,320,000	22,439,000
Rye, bu.	3,718,000	2,460,000	4,202,000
Flaxseed, bu.	5,670,000	5,598,000	4,833,000
Potatoes, bu.	1,338,000	1,680,000	2,139,000
Soybeans, bu.	3,156,000	3,114,000	5,820,000
Hay, tons	4,100,000	4,878,000	3,617,000

Source: U.S. Department of Agriculture.

Agriculture.—Dry weather during July and August 1955 sharply reduced the corn and soybean crop, and livestock prices ran 15% below 1954.

In 1954 the total cash farm income, including government payments, was \$537,000,000. Roughly two thirds of this amount was derived from livestock. Government payments for soil conservation and sugar beets amounted to \$5,700,000. A farm census taken in 1954 revealed that there were 4,000 fewer farms than in 1950.

Manufactures.—Employees engaged in manufacturing numbered 11,900 in June 1955, with average weekly earnings of \$68.43; employees in nonagricultural establishments, 125,800; value added by manufacture in 1953, \$80,703,000. Leading industries: food and kindred products, printing and publishing. (Ev. W. S.)

Mineral Production.—Table II shows the tonnage and value of those mineral commodities produced in South Dakota in 1952 and 1953 (pre-

Table II.—Mineral Production of South Dakota

(In short tons, except as noted)

Mineral	Quantity 1952	Value 1952	Quantity 1953	Value 1953
Clays	293,000	\$ 2,641,000	331,000	\$ 2,826,000
Feldspar	45,000	221,000	57,000	321,000
Gold (oz.)	483,000	16,889,000	534,000	18,725,000
Sand and gravel	5,846,000	2,478,000	5,402,000	2,828,000
Silver (oz.)	132,000	120,000	139,000	125,000
Stone	1,671,000	4,807,000	1,189,000	4,996,000
Other minerals . . . . .	...	3,299,000	...	4,075,000
Total		\$30,455,000		\$33,896,000

liminary) whose value exceeded \$100,000. In 1953 South Dakota was first among the states in production of gold, second in feldspar, and fourth in mica; and ranked 36th in the value of its mineral output, with 0.24% of the U.S. total.

Southeast Asia Treaty Organization. Signed on Sept. 8, 1954.

at Manila, Phil., the Southeast Asia Defense treaty provided the legal and political foundation for a new barrier to communist aggression in southeast Asia. The treaty established nothing more than a foundation, however, and it was not until 1955 that the bones of the legal agreement were clothed with the flesh and blood of specific military arrangements.

The Southeast Asia Treaty organization (SEATO) came into effect at a conference at Bangkok, Thai., Feb. 23-25, 1955. It had taken nearly six months to get the Manila pact ratified, and the proclamation that the treaty was in force had come only on Feb. 19. No further changes had occurred in the original line-up of powers. The three Asian signatories (Pakistan, the Philippines and Thailand), the two south Pacific members (Australia and New Zealand) and the three global powers (United Kingdom, France and the United States) had stayed in despite demands from the communists and neutralists that some or all of them withdraw. No nations had been added despite other demands that Nationalist China, the Republic of Korea, Japan or other nations be included.

The purpose of the Bangkok conference was overstated by a great many sources. Some official and press commentators expected the Manila pact to result in a counterpart to the North Atlantic Treaty organization (NATO), with an elaborate, unified military headquarters, possibly located in Singapore. The actual organization of SEATO was quite different.

SEATO started with what the NATO organizers called "infrastructure," the practical co-ordination of the national military forces and the working-level military arrangements, before passing to a show of international command and high-level staffing.

There was evidence that the U.S. and British staff officers, both diplomatic and military, who set up SEATO were thoroughly familiar with the practical experiences of NATO and were desirous of avoiding the top-heavy features which had been necessary in Europe but which would not be required in an area possessing a wider variety of strategic possibilities. The SEATO structure was therefore very simple:

The SEATO secretariat was composed of the ambassadors of the signatories accredited to the Thai kingdom, together with a Thai foreign office official; it was located in Bangkok.

The military committees were given full freedom to meet at their own convenience and were organized at various levels, including both staff and advisory conferences.

Economic and cultural committees were given the opportunity of getting down to practical work before they became formalized in elaborate headquarters. Throughout 1955 these committees remained active. They were aware of the work of the Economic Commission for Asia and the Far East, under the United Nations structure, and sought to supplement the work of the UN instead of replacing it.

The progress in SEATO was at least partially responsible for two major developments in the neutralist Asian world and the communist world. The government and press of India remained antagonistic to SEATO throughout the year; the Indian sponsorship of the Asian-African conference at Bandung in April was construed partly as a direct or indirect attack on SEATO. A conference of the communist and communist-controlled governments at Warsaw, Pol., set up in May a Warsaw convention providing for military co-ordination against U.S. or British operations. The Warsaw pact established a counterpart to both NATO and SEATO in that a political-military organ, the Political Consultative committee, served as a clearinghouse for both strategic and diplomatic information.

From the communist point of view, self-defense against communism is invariably aggression. It was not at all surprising,

therefore, that the attitude of communist China toward SEATO remained implacably hostile throughout the year, following the tone of Chou En-lai's charge before the People's Political Consultative conference at Peking that by means of SEATO the United States was seeking to encircle China, to destroy the Korean armistice and to prepare for a new world war. This communist propaganda line wore thin as 1955 developed and was overshadowed by the more momentous developments connected with the meetings of the heads of state of the Big Four Powers at Geneva.

On the side of the democratic world, SEATO slipped into place as a valuable though unobtrusive diplomatic and strategic mechanism for maintaining a minimum of preparedness in southeast Asia. The United States possessed direct, bilateral security agreements with every other anticommunist nation in the far east (save for Indochina, where sweeping arrangements were prohibited by the Geneva settlement), including Japan, insular China and South Korea. In April John Foster Dulles, U.S. secretary of state, said that he thought it desirable to tie together this complex of treaties into a new agreement and a new organization, but throughout 1955 the separate arrangements worked well in practice. The uncertain state of world diplomacy made a further step impracticable at that time. (See also ASIAN-AFRICAN CONFERENCE; GENEVA BIG FOUR CONFERENCES OF 1955.)

(P. M. A. L.)

Southern Rhodesia: see RHODESIA AND NYASALAND, FEDERATION OF.

South-West Africa: see SOUTH AFRICA, THE UNION OF; TRUST TERRITORIES; UNITED NATIONS.

Sovereigns, Presidents and Rulers: see PRESIDENTS, SOVEREIGNS AND RULERS.

Soviet Union: see UNION OF SOVIET SOCIALIST REPUBLICS.

Soybeans. The 1955 U.S. soybean crop was indicated at a new high record 371,898,000 bu., as compared with the previous record of 342,795,000 bu. in 1954 and an average of 238,488,000 bu. for 1944-53. Acreage for harvest was increased to a record 18,397,000 ac., 8% more than 1954 and far in excess of the 11,987,000-ac. average for the previous decade. The indicated yield was 20.4 bu. per acre as compared with 20.1 bu. in 1954 and an average of 19.9 bu. per acre. As usual, Illinois with 104,190,000 bu. was the leading producer, followed by Indiana (46,508,000 bu.), Minnesota (45,532,000 bu.), Iowa (42,237,000 bu.), Missouri (34,740,000 bu.) and Ohio (31,125,000 bu.).

Support prices were reduced from \$2.22 per bushel (80% of parity) on the 1954 crop to \$2.04 per bushel (70% of parity) on the 1955 crop. Seasonal price developments were unusual on the 1954 crop; highest prices were attained during the harvest period followed by a slow, irregular decline thereafter. Prices to producers were \$2.08 per bushel in Oct. 1955, against \$2.54 per bushel a year earlier. About 17,000,000 bu. of the 1954 crop were taken over by the Commodity Credit corporation under price support operations, of which most was sold for export. Carry-over stocks were moderate. Exports amounted to a record 60,000,000 bu., with Japan and western Europe the major takers.

World production in 1955 was indicated at a record high of 763,870,000 bu. as compared with 717,295,000 bu. in 1954 and a pre-World War II (1935-39) average of 463,720,000 bu. Area utilized was 44,050,000 ac. as compared with 42,765,000 ac. in 1954 and 29,000,000 ac. in 1935-39. China and Manchuria accounted for 330,000,000 bu. of the total as against 320,000,000 bu. in 1954 and about 360,000,000 bu. annually in the years immediately prior to World War II.

(J. K. R.)

Spain. A country of southwestern Europe, Spain is bounded north by the Bay of Biscay and France, west by the Atlantic ocean and Portugal and south and east by the Mediterranean sea. Area: 194,945 sq.mi., including Balearic (1,936 sq.mi.) and Canary (2,804 sq.mi.) islands. Pop.: (1950 census) 27,976,755, including Balearic (422,089) and Canary (793,328) islands; (mid-1955 est.) 28,976,000. Language: mainly Spanish (Castilian), but Catalan, Galician and Basque are also spoken. Religion: Roman Catholic; Protestants, about 12,000. Chief towns (pop., 1953 est.): Madrid (cap.) 1,641,954; Barcelona 1,288,283; Valencia 515,917; Seville 383,900; Málaga 278,505; Zaragoza 267,952; Bilbao 229,334; Murcia 224,558; 16 towns with a population of 100,000 to 200,000. Chief of state, president of the council of ministers and commander in chief in 1955, Gen. Francisco Franco.

History.—Foreign Relations.—The year 1955 saw the continuation of the work on air and naval bases which, in accordance with the terms of the U.S.-Spanish agreement of Sept. 1953, had begun in 1954, and it was expected that the air bases of Torrejón (near Madrid) and Zaragoza would be operational by the autumn of 1956. Work also began on the new naval base at Rota near Cádiz and on the 487-mi. pipeline from there to Zaragoza, also planned to be fully functioning by the end of 1956. Naval facilities were also planned for vessels of the U.S. navy at the already existing Spanish bases at El Ferrol, Cartagena and Palma de Mallorca. During the two years following the conclusion of the agreement \$244,000,000 was allocated to military expenditure. In addition to the above expenditure, the U.S. government let it be known that \$350,000,000 would be spent on modernizing the equipment of the Spanish armed forces. A number of tanks and other war materials of U.S. manufacture arrived in Spain during the year, and it was announced that a group of U.S.-built jet fighters, with Spanish pilots and a projected strength of 230, was in process of formation.

As regards U.S. financial and economic aid to Spain, there was a disposition in Spanish official quarters to cavil at its alleged inadequacy. On this account \$85,000,000 had been allocated in 1953 and a similar sum in 1954, but with the important difference that in the latter case only \$30,000,000 could be expended on capital goods, the remaining \$55,000,000 being earmarked for the purchase of U.S. agricultural surpluses.

On Feb. 24 John Lodge presented his letters to Franco accrediting him as U.S. ambassador to the Spanish government in succession to James C. Dunn.

Spain continued to maintain normal diplomatic relations with all states of any importance with the exception of the Soviet Union, the "iron curtain" countries and communist China. An indication of the gradual improvement of Spain's international status was the submission of its candidature for membership of the United Nations, which the United States undertook to support. Anglo-Spanish commercial relations remained satisfactory, the United Kingdom retaining the position of Spain's best customer, but political relations were not altogether cordial because of the continuance, although in a rather less intensive form, of the officially instigated Spanish agitation for the return of Gibraltar. The policy of fostering good relations with the Islamic world and in particular with the Arab states was continued, the latter, together with Turkey, absorbing about two-thirds of Spain's textile exports.

Franco and the Monarchy.—The internal political situation was static. There was no change in the composition of the government and the only development of importance was the taking by Franco of the first overt steps toward the realization of his avowed intention of restoring the monarchy. For various reasons, however, he was opposed to a restoration in the person

of the present legitimist claimant to the throne, Don Juan, third son of King Alfonso XIII, and favoured instead the education in Spain of the elder son of Don Juan, Prince Juan Carlos, aged 17, with a view to his eventual succession on coming of age (at 30) as laid down in the law of succession of 1947. Prince Juan Carlos entered the General Military academy at Zaragoza in Sept. 1955. There was, however, evidence that the government party, the Falange, which was predominantly antimonarchist, viewed the prospects of a restoration with disfavour, and Franco during the course of the year issued statements designed to convince the party that a restoration was in the national interests.

Economic Position.—The existence of a press censorship and the prohibition of the strike weapon as a means of adjusting industrial grievances continued to make it difficult to assess labour conditions accurately. The level of employment was satisfactory, the number of unemployed averaging about 150,000, though these figures probably did not include agricultural unemployment, which fluctuated greatly in accordance with local conditions. The housing shortage, especially workers' dwellings, remained acute, and a \$75,000,000 five-year plan for building cheap workers' dwellings was sanctioned in July.

Industrial activity was well maintained. The expansion of the hydroelectric grid and the construction of thermal power plants was pushed ahead, and for the second summer in succession the dry season brought no appreciable power cuts. The new state-sponsored steelworks at Avilés in Asturias, which was expected to go into limited production in 1956, was designed eventually to double the national steel production.

Increasing interest was shown in the possibility of the application of nuclear energy, and in June Spain concluded an "atoms for peace" agreement with the United States, being also represented at the "atoms for peace" conference at Geneva two months later. Extensive uranium deposits were reported to have been discovered in the Sierra Morena, and a number of Spanish engineers were sent to the United States for training in nuclear physics.

Agriculture had a reasonably good year, the important foreign currency-earning citrus fruit export being well up to expectations. The wheat crop of 3,700,000 tons was disappointing, but it was estimated that reserves (1,100,000 tons) would obviate the necessity of imports.

In the field of domestic legislation the principal novelties were the promulgation of a law levying a surtax assessed on exterior signs of wealth and a decree prohibiting civil servants of the higher categories (cabinet ministers, ambassadors, directors of government departments, high officials of the Falange party, etc.) holding other posts in their respective services or gainful positions in official or private companies. (AL. WA.)

Education.—Schools (1952–53): primary (including private) 65,411, pupils 2,887,090, teachers 80,719; secondary 119, pupils 247,713; vocational, pupils 159,690. Teacher training schools (primary) 106, students 25,421. Universities 12, students 58,143, professors and lecturers (1952) 3,268.

Finance and Banking.—Monetary unit: peseta, with an official buying rate of 21.90 and controlled free rate of 38.95 pesetas per U.S. dollar. Budget (1954 est.): revenue 26,074,200,000 pesetas; expenditure 26,020,800,000 pesetas. Total public debt (1954): 86,896,700,000 pesetas. Currency circulation: (May 1954) 37,800,000,000 pesetas; (May 1955) 42,100,000,000 pesetas. Bank deposits: (Sept. 1954) 59,900,000,000 pesetas; (Dec. 1954) 64,400,000,000 pesetas. Gold reserves (May 1955): U.S. \$56,000,000.

Foreign Trade.—(1954) Imports \$614,000,000 (1,880,900,000 special gold pesetas); exports \$464,000,000 (1,421,600,000 special gold pesetas). Main sources of imports:

U.S. 18%; sterling area 13%; Germany 11%; franc area 11%. Main destinations of exports: sterling area 19%; Germany 19%; U.S. 10.3%; franc area 7.5%. Chief exports (1954): oranges 15%; wine 6%; iron ore (1953) 5%.

Transport and Communications.—Roads (1954): 120,763.6 km., of which 73,475.8 km. national roads. Motor vehicles in use (1954): cars 116,511; commercial vehicles 99,404. Railways 17,307 km., of which approximately 13,090 km. state lines; traffic (state only) passenger-km. (1953) 7,977,000, freight ton-km. (1954) 7,689,000. Shipping: merchant vessels of 100 gross tons and over (July 1954) 1,166; total tonnage 1,312,601. Air transport (1953): passenger-km. 285,932,000; freight ton-km. 1,387,000; 11,548,000 km. flown. Telephones (Jan. 1954): 903,097. Licensed radio sets (1953): 1,313,000.

Agriculture.—Main crops (metric tons, 1954): wheat 4,541,000; barley 2,135,000; oats 542,000; rye 487,000; maize (corn) 691,000; rice 352,000; chick-peas 121,000; lentils 20,000; broad beans 99,000; potatoes 3,515,000; cottonseed 34,000; cotton, lint 21,000; oranges, etc., 1,110,000; bananas 245,000; olives 1,296,000; flax 10,400; hemp 9,800; (1953) groundnuts (peanuts) 11,000; tobacco 31,700; sweet potatoes and yams 148,000; lemons, limes, etc., 49,000. Livestock: (Sept. 1954) sheep 20,000, pigs 5,000; (Sept. 1953) cattle 3,184,000, horses 650,000, mules 1,156,000, asses 799,000, chickens 26,623,000, goats (1950) 4,135,000. Production (metric tons, 1954): beet and cane sugar, raw value 268,000; olive oil 276,000; wine 1,776,000; wool 26,000. Fisheries: total catch (1953) 634,700 metric tons.

Industry.—Fuel and power (metric tons, 1954): coal 12,382,000; lignite 1,741,000; electricity 8,606,000,000 kw.hr. Production (metric tons, 1954): pig iron 924,000; crude steel 1,097,100; copper, blister 5,760; lead, refined 56,690; zinc, smelter 22,830; cement 3,301,000; iron ore (50% metal content) 3,405,000; potash (1953) 166,000. Other ores (metal content, 1953): tungsten 1,531; manganese 14,900; antimony 563; pyrites 1,783,000. Textiles (metric tons, 1954): cotton yarn 53,400; wool yarn 14,040; rayon filament yarn 12,380; rayon staple fibre 27,080. New dwelling units completed (1954) 24,722. Index of industrial production (1948=100): general (Dec. 1953) 150; mining (Jan. 1955) 143; gas and electricity (Jan. 1955) 185.

Spanish-American Literature: see LATIN-AMERICAN LITERATURE.

Spanish Colonial Empire. Under this heading are grouped the Spanish possessions in Africa. Their total area is approximately 134,477 sq. mi. and the total population (1950 census) 1,402,004. Areas, populations, capital towns and governors of the territories are given in the table.

History.—Spain's policy of cultivating the good will of the Islamic world continued to be the guiding principle in its relations with the native population of its Moroccan protectorate, an added motive for seeking whose good will being Spain's irritation over France's failure to consult regarding the deposition in Aug. 1953 of Sultan Mohammed ben Yussef, whose nephew, Muley Hassan Hassan ben el-Mehdi, was *khalifa* (sultan's representative) in the Spanish zone. The Spanish government made no secret of the fact that in principle it favoured the cause of the dethroned sultan and thus openly sympathized with those extensive sectors of the population of the French zone who were bitterly opposed to France's Moroccan policy.

In September the Spanish government addressed a note to the French government contending that, while the re-establishment of order in French Morocco was the responsibility of France alone, Spain should of right be admitted to participate in any negotiations between the French and Moroccan authorities having as their object the modification of the regime in the French zone.

According to the 1955 budget estimates the central govern-

Country	Area (sq. mi.)	Population (1950 census)	Capital	Status	Governor
Spanish Morocco					
Northern zone	7,589	1,010,117 (incl. 84,716 Spanish)	Tetuán pop. (1950 census) 80,732	Protectorate	High commissioner: Lieut. Gen. Rafael García Valiño y Marcen Khalifa (vicerey): Muley Hassan Hassan ben el-Mehdi
Southern zone	12,693	5,878	Cabo Juby	Protectorate	
Ifni territory	579	38,295	Sidi Ifni pop. (1950 census) 7,951	Colony	
Ceuta, Melilla, Alhucemas, Chafarinas and Peñón de Velez	82	141,302	—	Administered as part of Spain	
Spanish Sahara					
Rio de Oro	71,043	1,304	Villa Cisneros pop. (1950 census) 1,011	Colony	—
Saguia el Hamra	31,660	6,445	Santa Isabel, on	Colony	—
Spanish Guinea	10,831	198,663	Fernando Po pop. (1950 census) 11,098	Colony	—
including Fernando Po and four small islands					

ment's expenditure on Spanish possessions in Africa amounted to 1,099,600,000 pesetas, an increase of 1,074,000 pesetas on expenditure for 1954. Of this sum the greater part was earmarked for military expenses in the protectorate. (AL. WA.)

Finance.—*Spanish Morocco*, budget (1953 est.): balanced at 378,800,000 pesetas. *Spanish Guinea*, budget (1953): balanced at 73,936,000 pesetas.

Foreign Trade.—*Spanish Morocco* (1952): imports 933,900,000 pesetas; exports 571,500,000 pesetas. *Spanish Guinea*, exports (1953, metric tons): to Spain, cocoa 10,604.1, coffee 5,339.4, timber 87,030.3, other items 21,532.4; to rest of world 16,327.4; imports from Spain 317,315,200 pesetas. *Spanish West Africa*: exports 38,702,750 pesetas; imports 34,041,980 pesetas.

Transport and Communications.—*Spanish Morocco*: roads (1953) 869 km.; railways (1951) 173 km. Motor vehicles (1953): 2,875. Telephones (Jan. 1954): *Spanish Morocco* and *North Africa* 12,396; *Spanish Guinea* 525; *Spanish West Africa* 166.

Spanish Literature. During 1955 works such as expressions of the fervour of the Marian year (1954) or of antagonism to the *status quo* of Gibraltar which reflected the national conscience and pride achieved rewarding success, which might be temporary for *La Muralla* of J. Calvo Sotelo (more than 500 performances in Madrid and 300 in Barcelona, 1954–55), which carried the author into the Academy, and its Barcelona parallel, *La Herida Luminosa* (*La Herida Luminosa*) of J. M. de Sagarra. *La Mujer Nueva*, a novel of Carmen Laforet describing a similarly orthodox solution to a *crise de conscience*, won the Menorca prize of 200,000 pesetas. But in general writers sought a more individual and human expression.

Renewing the faith of the older masters—Unamuno, Machado, J. R. Jiménez—and the newer—Aleixandre—poets eschewed the feverish *desasosiego* of recent religious verse and pursued with more noble equanimity the search for understanding of that *tercer mundo profundo: exacta luz y clara poesía* of Dámaso Alonso's *Hombre y Dios*. Expression was simplified and found in nature renewed inspiration; but poetry rarely strayed from supernal mysteries to delight in simple things.

In prose an identical preoccupation with the individual, as a person rather than a soul, maintained the contemporary series of autobiographies and biographies and, in fiction (both novel and short story), developed the modern picaresque form in which every single character—the hero is out-of-date—struggles to fulfil his more or less humble destiny on earth. Tremendous energy is released by the continuous splitting of the human atom, the “setting” of the experiment is described with the minute realism not of the scientist but of the poet concerned with it only as a function, not as a background. The whole process, from single to chain reaction explosions, was demonstrated by C. J. Cela in *El Gallego y su Cuadrilla*, a collection of *apuntes carpetovetónicos*, and in *Historias de Venezuela: La Catira*, a linguistic tour de force and an overwhelming imaginative creation, whatever the immediate validity of language or story.

Juan Guerrero Ruiz, *consul de la poesía española*, and Concha Espina, veteran novelist, aged 86, died during the year. The year's production (1954–55) was recorded in *Almanaque de Literatura 1955* and in J. de Entrambasaguas' *El Año Literario*.

Other notable works of the year included:

Poetry.—P. Salinas, *Poesías Completas*; F. García Lorca, *Obras Completas* (first publication in Spain); J. R. Jiménez, *Diario de Poeta y Mar* (definitive text); M. García Blanco, *Don Miguel de Unamuno y sus Poesías* (1954; critical anthology); J. A. Valente, *A Modo de Esperanza* (winner of the Premio Adonais, 1954).

Prose Fiction.—I. Aldecoa, *El Fulgor de la Sangre* (1954) and *Vísperas del Silencio*; A. M. Matute, *Pequeño Teatro* (1954); C. Kurz, *Duermen bajo las Aguas*; F. J. Alcántara, *La Muerte le Sienta Bien a Villalobos* (winner of the Premio

Nadal, 1954).

Theatre.—A further volume of *Teatro Español*; Unamuno, *Teatro* (four plays, 1954); L. Delgado Benavente, *Tres Ventanas*.

Scholarship.—J. Corominas, *Diccionario . . . etimológico de la Lengua Castellana*, 2 of 4 vol., authoritative; Manuel Palau, *Memories*. (R. F. B.)

Speed Records: see AIR RACES AND RECORDS; AUTOMOBILE RACING; HORSE RACING; MOTOR-BOAT RACING; RAILROADS; TRACK AND FIELD SPORTS; YACHTING.

Spices. U.S. imports of complementary spices were valued at \$34,838,000 in 1954–55 as compared with \$43,313,000 in 1953–54. Essential (flavouring) oils imported were valued at \$18,868,000 as compared with \$10,729,000 in the previous year.

Aside from pepper, U.S. annual consumption of spices was indicated to have increased by 37,000,000 lb. since World War II, and herb cookery received continued enthusiasm.

World pepper production continued to recover from its post-war low levels; the 1955 crop was forecast at 12% higher than in 1954 but 15% less than before World War II. World export availabilities were estimated at 116,000,000 lb. of the new crop plus substantial carry over, against a demand of not more than 120,000,000 lb. The U.S. imported 37,000,000 lb. in 1954. Wholesale prices in New York city during much of 1955 were less than 50 cents per pound as compared with \$2.65 per pound in Aug. 1950. Effectiveness of Indian marketing advantages were dissipated by rebound of the production of Sarawak and Indonesia—Bombay prices fell as much as 72% from June 1953 to June 1954. In Jan. 1955 India reduced export duties by approximately one-half.

World production of ginger was indicated at about 14,000 tons, 10,000 tons from India. The vanilla bean, at high price levels, met rapid and drastic curtailment of U.S. imports. Promotion of pure vanilla by Madagascan producers and the Flavouring Extract Manufacturers' association was initiated.

Among the flavouring oils, citrus oil supplies appeared adequate, with prices generally moderate but firm. Mint oils presented a diverse picture. Spearmint oil declined to about half the \$8 per pound level of 1954, whereas peppermint oil rose to \$8 per pound from a previous \$5 level. Among the spice oils, clove continued high in price but below its peak and readily available. Oil of cassia was exorbitant in price and very scarce, as was onion oil.

The American Spice Trade association celebrated its 50th anniversary in October. It reported the business as a \$150,000,000 per year one, using about 132,000,000 lb. of imported spices and 20,000,000 lb. produced domestically. About three-fifths of the total is sold packaged, the rest in bulk; the meat trade takes about one-half of the bulk volume. (J. K. R.)

World Pepper Production
(in 000,000 lb.)

Area	Forecast, 1955	Preliminary, 1954	Average, 1946–50	Average, 1935–39
Indonesia	38.5	33.6	7.9	128.6
Sarawak	40.0	33.6	0.2	5.3
India	58.5	53.3	68.0	33.1
Ceylon	12.0	12.0	*	5.0
Other Asia	5.7	5.3	10.0	11.5
Africa	2.0	2.0	2.1	0.7
World	156.7	139.8	88.2	184.2

*Included in "Other Asia."

Spirits: see LIQUORS, ALCOHOLIC.

Spitsbergen: see NORWAY.

Sports and Games: see ANGLING; ARCHERY; AUTOMOBILE RACING; BADMINTON; BASEBALL; BASKETBALL; BILLIARDS; BOWSLIDDING; BOWLING; BOXING; CHESS; CONTRACT BRIDGE;

CURLING; CYCLING; FENCING; FOOTBALL; GLIDING; GOLF; GYMNASTICS; HANDBALL; HOCKEY, FIELD; HOCKEY, ICE; HORSE RACING; ICE SKATING; LACROSSE; LAWN BOWLING; MOTOR-BOAT RACING; OLYMPIC GAMES; POLO; ROWING; SHOOTING; SKIING; SOCCER; SOFTBALL; SQUASH RACQUETS; SWIMMING; TABLE TENNIS; TENNIS; TRACK AND FIELD SPORTS; WRESTLING; YACHTING.

Squash Racquets.

G. Diehl Mateer, Jr., of Philadelphia, Pa., retained top ranking among United States amateur stars following his conquests of the 1954-55 season. Mateer gave one of his best performances in the final of the national open championship on the courts of the University club (New York city) when he routed Azam Khan of Pakistan, 15-9, 15-5, 15-10, on Jan. 3. Earlier in the competition, Khan had eliminated Henri Salaun of Boston, Mass., the defending titleholder. Mateer again opposed Azam Khan in the Canadian open final at Toronto, Ont., on Jan. 9 at the Badminton and Racquet club and triumphed, 11-15, 15-11, 13-15, 15-10, 15-10. Mateer also won the Canadian amateur crown, turning back Salaun in a hard-fought battle at Montreal, Que., on Feb. 6 by scores of 15-7, 15-9, 15-16, 12-15, 15-7. The Philadelphian, however, relinquished his national amateur laurels when he lost to Henry Foster of Boston in the quarter-final round at Detroit, Mich., Feb. 12. Salaun came through on top in that tournament when he conquered Ernie Howard of Toronto in the last round on Feb. 13 by 15-7, 15-6, 15-11. Hashim Khan captured British open honours for the fifth straight season by halting his brother Azam, 9-7, 7-9, 9-7, 5-9, 9-7, and gained American professional laurels by beating Azam, 15-11, 11-15, 14-16, 15-6, 15-7, at the New York Athletic club on Feb. 13.

Janet Morgan of London set a record for English women players when she captured the British championship for the sixth consecutive time. She defeated Mrs. Ruth Turner of London, 9-5, 9-3, 9-6, on Dec. 11, 1954. Miss Morgan added the U.S. title to her collection by subduing Mrs. Robert White, Rochester, N.Y., 17-16, 15-9, 15-12, at the Merion Cricket club in Haverford, Pa., on Feb. 26. She also shared in the doubles title, pairing with Sheila Speight, Cheltenham, Eng., to conquer Mrs. John Carrott, Greenwich, Conn., and Mrs. Hilda Smith-Peter-son, Boston, 15-8, 15-11, 15-8.

Roger Campbell of Princeton retained the National Intercollegiate Squash Racquets association crown by halting Harvard's Ben Heckscher at Annapolis, Md., in March.

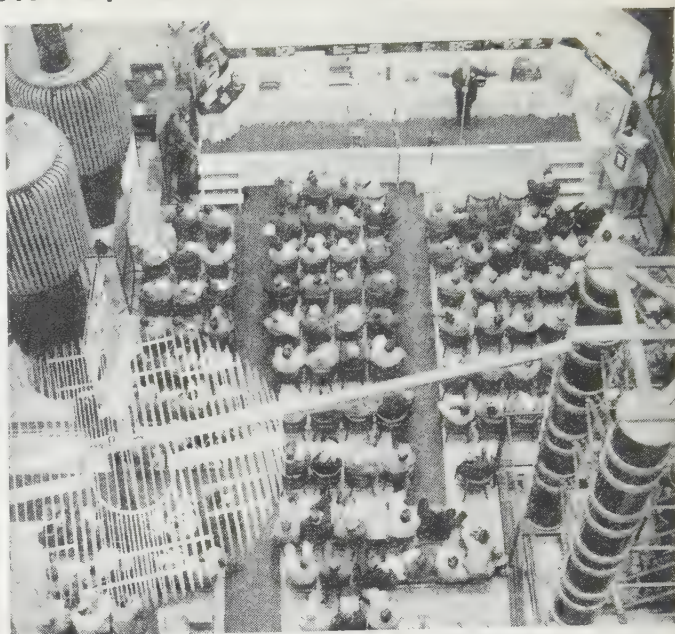
In the Wolfe-Noel cup matches, Miss Morgan led the British women to a 4-1 victory over the U.S. at the Merion Cricket club on Feb. 27. In these matches, Rosemary Walsh, Birmingham, defeated Mrs. Carrott, 15-11, 12-15, 15-9, 15-9; Mrs. L. Clement, Philadelphia, defeated Mrs. Jennifer Pendered, London, 16-15, 11-15, 15-16, 15-9, 18-14; Miss Speight defeated Mrs. Nathan Stauffer, Philadelphia, 9-15, 15-6, 15-7, 16-13; Mrs. Turner defeated Lois Dilks, Philadelphia, 13-15, 15-6, 13-15, 18-14, 15-9, and Miss Morgan defeated Mrs. White, 15-9, 15-8, 15-12.

(T. V. H.)

Stamp Collecting: see PHILATELY.

Standards, National Bureau of.

Established by act of the United States congress, March 3, 1901, the national bureau of standards has basic responsibility for research, development, testing, calibration, specifications and scientific services in physics, mathematics, chemistry, metallurgy and engineering. During 1955 it consisted of 16 scientific and technical divisions (electricity and electronics, optics and metrology, heat and power, atomic and



GUESTS attending a lecture and demonstration at the high voltage laboratory of the National Bureau of Standards during an open house held in Feb. 1955

radiation physics, chemistry, mechanics, organic and fibrous materials, metallurgy, mineral products, building technology, applied mathematics, data processing systems, cryogenic engineering and three radio propagation divisions), 4 offices (basic instrumentation, weights and measures, publications and technical information) and 10 administrative divisions. The total staff was more than 2,600, of which the majority were stationed at the bureau's principal laboratories in Washington, D.C., and Boulder, Colo. Twenty field stations were also maintained in the United States and abroad.

During the year, two new determinations of the velocity of light were made by the bureau's scientists. Although carried out independently by widely different methods, the two determinations gave precise values that were in close agreement. They also provided confirmation for the higher values of electromagnetic wave velocity (average value, $299,793 \pm 1$ km./sec.) that had been consistently obtained by microwave measurements since World War II. In one method, the velocity of light was determined from measurement of the molecular constants of carbon monoxide by infra-red spectroscopy. The other determination made use of phase-shift measurements on very high frequency radio waves to obtain their velocity of propagation. Before World War II, the value $299,776 \pm 4$ km. per second was generally accepted as an average. The results obtained by the bureau gave $299,792 \pm 6$ km./sec. by the molecular constants method and $299,795.1 \pm 3.1$ km./sec. by the radio interferometer.

Advances were also made in the field of radiation standards. Two devices were developed that precisely measure radiation in terms of the heating effect it produces. One of these, a radiation-balance microcalorimeter, was expected to aid materially in meeting the increased demand for calibration of radioactive sources. The other, an X-ray calorimeter, would serve as a basic standard for measurement of the high-energy X-rays now being used in medical treatment and industrial radiography. To meet the increasing demand for standard samples of radioactivity, a radiochemistry laboratory was established. The new laboratory would prepare and distribute approximately 57 different radioactive nuclides and ores to hospitals, research laboratories and industrial plants.

In studies of the basic properties of materials, increased emphasis was placed on those inorganic materials that are stable at very high temperatures. Data on such materials were required

for further advances in atomic power plants, high-speed missiles and jet aircraft, but information on their high-temperature behaviour had been lacking. In one project, the high-temperature reactions of uranium dioxide with other refractory compounds were studied to provide information essential to the design of nuclear reactors for operation at higher temperatures than were being used. Another project investigated various types of high-temperature concretes to obtain materials for jet aircraft aprons that would withstand high and fluctuating temperatures. The properties of cermets—heat-resistant ceramic-metal combinations—were studied in connection with their use in critical components of jet engines, rocket motors and ordnance devices. Vitreous ceramic materials were also investigated to obtain insulating coatings for electronic instrument components and wiring used at high temperatures. Studies showed that under proper conditions ceramic coatings can substantially reduce the creep rate of high-temperature alloys. Other work in this general area dealt with diffusion of gases in glasses, phase equilibria of refractory materials and thermal decomposition mechanisms of inorganic materials.

The year saw a data-processing systems laboratory established as a separate division of the bureau. Combining the work in electronic digital computers with a program in analogue computer technology, the new division carried on research, development and systems design and analysis in these fields. It also provided technical advisory services to other government agencies on the use of high-speed computing techniques in new areas of potential application—such as massive paper-work operations, automatic control systems and simulation—as well as in the solution of specific technical problems.

Of broad industrial interest was a study of electronic circuits undertaken for the navy bureau of aeronautics. Results showed the feasibility of standardizing many of the electronic circuits used in navy aeronautical equipment. Known as the NBS-BuAer preferred circuits program, this continuing investigation sought to determine those well-known circuit configurations that are common to a wide variety of electronic devices but which differ unnecessarily in detail. A number of preferred circuits were selected and prepared for joint national bureau of standards-navy publication as a manual for design engineers.

Approximately 174,000 items were calibrated or tested for the public and the government during the year. In addition, about 32,500 standard samples of certified chemicals, metals and alloys were issued. Typical services included the following calibrations and tests: 694 standard cells, 994 water-current meters, 757 hydrometers, 839 radium sources, 491 radioactive cobalt sources, 2,400 dilution pipettes, 33,110 clinical thermometers and the sample testing of 3,000,000 lamps and 15,000,000 bbl. of cement.

Results of the bureau's work are available through three monthly periodicals (*Journal of Research*, *Technical News Bulletin* and *Basic Radio Propagation Predictions*) and a series of nonperiodical publications. An indexed list of publications ("Publications of the National Bureau of Standards," *Circular 460* and *Supplement*) is available from the superintendent of documents, U.S. government printing office, Washington 25, D.C. (W. R. BR.)

Stars: see ASTRONOMY.

Stassen, Harold Edward (1907–), U.S. government official, was born on April 13 at West St. Paul, Minn. He received his bachelor's degree from the University of Minnesota, Minneapolis, in 1929, and his law degree there the same year. In 1930 he was elected county attorney, holding the post for eight years, then was

elected governor of Minnesota on the Republican ticket in 1938. He was re-elected in 1940 for a second term but resigned in 1943 to join the U.S. navy.

Stassen was a candidate for the Republican presidential nomination in 1944 and again in 1948 but lost on both occasions to Thomas E. Dewey. After the 1948 convention he accepted the presidency of the University of Pennsylvania, Philadelphia. On Nov. 21, 1952, Pres. Dwight D. Eisenhower named Stassen director of the Mutual Security agency, and he was confirmed by the U.S. senate on Jan. 27, 1953. (The Mutual Security agency was reconstituted as the Foreign Operations administration later that year.) During 1953 Stassen made extended tours through Europe, Africa and Asia, later urging that the U.S. step up military and economic aid to the free nations of those continents. In 1954–55 his attention was largely focused on economic aid to the non-communist nations of Asia. The F.O.A. went out of existence June 30, 1955, and its functions were taken over by the new International Cooperation administration; but Stassen remained as F.O.A. administrator until then. Meanwhile, on March 19, 1955, Pres. Eisenhower appointed Stassen to the new office of special presidential assistant for disarmament, with cabinet rank. On Aug. 30 Stassen presented to the UN subcommittee on disarmament the essence of Eisenhower's Geneva "mutual inspection" plan as the proposed basis for a U.S.-soviet treaty on disarmament.

State, U.S. Department of: see GOVERNMENT DEPARTMENTS AND BUREAUS, U.S.

State Fairs: see FAIRS AND EXHIBITIONS; SHOWS.

State Guard: see NATIONAL GUARD.

Steel: see IRON AND STEEL.

Stellar System: see ASTRONOMY.

Stereophotography: see PHOTOGRAPHY.

Stevenson, Adlai Ewing (1900–), U.S. political figure, was born at Los Angeles, Calif., on Feb. 5. He was graduated from Princeton university in 1922, subsequently earning his law degree at Harvard and Northwestern university, Evanston, Ill. After serving abroad as a newspaper correspondent, he became a federal official, principally with the agriculture, state and navy departments. He was governor of Illinois 1949–53, and was the Democratic nominee for president in 1952. Carrying only nine states, he was defeated on Nov. 4 by Dwight D. Eisenhower.

Stevenson announced on Nov. 15, 1955, that he would be a candidate for the presidential nomination in 1956. Stevenson explained that he had decided to stand for renomination before President Eisenhower fell ill, and that his decision had not been influenced by the fact that Eisenhower's possible retirement from politics may have brightened the Democrats' chances for 1956. He said that he would enter numerous primaries, where his principal opponent was expected to be Sen. Estes Kefauver of Tennessee.

In numerous speeches at \$100-a-plate dinners, which helped to pay off the party deficit his 1952 campaign had incurred, as well as in his Nov. 15 press interview, he outlined the kind of attack he would make on the administration's domestic and foreign policies.

The Democratic party, he said, must stand for three main principles: social progress, civil freedom and peace. He criticized the administration for not spending enough money on health and education, and for what he feared was a dissipation of natural resources for the benefit of the few rather than the many. He referred to the Eisenhower regime as a "special interest government" that offered only a "shaky peace, deceptive prosperity and no progress."

Although he praised Eisenhower's participation in the Geneva conference of the heads of the Big Four Powers on the ground that "after three years of a 'get tough' policy, it proved that, contrary to many people's belief, the United States was not more of a threat to peace than the Russians," he expressed dissatisfaction with the results. He declared that the "cold war is still in a deep freeze," with the free nations' security system "deteriorating," and a "safe and orderly world still a distant goal." He also expressed alarm over Washington proposals to curtail funds for national defense when world conditions were so "acute."

Besides making numerous political speeches, Stevenson delivered a series of lectures at Northwestern university law school and the University of Texas, Austin. He vacationed in Jamaica in February, visited South Africa on business in April-May and journeyed to Haiti and Jamaica in September. (See also ELECTIONS, U.S.; POLITICAL PARTIES, U.S.) (R. TU.)

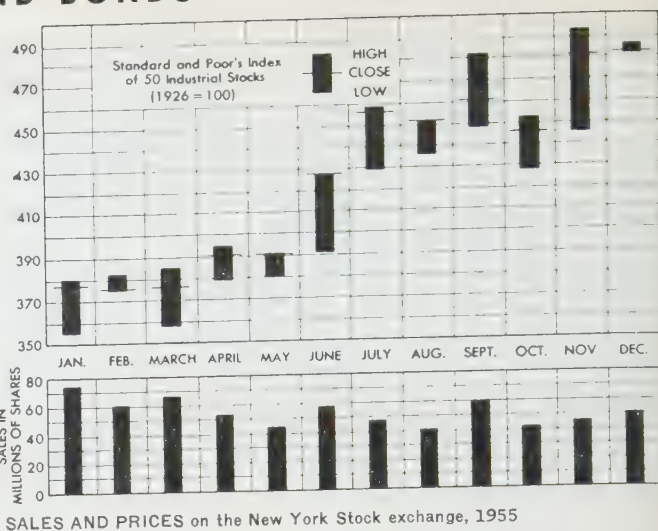
Stocks and Bonds. **U.S. Stocks.**—The bull market, which began to develop momentum at the beginning of 1954, continued to push forward throughout the greater part of 1955. Measured by Standard and Poor's composite index of 90 stocks, as shown in Table I, U.S. common stock prices rose with minor interruptions to the highest levels on record during Sept. 1955. During the first nine months of 1955 the composite index registered a gain of more than 22.6%.

Industrials led the advance with a gain of 25.8%. Railroads and public utilities followed with price index rises of 10.6% and 5.8%, respectively. The Dow Jones averages and the Securities and Exchange commission index of stock prices lend confirmation to the magnitude of the boom.

The average yield on common stocks, which had been declining since Sept. 1953, continued to slide downward until Sept. 1955 when it reached a new low of 3.75%. Of the 964 dividend-paying common stocks listed on the New York Stock exchange at the beginning of Sept. 1955, 144 were selling to yield less than 3%. Of the remaining 820, there were 190 yielding between 3% and 4%, 288 yielding between 4% and 5%, 201 yielding between 5% and 6% and 90 yielding 6% to 7%. Only 35 common stocks on the New York Stock exchange were paying between 7% and 8% and only 16, or 1.6%, were returning more than 8%. By way of contrast, at the end of 1953 28% of all dividend payers were yielding 8% or more. The spread between corporate bond yields and common stock returns became smaller in Sept. 1955 than at any time since the late 1920s.

The total number of shares traded on all registered exchanges in the United States, as reported by the Securities and Exchange commission, was 728,917,000 during the first six months of 1955. This represented a gain of 22.5% over the 594,635,000 aggregate trading volume established during the latter half of 1954. Expressed in terms of market values, the trading in the first half of 1955 amounted to \$20,415,000,000, an increase of 24% as compared with \$16,455,000,000 worth of shares sold during the second six months of 1954.

During the first nine months of 1955 the volume of trading on the New York Stock exchange was the highest in more than two decades. The 507,920,118-share turnover represented an increase of 30.6% over the number of shares traded in the comparable period of 1954, and 90% over 1953. On Sept. 26, 1955, the



SALES AND PRICES on the New York Stock exchange, 1955

market reacted violently to the news of Pres. Dwight D. Eisenhower's heart attack, and 7,720,000 shares were traded in a single day. Trading volume continued at an abnormally high level during the early part of Oct. 1955.

U.S. Bonds.—United States government long-term bond prices, according to Table II, reached a peak of 107 in July 1954 and thereafter declined steadily to a level of 101 in Aug. 1955. While the downtrend was interrupted during March and May, the price of long-term governments fell about 3.3% during the first eight months of 1955 to the lowest level in two years. Corporate bonds with A1+ ratings, as shown in Table III, observed the same pattern as that of long-term governments; i.e., their prices achieved a high of 117.8 in the midsummer of 1954 and thereafter fell month by month to a low of 113.2 in Sept. 1955.

Bond yields revealed the customary inverse correlation with prices and rose irregularly from mid-1954 until Sept. 1955. During the first nine months of 1955 the yields on high-quality corporate bonds increased from 2.896 to 3.107, a gain of 7.2%. Long-term government bonds registered a gain of 8.2%, rising somewhat unevenly from 2.65 to 2.87 during the same period.

The market value of bond sales, exclusive of United States government bonds, on all registered exchanges in the United States during the first half of 1955 increased by less than 1% over the corresponding values for the second half of 1954. In absolute terms, bond sales rose from \$561,920,000 in the last half of 1954 to \$567,256,000 in the first half of 1955.

There was a modest decrease in the total market values of all bond issues listed on the New York Stock exchange during the first six months of 1955 according to the U.S. department of commerce. At the end of June 1955, aggregate bond market values were \$104,282,000,000, comprising \$102,181,000,000 in domestic issues and \$1,443,000,000 in foreign. These figures are comparable with the 1954 year-end statistics of \$106,517,000,000 for all bond issues combined, consisting of \$104,442,000,000

Table I.—U.S. Stock Market Prices

	Railroads (20 stocks)		Industrials (50 stocks)		Public Utilities (20 stocks)		Stocks (90 stocks)		Yield (90 stocks)	
	1954	1955	1954	1955	1954	1955	1954	1955	1954	1955
Jan.	64.7	90.9	254.6	366.5	105.8	124.0	202.2	282.7	5.69	4.38
Feb.	67.6	94.4	260.2	379.1	107.4	127.3	206.7	292.2	5.62	4.32
March	67.3	96.8	266.2	375.1	109.4	127.4	211.0	289.9	5.46	4.33
April	66.7	102.3	278.7	388.9	110.9	128.9	219.4	299.9	5.24	4.19
May	70.5	102.3	291.0	387.3	112.2	128.0	228.2	298.6	5.02	4.23
June	71.6	105.3	293.2	412.9	113.1	129.6	230.0	315.9	4.99	4.01
July	74.7	104.2	305.3	447.7	117.0	132.6	239.2	339.0	4.77	3.77
Aug.	75.7	101.5	311.4	443.9	119.5	135.0	244.0	336.9	4.63	3.87
Sept.	74.6	100.6	320.7	461.1	119.2	131.2	249.8	346.8	4.57	3.75
Oct.	75.7	...	330.5	...	116.9	...	255.5	...	4.43	...
Nov.	80.5	...	344.3	...	118.7	...	265.6	...	4.52	...
Dec.	89.0	...	360.0	...	122.0	...	277.7	...	4.45	...

Source: Standard and Poor's Trade and Securities Statistics, Current Statistics. Figures are an average for the month, based upon closing prices with 1926 used as base period.

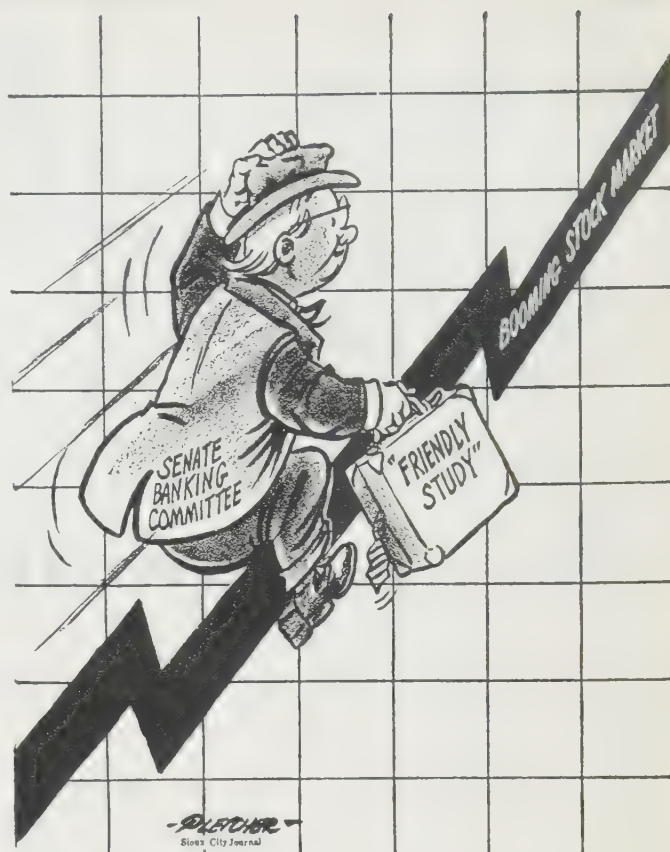
domestic and \$1,403,000,000 foreign. The apparent discrepancies in total market values arise from the omission of bonds of the International Bank for Reconstruction and Development.

Market Conditions.—The security markets at the end of the third quarter of 1955 had shown substantial gains in the prices of stocks as compared with the same period in 1954. However, a number of significant changes occurred during 1955 which had a dampening effect on the speculative enthusiasm of many investors.

Margin requirements were raised from 50% to 60% in Jan. 1955 and from 60% to 70% in April, as the federal reserve board attempted to put a rein on the volume of stock market credit. Credit was tightened as well by other policies of the government. The discount rate charged on member bank loans from the federal reserve banks was raised from 1.5% to 1.75% in April 1955, and subsequently it was raised to 2% with the Cleveland and regional bank establishing a rate of 2.25% on its loans. The treasury department continued its policy of selling long-term bonds with the consequence of tighter bank credit. Most banks tended to become more selective in granting loans, and loan rates increased. Mortgage credit was severely curbed in Aug. 1955 when the provisions for down payments and maximum terms on Federal Housing administration and Veterans administration loans were revised. Where formerly there were no down payments required on VA loans and terms up to 30 years were available, the new regulations provided for a minimum down payment of 2% and a maximum term of 25 years. Under FHA rules, maximum terms were likewise reduced from 30 years to 25 years, and down payments were increased from 5% of the first \$9,000 of appraised value to 7%, and from 25% of the excess over \$9,000 to 27%. The combined effect of these credit restricting measures indirectly served to boost bond yields to the point where the relative yield advantage enjoyed by equities had become unusually small.

Despite the small margin between stock and bond yields, the price-earnings ratios of industrial shares during the 12 months ending Sept. 1955 were far more conservative than those prevailing in past market peaks. Another significant factor which might be expected to grow in importance, and which was beginning to be discounted by the market during 1955, was the impending end of the heavy charges for accelerated amortization of defense facilities which imposed a burden on current earnings in a number of important industries.

New York Stock Exchange.—The operations and practices of the New York Stock exchange came under close scrutiny in 1955 as a result of a series of hearings conducted by the U.S. senate committee on banking and currency. While the primary object of the Fulbright committee was to determine whether federal regulation of stock market activity was adequate, the attendant publicity served to focus the attention of the public



"CONGRESSIONAL JUNKET," a 1955 cartoon by Pletcher of the *Sioux City Journal* (la.)

on the effectiveness of the New York Stock exchange's internal regulation. The exchange emerged from these hearings with a clean bill of health.

During the first half of 1955 the Monthly Investment plan, which was designed to attract the small investor, seemed to be taking hold satisfactorily. During the first six months of 1955 more than 15,000 plans were sold as compared with approximately 29,000 plans sold in 1954. More than 80% of the new plans provided for plowing back dividends into capital accounts.

(See also FOREIGN INVESTMENTS; SECURITIES AND EXCHANGE COMMISSION.) (I. Pr.)

Great Britain.—The year 1955 was divided into two more or less equal sections, so far as United Kingdom stock markets were concerned. During the first half of the year the general trend of industrial ordinary share prices was sharply upward, and during the second half there was an equally sharp decline. Industrial ordinary shares, which had risen almost without a pause during 1954, made an equally promising start in 1955. On Jan. 10, 1955, the London Stock exchange experienced one of its most active trading sessions ever, when at 18,836 the number of bargains marked reached the highest level since the 19,438 recorded on Jan. 20, 1947, just after the culmination of the postwar bull market.

Soon, however, came the first warning that all was not entirely sound in the U.K. economy. On Jan. 27 the bank rate was raised by 0.5% to 3.5%, thus restoring the rate to the level from which it was reduced in May 1954; this was the government's first dearer money move since the bank rate was raised from 2.5% to 4% to meet the economic crisis of 1951-52. But the *Financial Times* industrial ordinary share index, after a very modest setback on the news, went on advancing to a peak of 197.5 on Feb. 3.

International uncertainties were the immediate cause of the first reaction from this peak—with the industrial ordinary yield

Table II.—U.S. Government Long-Term Bond Prices and Yields

(Average price in dollars per \$100 bond)

Month	Average		Yield		Month	Average		Yield	
	1954	1955	1954	1955		1954	1955	1954	1955
Jan. . . .	104.3	104.4	2.65	2.65	July	107.0	101.6	2.44	2.87
Feb. . . .	105.2	103.6	2.58	2.71	Aug.	106.8	101.0	2.45	2.91
March . . .	106.4	103.7	2.49	2.70	Sept.	106.4	101.6	2.49	2.87
April	107.0	102.8	2.44	2.77	Oct.	106.1	...	2.51	...
May	106.1	103.0	2.51	2.76	Nov.	105.7	...	2.54	...
June	106.0	102.8	2.52	2.77	Dec.	105.5	...	2.56	...

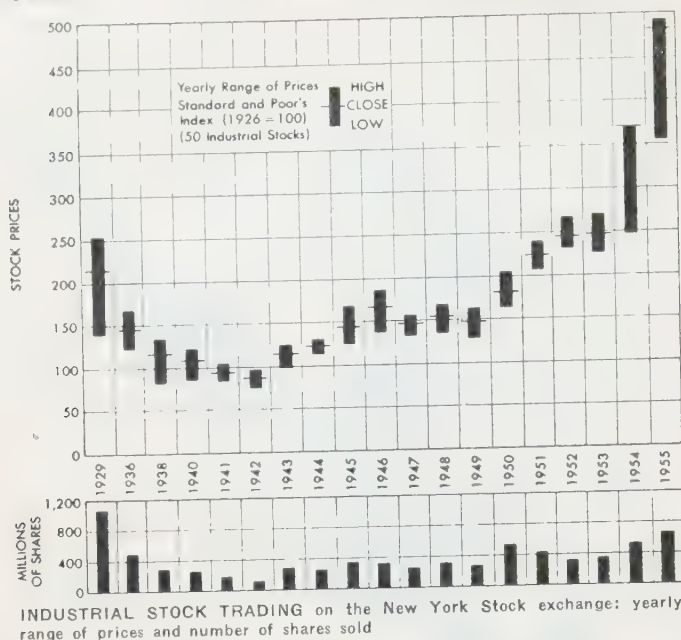
Source: Standard and Poor's Trade and Securities Statistics, Current Statistics.

Table III.—U.S. Corporate Bond Prices and Yields

(Composite bonds A1+; average price in dollars per \$100 bond)

Month	Average		Yield		Month	Average		Yield	
	1954	1955	1954	1955		1954	1955	1954	1955
Jan.	114.6	116.7	3.024	2.896	July	117.5	114.3	2.849	3.039
Feb.	116.5	115.7	2.908	2.954	Aug.	117.8	113.3	2.830	3.105
March	117.9	115.4	2.822	2.975	Sept.	117.6	113.2	2.843	3.107
April	118.1	115.2	2.814	2.983	Oct.	117.5	...	2.847	...
May	117.5	114.7	2.845	3.018	Nov.	117.4	...	2.855	...
June	117.0	114.5	2.874	3.030	Dec.	117.0	...	2.875	...

Source: Standard and Poor's Trade and Securities Statistics, Current Statistics.



down to 4.31% prices were vulnerable to any bad news—and these were followed by fears of a further increase in the bank rate, which proved well founded, for on Feb. 24 came the news that the bank rate was raised by a further 1% to 4.5% and the announcement of the reimposition of instalment credit restrictions. Share prices slumped sharply on this news, rallied for several days and fell away to a low point of 175.7 for the *Financial Times* industrial ordinary index on March 15.

From that low point a recovery developed, which carried on until the budget on April 19, and though market views were that, with its tax concessions, the budget was a good one, there was some setback in prices because the general election date of May 26 was approaching so close. In their traditional role of discounting the news, however, markets began to move up again at the beginning of May, and the initial advance, proving justified by the election of a Conservative government for a further five years, was followed by a strong upward movement, with steel shares particularly prominent, thanks to the disappearance of the threat of renationalization.

The general optimism swept the *Financial Times* industrial ordinary index up to an all-time peak of 223.9 on July 21—no less than 27% above the low point touched only four months earlier and 118% above the point at which that particular bull market started in June 1952—and that was the top.

The three-year advance in equity share prices had been, on the whole, very well based; for it did little more than bring share values more into line with the huge appreciation there had been in the value of the underlying assets of the businesses concerned, largely because of inflation. The immediate cause of the advance, moreover, was the rises in industrial profits during 1954 and 1955 and the much more liberal distribution policies followed by boards of directors, which resulted in an increase of more than one-fifth in dividend payments in each year.

But, as with all booms, in the latter months hopes tended to outrun performance, so that at the peak investors were willing to accept a yield of no more than 4.28% on the *Financial Times* industrial ordinary index. With the yield on consols at the same date as high as 4.23%, the traditional differential between equity yields and gilt-edged yields had virtually disappeared, and markets were in a very vulnerable position.

With intermittent rallies ordinary shares declined until the beginning of October, when the *Financial Times* industrial ordinary index touched a low point of 181.1 on Oct. 10, or 19%

below the peak. From that point a recovery developed, helped by the improvement that had begun around the beginning of September in gilt-edged prices, on the view that with gilt-edged prices at their lowest levels for around 30 years they were certainly historically cheap and worth acquiring on a long-term investment basis.

November brought a renewed setback in gilts, however, on the news that the credit squeeze was to be continued into 1956, and equities also reacted once again. Thus the year ended with brokers sharply divided about both the immediate position and prospects. Some considered that after their setback ordinary shares were on quite a reasonable yield basis for investment purposes, while others believed that the effects of the government's measures to curb inflation would be much severer than many persons had imagined and that even at their relatively depressed levels ordinary shares were still not adequately discounting the uncertainties. (E. Mt.)

Stomach and Intestines, Diseases of the.

Oesophagus.—Reflux of hydrochloric acid from the stomach to the oesophagus was demonstrated in approximately 50% of persons troubled by heartburn. Belching was a common symptom, the frequent eructations of gas presumably facilitating backflow of acid and irritation of the oesophagus.

Hiatus hernia, a protrusion of the stomach through the oesophageal opening in the diaphragm, frequently does not produce symptoms and is detected only by routine X-rays of the upper digestive tract. Occasionally, hiatus hernia caused heartburn, discomfort in the chest and upper abdomen, difficulty in swallowing and bleeding. The hernia was attributed to relaxation of supporting structures. Treatment included weight reduction, small meals, antacids and avoidance of tight corsets and belts or strenuous physical activity; surgery was necessary infrequently for large, fixed hernias and for recurrent bleeding. In children, the cause usually was a developmental defect of the diaphragm, permitting the stomach to enter the left chest; surgical repair was needed to relieve compression of the heart and lung.

Stomach.—Many additional drugs were available in 1955 for suppressing acid production in the treatment of peptic ulcer. A new compound, acetazoleamide, lowered acidity after intravenous injection; this medication, though itself not suitable for routine use, suggested the possible development of more effective antacid drugs. Antirheumatic medicines, including salicylate and phenylbutazone, irritated the stomach, increased the acidity and caused the formation or reactivation of peptic ulcer, with haemorrhage and perforation.

Vagotomy with gastroenterostomy or haemigastrectomy was advocated by more surgeons in the operative treatment of duodenal ulcer and of jejunal ulcer complicating partial gastrectomy. Whereas simple closure had been the usual treatment of ruptured ulcers, partial gastrectomy now was recommended especially for perforations of gastric ulcer and for patients with chronic recurrent duodenal ulcer with perforations less than eight hours old; the mortality was not excessive; the incidence of complications and duration of hospitalization were reduced.

The relatively high incidence of cancer of the stomach among Japanese, 35 per 100,000 population compared with 18 per 100,000 in the United States, presented an unexplained problem. Increased frequency of the disease in relatives of patients with gastric cancer and its occurrence occasionally in identical twins suggested an inherited predisposition. Patients with pernicious anaemia and with little or no hydrochloric acid in the stomach were more susceptible than the general population. Examination of these cancer-prone individuals with various laboratory

ests, X-rays and study of cells from the stomach, utilizing a new enzyme, chymotrypsin, facilitated earlier diagnosis of cancer and other tumours, such as lymphoma, responding more favourably to surgery and irradiation. The prognosis of gastric cancer depended upon its extent and the presence and location of metastases, factors determining the possibility of complete surgical removal. The mortality rate of surgery decreased considerably despite more frequent and extensive operations. Since complete gastrectomy was ineffective for tumours extending beyond the stomach and since this operation accounted for most operative failures, subtotal resection was preferred, except in special circumstances.

Intestines.—The importance of careful bacteriological examination of the faeces of patients with diarrhoea was re-emphasized in the frequent occurrences of *Salmonella* infections. Epidemics of diarrhoea in nurseries of premature and newborn infants were traced to *Escherichia coli* 0-111, B₄ and to *Escherichia coli* 0-127, B₈; the organisms were sensitive to various antibiotics. Active amoebic infections were treated simultaneously with several medications; those most effective for amoebiasis in tissues were chloroquine, emetine and quinacrine; for the bowel, arsenicals (carbasone, milibis, thiocarbasone), iodoquinoline compounds (chinfofon, diiodohydroxyquinoline) and antibiotics (chlortetracycline, oxtetracycline, bacitracin, neomycin and fumagillin).

Acute haemorrhagic inflammation of the small and large intestine developed in elderly people with chronic heart disease, as a result of the breakdown of congested, oxygen-deficient intestinal capillaries. A similar process could be produced experimentally by the clotting of blood within capillaries of the intestinal mucosa. The principal symptoms were diarrhoea, often bloody, severe abdominal pain and distension. Treatment was primarily supportive. A severe, at times fatal, enterocolitis was caused by increased growth of staphylococci during antibiotic therapy. The chief symptoms were intense diarrhoea, dehydration, fever and shock. Treatment included erythromycin to destroy the staphylococci and administration of fluids and minerals.

The irritable colon, a common disorder, usually is caused by emotional tension, improper diet, irritating drugs or excessive laxatives. Prolonged use of irritant cathartics containing aloin and podophyllum caused extensive dilatation and atony of the colon and occasionally changes resembling ulcerative colitis. Acute intestinal infections also produced irritability of the large bowel after the infection had subsided; symptoms included abdominal pain, flatulence and recurrent diarrhoea. Bowel spasm and loss of normal reflex response to defaecation resulted in constipation. Treatment included bland foods, avoidance of laxatives and other irritants, adequate intake of water, sedatives and antispasmodics.

Most patients with ulcerative colitis could be maintained in satisfactory health by comprehensive and prolonged medical management; surgery was required in 10% to 15% of the cases. The preferred operations were total colectomy and ileostomy, and for regional colitis, segmental resection of the bowel with ileosigmoidostomy or ileocolostomy. While surgery was highly effective and, at times, lifesaving, the numerous complications, locally and systemically, limited operation to problems such as obstruction, perforation, polyps, carcinoma, extensive perianal infection, severe arthritis and cirrhosis of the liver. A new type of ileostomy was devised to permit proper function of the ileostomy, protecting against local inflammation and preparing the ileostomy for prompt application of a leak-proof appliance.

Liver.—Hepatitis, an inflammatory virus disease of the liver, may occur at any time of the year and at all ages. In hepatitis affecting children at birth, the virus of serum jaundice was the

infectious agent, apparently transmitted through the placental barrier by mothers who were symptomless carriers. In children, acute hepatitis did not always produce jaundice, a characteristic sign of the disease. Symptoms included lassitude, poor appetite, failure to gain weight, fever, loose, light-coloured stools and vomiting; the liver was enlarged and tender. Most infants and children recovered completely, without permanent liver damage. Treatment was supportive, including moderate bedrest, a palatable diet high in protein and carbohydrate, with added vitamins. ACTH and cortisone were not helpful, except perhaps in a few cases of severe or relapsing hepatitis. Symptomless carriers were responsible for continued transmission of the disease. In serum hepatitis, prevention of further spread of the virus necessitated scrupulous sterilization of needles, syringes and instruments, avoiding unnecessary use of blood or blood products and techniques inactivating or eliminating the virus from the blood. Current methods for this latter purpose included ultra-violet irradiation, storage of plasma at room temperature and the use of beta-propiolactone; over a three-year period 241 patients received 787 transfusions of plasma treated with this latter material without evidence of toxicity or serum hepatitis. An unusual type of hepatitis, with features suggesting obstruction to bile flow, developed infrequently during the use of chlorpromazine, a drug prescribed for anxiety, tension and nausea. The illness extended for several days to several months; recovery usually was complete.

Gall Bladder.—Cholecystitis (inflammation of the gall bladder) was one of the more common causes of acute abdominal disease in the postoperative period, after unrelated surgery. Angina pectoris was not a contraindication to removal of the gall bladder for gallstones, unless the heart disease was so advanced that operative risk exceeded the possibility of benefit.

Pancreas.—Diagnosis of acute pancreatitis was aided by elevated antithrombin activity in plasma, reflecting the release of increased amounts of trypsin. Surgery was indicated only for an associated cholangitis or obstruction of the common bile duct. Medical treatment included the use of albumin, to maintain normal plasma volume. The outcome depended upon the extent of the destruction of the pancreas.

Early diagnosis of cancer of the pancreas continued to be extremely difficult; the output of enzymes in response to secretin, and examination of pancreatic cells, recovered in the duodenal contents, occasionally facilitated the diagnosis. Many surgical procedures were available for pancreatic tumours; however, radical operation was not attempted, except in limited growths with increased prospects of surgical cure. The size of pancreatic cancers could be reduced by radioactive iodine introduced through fine polyethylene tubing threaded around and through the growth; as much as 9,000 r of radiation could be administered internally by this technique. (See also SURGERY.)

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Strawberries: see FRUIT.

Strikes. **United States.**—Fewer work stoppages (strikes and lockouts) occurred in 1954 than in any year since World War II with the exception of 1948; and fewer workers and man-days of idleness were involved in work stoppages in 1954 than in any year since 1945. Compared with 1953, there was a decline of 20% in the number of man-days idle (a reduc-

tion from 28,300,000 in 1953 to 22,600,000 in 1954), a 36% decline in the number of workers involved in stoppages (a reduction from 2,400,000 in 1953 to 1,530,000 in 1954) and a 32% decline in the number of work stoppages (a reduction from 5,091 in 1953 to 3,468 in 1954). In 1954 the number of man-days idle was 0.21% of the estimated working time of all workers—the lowest percentage since 1945.

The declines in the number of work stoppages, workers involved and man-days idle failed to continue into 1955. The number of stoppages beginning during the period January–May 1955 was 1,475 compared with 1,439 for the comparable period in 1954. Similarly, a 21% rise occurred in the number of workers involved in strikes beginning during the period, and the number of man-days idle rose by 17%. There were 564,000 workers involved in strikes beginning during the January–May period in 1954 and 6,626,000 man-days of idleness during this period. In the January–May period in 1955, the number of workers involved rose to 685,000 and the man-days of idleness increased to 7,770,000.

Approximately half of the number of work stoppages and workers involved in work stoppages that began in 1954 occurred in the manufacturing industries. However, these industries accounted for 61% of the man-days idle during 1954. Work stoppages in the lumber and wood products (except furniture) industry were responsible for 31% of the man-days idle in the manufacturing industries. Similarly, work stoppages in the construction industry were responsible for 54% of the man-days idle in the nonmanufacturing industries during 1954.

Wages, hours and supplementary benefits were the major strike issues in almost half of the 3,468 work stoppages that began in 1954. Forty-three per cent of these stoppages involved disputes over wage decreases. Twenty-four per cent of the work stoppages that began in 1954 featured disputes over working conditions as their major issue. The remaining work stoppages were principally concerned with the issues of union organization (12%), interunion or intraunion matters (7%) and union organization, wages, hours and supplementary benefits (5%). The major strike issues were not reported in 2% of the work stoppages.

Unions affiliated with the American Federation of Labor were involved in 61% of the strikes that occurred in 1954. These strikes accounted for 46% of the total number of workers involved and 41% of the man-days of idleness. Unions affiliated with the Congress of Industrial Organizations were involved in 22% of the strikes. These strikes accounted for 31% of the total number of workers involved and 30% of the man-days of idleness during 1954. About 14% of the stoppages, with 16% of the workers and 11% of the man-days of idleness, involved unions that were not affiliated with either the A.F. of L. or C.I.O. Many of these strikes were short, localized stoppages in the coal-mining industry. (P. TA.)

Major U.S. Strikes.—Although a number of notable strikes occurred during 1955, in no instance did the White House deem

Table II.—United States: Work Stoppages by Industry Group

Industry group	Stoppages beginning in 1954		Man-days idle during 1954 (all stoppages)	
	Number	Workers involved	Number	Per cent of estimated working time of all workers
All industries	3,468*	1,530,000†	22,600,000†	0.21
Manufacturing	1,703	772,000	13,700,000	.33
Primary metal industries	156	80,400	952,000	.31
Fabricated metal products (except ordnance, machinery and transportation equipment)	175	42,400	1,200,000	.45
Ordnance and accessories	11	4,260	57,800	.13
Electric machinery, equipment and supplies	116	57,100	1,010,000	.35
Machinery (except electrical)	175	64,000	1,350,000	.34
Transportation equipment	84	107,000	656,000	.15
Lumber and wood products (except furniture)	70	87,300	4,200,000	2.25
Furniture and fixtures	70	10,900	139,000	.16
Stone, clay and glass products	106	20,700	300,000	.23
Textile mill products	65	28,400	573,000	.21
Apparel and other finished products made from fabrics and similar materials	135	12,200	145,000	.05
Leather and leather products	36	5,560	53,300	.06
Food and kindred products	157	73,800	694,000	.18
Tobacco manufactures	2	100	140	.01
Paper and allied products	37	9,970	77,000	.06
Printing, publishing and allied industries	30	5,950	103,000	.05
Chemicals and allied products	77	18,200	159,000	.08
Products of petroleum and coal	16	2,230	50,600	.08
Rubber products	83	108,000	1,620,000	2.49
Professional, scientific and controlling instruments; photographic and optical goods; watches and clocks	24	18,700	145,000	.18
Miscellaneous manufacturing industries	85	14,200	186,000	.15
Nonmanufacturing	1,765	761,000	8,900,000	.14
Agriculture, forestry and fishing	11	2,930	59,900	.02
Mining	249	111,000	845,000	.44
Construction	804	437,000	4,800,000	.71
Trade	298	53,400	1,690,000	.06
Finance, insurance and real estate	10	600	13,900	.01
Transportation, communications and other public utilities	282	146,000	1,410,000	.14
Services (personal, business and other)	104	8,040	82,900	.02
Government (administration, protection and sanitation)‡	10	1,810	10,400	.01

*The sum of the figures in this column exceeds 3,468 because a few stoppages extending into two or more industry groups have been counted in this column in each industry group affected; workers involved and man-days idle were divided among the respective groups. †In this and subsequent tables, the sum of the individual items may not equal the total for the group because of rounding the individual figures. ‡Less than 0.05%. §Not available. ||Municipally operated utilities are included under "Transportation, communications and other public utilities."

Source: United States Bureau of Labor Statistics, *Monthly Labor Review*.

that the national health and safety were threatened. There was no consistent pattern to these work stoppages, and the key issues varied from industry to industry. A small proportion of the strikes were accompanied by violence.

Two strikes in the southeast attracted national attention. One, by the Communications Workers of America against the Southern Bell system, involved about 50,000 workers and lasted 72 days. It was accompanied by numerous incidents of violence and property damage. The union demanded that the agreement which contained a no-strike, no-lockout clause, also provide for arbitration of any disputes arising during the term of the agreement which the parties would not decide themselves. The company insisted on retaining final decision in disputes involving benefit plans, leave of absence and compliance with health and safety measures. Wage issues were also involved in the dispute. Both sides claimed partial victory when the strike was settled. The company filed a \$5,000,000 suit for property damage against the union after the strike settlement.

The other large strike in the south found ten A.F. of L. union representatives about 25,000 nonoperating employees, including telegraphers, clerks, track crews and shop crafts, refusing to work at the Louisville and Nashville railroad (L. & N.) in the southern states for 59 days. Most of the railroads in the country had in 1954 accepted a presidential emergency board recommendation calling for a health insurance program financed jointly by the workers and carriers. The L. & N. refused to accept the same terms; it favoured the continuance of its own voluntary insurance system, opposing the other programs on the

Table I.—United States: Work Stoppages, Workers Involved and Man-days Idle

Year	Number of work stoppages	Number of workers involved	Man-days idle during year	Man-days idle as a per cent of estimated working time of all workers
1935–39 (av.)	2,862	1,130,000	16,900,000	0.27
1945	4,750	3,470,000	38,000,000	0.47
1946	4,985	4,600,000	116,000,000	1.43
1947	3,693	2,170,000	34,600,000	0.41
1948	3,419	1,960,000	34,100,000	0.37
1949	3,606	3,030,000	50,500,000	0.59
1950	4,843	2,410,000	38,800,000	0.44
1951	4,737	2,220,000	22,900,000	0.23
1952	5,117	3,540,000	59,100,000	0.57
1953	5,091	2,400,000	28,300,000	0.26
1954	3,468	1,530,000	22,600,000	0.21

Source: United States Bureau of Labor Statistics, *Monthly Labor Review*. The 1954 figures are preliminary.

round that workers were compelled to contribute to it. The strike ended when the parties agreed to submit their differences to arbitration.

The referee ruled that the L. & N. should pay the full costs of the same health and welfare plan which was paid for jointly by workers and railroads elsewhere. The arbitrator stated that his decision was based upon the company opposition to forcing employees to contribute to the health and welfare plan and the general trend toward plans financed entirely by employers. Before the arbitrator had issued his decision, the nonoperating unions had demanded that all carriers assume the burden of the total costs of their health and welfare plan.

A 13-week strike of the C.I.O. Textile Workers union in New England was prompted by an employers' demand that the workers accept a ten-cent "package" cut. The final settlement called for the continuance of wages and working conditions as they existed prior to the strike.

Labour unrest continued to plague the New York city waterfront. In September the International Longshoremen's association, which had been expelled from the A.F. of L. the preceding year, called a strike in protest against the Waterfront commission. This commission controlled work permits for longshoremen on the New York-New Jersey water front, and had denied permits to several hundred longshoremen who had criminal records.

The I.L.A. tried to extend the strike to the whole east coast, apparently in the effort to obtain governmental intervention and overruling of the commission's policy. However, the governors of New York and New Jersey refused to interfere with the commission's activities. The I.L.A. called off the strike when a New Jersey state senator organized a "citizens committee" to hear the alleged grievances of the union against the commission. One of the most prolonged and violent strikes in recent labour-management disputes occurred at Kohler, Wis. The strike, which started in April 1954, involved the United Automobile Workers and the Kohler company, a producer of plumbing fixtures. After a brief shutdown the company resumed oper-



TRAFFIC JAM IN WASHINGTON, D.C., during the transit strike of 1955. Because of the great increase in automobile traffic, motorists were permitted to park on the trolley tracks in the centre of Pennsylvania avenue

Table III.—United Kingdom: Industrial Disputes

Industry group	Jan.-July 1955			Jan.-July 1954		
	Number of stoppages beginning in period	Number of workers involved in all stoppages in progress	Aggregate number of working days lost	Number of stoppages beginning in period	Number of workers involved in all stoppages in progress	Aggregate number of working days lost
Agriculture, forestry, fishing	1	500	1,000	1	†	†
Coal mining	917	241,900*	884,000	778	117,900*	279,000
Other mining and quarrying	—	—	—	2	100	†
Treatment of nonmetallic minerals	5	800	29,000	10	1,200	3,000
Chemicals and allied trades	5	1,700	5,000	4	200	†
Metallurgical industries	26	5,800	18,000	16	2,500	5,000
Shipbuilding and ship repairing	32	5,800	20,000	30	4,800	24,000
Engineering	31	7,400	40,000	23	4,000	22,000
Vehicles	34	22,500	37,000	33	12,800	50,000
Other metal industries	5	1,100	4,000	7	600	4,000
Textiles	7	1,400	9,000	8	500	1,000
Leather, etc.	1	100	†	—	—	—
Clothing	4	200	1,000	14	3,000	9,000
Food, drink, tobacco	6	300	1,000	6	200	1,000
Manufactures of wood and cork	13	900	12,000	11	1,200	9,000
Paper and printing	1	17,900	73,000	2	700	19,000
Other manufacturing industries	1	†	†	8	5,200	26,000
Building and contracting	49	4,800	42,000	36	28,800	181,000
Gas, electricity, water	1	100	†	2	300	3,000
Transport, etc.	55	120,900	1,608,000	58	20,000	51,000
Distributive trades	6	700	7,000	3	200	1,000
Other services	5	1,200	4,000	9	900	4,000
Total	1,205	436,000†	2,795,000	1,060†	205,100†	692,000

*Some workers, largely in the coal-mining industry, were involved in more than one stoppage and are counted more than once in the totals. The net number of individuals involved in coal-mining stoppages in the period under review in 1955 was approximately 88,000, and in the corresponding period in 1954 was approximately 92,000. For all industries combined the corresponding net totals were approximately 362,000 and 77,000. †Less than 50 workers or 500 working days. ‡A stoppage of electricians which began in April 1954 involved workers in more than one industry group but was counted as only one stoppage in the total for all industries taken together.

Source: Ministry of Labour Gazette.

ations, employing some old and many new workers. The dispute was punctuated by numerous outbursts of violence. The basic issue in the strike appeared to be that of union security, which the company refused to grant. The length and bitterness of the strike and the widespread publicity given to arguments of "principle" attracted nation-wide attention. Appeals to secure White House intervention were rebuffed on the basis that the strike did not involve any threats to national health and safety. An unusual attempt by members of the U.S. senate to act as mediators in the strike was rejected by the company spokesman. The U.A.W. was alleged to have spent in excess of \$5,000,000 in support of the strike. (S. A. LN.)

United Kingdom.—The number of work stoppages arising from industrial disputes in the United Kingdom that began during the year rose by 14% from 1,746 (1953) to 1,989 (1954). Similarly, the aggregate number of working days lost during the year in stoppages rose by 13% from 2,157,000 (1953) to 2,441,000 (1954). On the other hand, the aggregate number of workers involved in stoppages which began during the year declined from 1,370,000 (1953) to 448,000 (1954).

The two principal causes of the disputes which led to work stoppages in 1954 were wage disputes and disputes over other working arrangements, rules and discipline. The former accounted for 47% of the stoppages and 39% of the workers directly involved in stoppages beginning in 1954. The latter issue accounted for 37% of the stoppages and 28% of the workers directly involved.

The largest number of stoppages of work arising from indus-

Table IV.—Canada: Time Lost in Labour Disputes

Industry	1953	1954
	000 man-working days	
Total, all industries	1,324.7	1,475.2
Manufacturing		
Food, animal and vegetable products	21.4	57.6
Tobacco and liquors	—	10.0
Rubber	7.7	0.5
Fur and leather products	30.0	0.2
Textiles and clothing	68.6	25.0
Pulp and paper products	34.4	3.4
Printing and publishing	—	0.1
Logging, lumber and products	177.6	33.1
Motor vehicles and parts	1.4	456.4
Aircraft, shipbuilding and farm implements	—	136.4
Other iron and steel	91.3	117.0
Electrical apparatus	9.0	20.3
Other nonferrous	20.7	19.2
Nonmetallics, chemicals and miscellaneous	15.6	61.3
Construction	36.3	202.7
Fishing and trapping	12.0	47.9
Coal mining	17.5	8.4
Other mining	664.5	187.7
Transport and public utilities	85.8	3.3
Trade, finance and service	30.9	84.6

Source: Dominion Bureau of Statistics, Canadian Statistical Review.

trial disputes in 1954 occurred in the coal-mining industry. These stoppages accounted for about 20% of the total loss of time in 1954 and for about 40% of the total number of workers involved in all stoppages in the year.

A comparison of the first halves of 1954 and 1955 revealed substantial increases in the time lost in all stoppages (692,000 working days in the first half of 1954 to 2,795,000 in the first half of 1955) and in the number of workers involved (205,100 to 436,000). The total number of stoppages beginning during the period rose to a lesser extent, from 1,060 (first half of 1954) to 1,205 (first half of 1955).

Canada.—In Canada the number of strikes and lockouts commencing during the period decreased from 174 in 1953 to 168 in 1954, and from 46 in the first quarter of 1954 to 27 in the first quarter of 1955. Nevertheless, the number of workers involved in the strikes commencing during the period and the time lost in man-days continued to increase. The number of workers involved in strikes increased from 55,988 in 1953 to 61,477 in 1954, and from 12,607 in the first quarter of 1954 to 12,974 in the first quarter of 1955. Similarly, the time lost in man-working days rose from 1,324,715 in 1953 to 1,472,160 in 1954, and from 223,949 in the first quarter of 1954 to 252,171 in the first quarter of 1955. The per cent of estimated working time lost rose from 0.13 in 1953 to 0.15 in 1954, and from 0.09 in the first quarter of 1954 to 0.10 in the first quarter of 1955. (The 1954 yearly figures and the 1955 figures are preliminary and are based upon the data published in the *Labour Gazette*.)

In 1954, the greatest time losses occurred in the motor vehicles and parts industry (456,400 man-working days), the construction industry (202,700) and in mining other than coal (187,700). More than half of the man-working days lost in the first five months of 1955 was accounted for by the time lost in January, as a result of the dispute in the motor vehicles and parts industry.

(See also LABOUR UNIONS; NATIONAL LABOR RELATIONS BOARD.)

Sudan: see ANGLO-EGYPTIAN SUDAN; FRENCH UNION; FRENCH WEST AFRICA.

Sugar. Centrifugal sugar continued in abundant supply in 1955 in the U.S. and throughout the world. It appeared that the U.S. crop would, more because of restrictions than otherwise, fall below that of 1954 which was valued at \$208,000,000 for 2,653,000 tons (raw value), of which 2,043,000 tons were from sugar beets, 610,000 tons from sugar cane.

The indicated U.S. sugar-beet crop of 12,474,000 tons was 13% less than the 14,091,000 tons of 1954, but substantially in excess of the average 10,431,000 tons for 1944-53. Acreage for harvest, under official restriction for the first time since

1935, was 744,000 ac., only 85% as much as the 876,000 ac. of 1954 but slightly above the 736,000-ac. average for the previous decade. The indicated yield was a record high of 16.8 tons per acre, as compared with 16.1 tons in 1954 and an average 14.1 tons.

Table I.—U.S. Sugar-Beet Production of the Principal Producing States

State	(in 000 tons)		Average 1944-53
	Indicated 1955	1954	
California	3,526	4,641	2,554
Colorado	1,628	1,654	1,897
Idaho	1,482	1,569	1,201
Michigan	840	771	633
Nebraska	740	786	699
Minnesota	732	819	447
Montana	686	683	709
Washington	675	761	375
Utah	464	535	467
Wyoming	392	475	411
North Dakota	391	418	223
Oregon	391	389	346
Ohio	264	247	183

Sugar cane for sugar and syrup was indicated at 7,056,000 tons, 6% less than in 1954 but 7% above average for the decade. The 291,000 ac. for harvest were 6% less than in 1954 and well below the 322,000-ac. average of the previous decade. The indicated yield of 24.2 tons per acre was the same as 1954 but well above the average 20.4 tons per acre for 1944-53. The USDA in October set the 1956 acreage allotment at 267,000 ac. as compared with 282,000 ac. in 1955.

Table II.—U.S. Sugar-Cane Production

State	(in 000 tons)		Average 1944-53
	Indicated 1955	1954	
Louisiana	5,865	6,200	5,402
Florida	1,191	1,281	1,161

U.S. consumption per capita of refined sugar in 1955 was indicated at 94.9 lb., slightly less than the usage in recent years. In addition, miscellaneous sweets used included about 50,000 ac. of sorgo for syrup, 1,657,000 gal. of maple syrup and 151,000 lb. of maple sugar. The 1955 honey crop was estimated at 243,100,000 lb., 12% more than in 1954, from 5,238,000 colonies of bees. California was the leading state (27,924,000 lb.) followed by Minnesota (21,627,000 lb.). U.S. sugar imports in 1954-55 included 3,555,000 tons of cane sugar valued at \$382,191,000, as compared with 3,944,000 tons valued at \$437,865,000 in the preceding year. An additional 2,140,758 tons were obtained in trade with U.S. territories, largely from Puerto Rico and Hawaii.

U.S. 1955 sugar consumption was estimated as high as 8,500,000 tons. The secretary of agriculture in July increased the sugar quota by 100,000 tons to 8,300,000 tons. It appeared that the initial quota for 1956 would probably be set at 8,300,000 tons.

World production of centrifugal cane and beet sugar for 1955-56 was forecast at a record 41,126,000 short tons, raw

Table III.—Centrifugal-Sugar Production of the Principal Producing Countries

Country	(in 000 of tons, raw value)		Average 1945-49	Average 1935-39
	1955-56	1954-55		
Cuba	5,000	4,994	5,898	3,111
U.S.S.R.	3,000	2,500	1,643	2,777
Brazil	2,470	2,479	1,420	811
United States	2,400	2,598	1,969	1,977
India	2,100	2,000	1,319	1,319
France	1,678	1,860	823	1,011
Western Germany	1,460	1,438	524	611
Republic of the Philippines	1,208	1,371	382	1,011
Puerto Rico	1,175	1,166	1,143	911
Hawaii	1,120	1,127	861	911
Italy	1,065	968	331	411
Mexico	1,063	1,041	636	311
Indonesia	937	787	102	1,211
Union of South Africa	923	828	542	411
Argentina	900	908	654	511
Formosa	795	832	346	1,211
Peru	760	725	485	411
Dominican Republic	725	673	509	411
United Kingdom	710	699	612	511
Mauritius	564	551	351	311

value, as compared with 40,542,000 tons in the previous year and an average 28,536,000 tons in 1935-39. Cane accounted for 25,163,000 tons as compared with 24,945,000 tons in 1954-55, and beet sugar was 15,963,000 tons against 15,597,000 tons in the previous year. Noncentrifugal sugar, much less refined and known by a variety of local names, amounted to 6,724,000 tons as compared with 6,788,000 tons in the previous year and 5,502,000 tons prewar.

World production of sugar beets was indicated at 119,321,000 tons as compared with 113,596,000 tons in 1954 and a prewar average of only 82,071,000 tons. Acreage was expanded to 12,105,000 ac., as compared with 11,680,000 ac. in 1954 and 8,285,000 ac. prewar.

International trade in centrifugal sugar in 1954 was 13,730,289 tons as compared with 14,884,633 tons in the previous year, 46% larger than the average for early postwar years and 19% above prewar. Cuba exported 4,613,352 tons against 5,977,742 in the previous year. Western Europe imported 4,220,547 tons as compared with 5,793,865 tons in 1953.

The International Sugar council in April raised effective export quotas from 80% to 90% of basic tonnages, increasing the supply available to the free world market by 445,000 tons (to 4,133,000 tons). In June the council withdrew the rule that one-fifth of the initial export quota be held for shipment after August.

Both the U.S.S.R. and the Netherlands were unable to meet export quotas, so provided 372,000 tons for reallocation. But in July the quotas were cut back by 5% as prices dipped below the minimum. The council met in London in September under the chairmanship of Lawrence Myers, attended by delegates of 23 countries and some observers. Estimated free-market requirements for 1955 were revised upward to 4,690,000 metric tons, 40,000 tons more than the June estimate. It became clear that Brazil would not ratify, having sold something like three times what would have been its quota amount. Free-market prices, which had fallen significantly below the 3.25 cents per pound minimum, improved in one month in early 1955 from 3.17 cents per pound to 3.31 cents f.a.s. Cuba as the U.S.S.R. reached for imports. Some stocks were sold as low as 3.05 cents per pound.

(J. K. R.)

Suicide Statistics. There was a small increase in the suicide rate in the United States during 1955, as compared with the year before, according to provisional data relating to the first seven months of both years. The rate for the latter period was 10.3 per 100,000 population. There were altogether 15,980 suicides during the entire year of 1954, the rate being 9.9 per 100,000 population, about 3% lower than in 1953. In England and Wales 5,043 suicides were reported during 1954, with a rate of 11.4 per 100,000 population. On the other hand, Canada had a suicide rate of only 7.3 per 100,000 population in 1954, with 1,102 deaths.

Australia recorded a suicide rate of 10.9 per 100,000 population in 1953.

Suicide rates vary widely with age, with the highest rates among elderly persons. In the United States during 1954, the suicide rates per 100,000 population of stated ages were: 15-24 years, 3.6; 25-34 years, 8.7; 35-44 years, 12.1; 45-54 years, 18.7; 55-64 years, 23.2; 65-74 years, 26.3; 75-84 years, 25.3; and ages 85 and over, 21.0. Suicide is much more frequent among men than women, the rates according to race and sex being: white males, 16.8; white females, 4.6; nonwhite males, 6.7; and nonwhite females, 1.4 per 100,000 population.

The geographic differences in suicide are very marked, with the highest rates customarily in the Pacific coast area and the lowest rates in the south central states. In 1953 the suicide rates per 100,000 population were: New England, 8.9; middle Atlantic, 8.9; east north central, 10.8; west north central, 10.7; south Atlantic, 9.0; east south central, 7.2; west south central, 7.8; mountain, 13.3; Pacific, 15.7.

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Sulphur. Of the total world production of sulphur shown by countries in the section on MINERAL AND METAL PRODUCTION AND PRICES, the United States produced in 1954 more than 90%. Italy and Japan continued to supply most of the remaining 10%.

United States.—In 1954 domestic output of sulphur was triple that in 1939. The table below based on U.S. bureau of mines reports, gives the salient features of the industry from 1949 to 1954.

A substantial addition to the sulphur supply is derived from the sulphur content of pyrite ores of copper, lead and zinc which are roasted to produce by-product sulphuric acid.

In the first nine months of 1955, output of native sulphur was 4,576,970 short tons and recovered sulphur was 330,176 tons.

Producers' stocks included 3,360,388 tons of native and 119,536 tons of recovered sulphur.

The new Chacahoula mine of the Freeport Sulphur company, part of the four-year \$25,000,000 expansion program of development by the company, went into operation in February. This mine is in a 100,000-ac. reclaimed cypress swamp in Louisiana, about 50 mi. W. of New Orleans. The rated annual capacity is 100,000 tons.

(F. E. H.)

Data on Sulphur Industry in the United States

	(In 000 short tons)					
	1954*	1953	1952	1951	1950	1949
Production (native)	6,177.4	5,774.0	5,928.3	5,911.6	5,815.2	5,314.4
Shipments	5,978.6	5,851.1	5,758.4	5,586.7	6,165.3	5,364.0
Exports (crude)	1,845.5	1,390.5	1,460.7	1,442.3	1,613.9	1,602.6
Available supply	4,133.1	4,460.6	4,297.7	4,144.4	4,551.4	3,761.4
Consumption	4,069.4	4,430.8	4,175.6	4,241.0	4,657.5	3,818.9
Stocks (producers')	3,615.4	3,385.2	3,437.1	3,177.9	2,973.0	3,471.2
By-product recovery	400.3	382.7	281.3	206.1	159.6	63.6

*Preliminary.

"HOT" SULPHUR in "Thermos bottle" containers being pushed on barges by a Mississippi river tug at New Orleans, La. Shipping sulphur and steel in a hot, molten state by this method was increasingly used in 1955



Sumatra: see INDONESIA.

Summerfield, Arthur E(IIsworth) (1899—), U.S. government official, was born at Pinconning, Mich., on March 17. He worked in various automobile plants and in real estate, and in 1924 became distributor in Flint, Mich., for the Pure Oil company.

In 1929 he founded the Summerfield Chevrolet company and in 1938 became president of the Bryant Properties corporation. He became active in Republican politics during Wendell Willkie's campaign for the presidency in 1940. In 1943 he was appointed finance director of the Republican state central committee, and in 1944 he was elected committeeman from Michigan at the Republican national convention. Summerfield was appointed to the chairmanship of the Republican strategy committee in July 1949, and in July 1952 he was elected chairman of the Republican national committee.

On Nov. 25 Pres.-elect Dwight D. Eisenhower selected Summerfield to serve as U.S. postmaster general. He was confirmed by the U.S. senate on Jan. 21, 1953, and was sworn into office the same day.

During 1954 and 1955 Summerfield made strenuous, though unavailing, efforts to secure from congress authorization to increase postal rates on certain classes of mail matter in order to decrease the annual deficit of the department. In May 1955 he advised Pres. Eisenhower to veto an 8.8% average increase in pay for postal workers, and congress adopted a compromise figure of 8% the next month.

Support Prices: see AGRICULTURE.

Supreme Court of the United States. The annual term of the court began Oct. 4, 1954, and ended June 6, 1955. Associate Justice Robert Houghwout Jackson died Oct. 9, 1954, after 13 years of service on the court. Former Associate Justice Owen J. Roberts, who resigned from the court in 1945, died May 17, 1955. John Marshall Harlan of New York, a judge of the United States Circuit Court of Appeals for the Second Circuit, was named to succeed Justice Jackson and took his seat on the bench on March 28, 1955.

The court disposed of 1,566 cases, the largest volume of business since the 1948 term. In 1953-54, the court disposed of 1,303 cases. Of the cases disposed of all but 105 were decided without oral argument being permitted. Seventy-eight full opinions were handed down as compared with 65 during the previous term, and dissenting opinions numbered 45 as compared with 54 in 1953-54. The justices also wrote 14 concurring opinions.

The United States or a state was a party in all but 20 of the cases in which written opinions were rendered.

Prior to adjournment the court announced that hereafter it would not sit on Fridays to hear oral arguments. Heretofore, when in session, the court sat Monday through Friday.

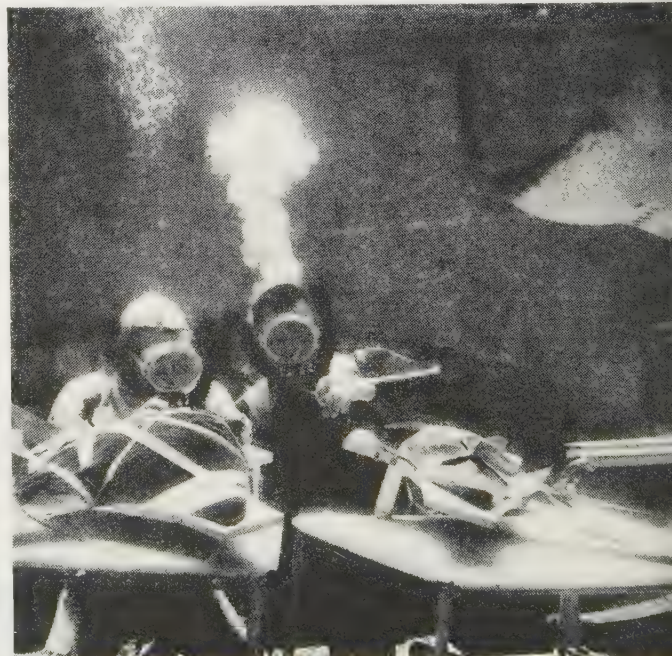
Members of the Court.—The United States Supreme Court in 1955 was composed of the following members (dates indicate year appointment was confirmed by the senate): chief justice, Earl Warren (1954); associate justices, Hugo L. Black (1937), Stanley Reed (1938), Felix Frankfurter (1939), William O. Douglas (1939), Harold H. Burton (1945), Tom C. Clark (1949), Sherman Minton (1949) and John M. Harlan (1955). (See also LAW.) (H. B. Wv.)

Surgery. Surgery of heart conditions occupied a prominent place in new advances during 1955. C. W. Lillehei and his co-workers reported successful use of cross circulation

in the repair of intracardiac defects. The heart and lungs of a donor, usually a relative, are used to circulate the blood and oxygenate it during which time the blood is circumvented from entering the patient's heart, making it possible to open the heart of the patient in a bloodless field. None of the blood enters the heart except that which is necessary to nourish the heart muscle through the coronary arteries. Lillehei *et al.* reported the repair of defects in the partition between the two heart ventricles in 25 cases with only seven deaths, and of 9 cases of tetralogy of Fallot (blue baby) with only four deaths. This procedure was used only in the severer cases.

D. A. Cooley and his co-workers emphasized the importance of conservative treatment in penetrating wounds of the heart. In 57 cases observed, 15 cases without treatment had a 46% mortality, 14 cases were operated upon with a mortality of 50%, and 28 were treated by simple removal of the blood from the pericardium (the sac surrounding the heart) with only 10.7% mortality.

H. W. Baker and his co-workers attempted to determine the risk of surgery in patients with previous coronary thrombosis and infarction of the heart muscle. Seventy patients with previous coronary thrombosis were subjected to 111 operative procedures. Operative mortality rate was 3.6%, and the incidence of cardiorespiratory complications was 7.2%. Baker *et al.* found that the death rate and heart and lung complications were higher in patients with congestive heart failure and irregularities of the heart beat. An increase in mortality and complications was not apparent in patients with angina pectoris, enlarged heart or high blood pressure. They observed five deaths in 13 patients who had had congestive heart failure prior to the operation (38%) as compared with a 7% mortality rate in those who had no previous heart failure. Deaths or heart and lung complications occurred in 23% of patients with irregularities in heart rate as compared with a mortality of 9.4% in those patients with normal rhythm. The incidence of deaths and complications in the hypertensive group was 13%, and in the non-hypertensive group it was 12.8%. Baker and his co-workers also showed that the length of time that the operation took increased the risk and found that the risk from operation was least when it was done under local anaesthesia, somewhat



EYE SURGEONS transplanting eye tissue from a wild bat ray to a "pet" ray in a public aquarium at Los Angeles, Calif., in 1955. It was believed that this was the first underwater operation ever performed

greater when done under spinal and greatest when done under general anaesthesia.

A. de S. Pereira discussed the treatment of internal carotid thrombosis (a clotting of the main artery that goes to the brain), which is likely to be confused with a stroke. He reported 31 cases which had been treated surgically among 154 patients with evidence of stroke. Attempts to revascularize the brain were unsuccessful by many methods. The best results were obtained when the blood supply to the brain was increased by removing the sympathetic nerves in the neck, which control the blood vessels going into the brain. The other methods offered little or no relief.

L. W. Guiss studied the incidence of cancer in the second breast of women who had had cancer in one breast. He found that about 3% of all women who have had removal of one breast for cancer will ultimately develop an independent cancer in the opposite breast. This is about three times the chance that a woman who has not had cancer has of developing breast cancer. It seems paradoxical, but Guiss found that patients with bilateral independent cancers have a better prognosis than those with cancer in only one breast. In his series of cases, 35.1% with bilateral disease were free from disease after 15 years as compared with 25.1% with unilateral disease. He saw no justification in routine removal of the opposite breast in a woman who has had cancer of one breast.

In some patients, following removal of the stomach for ulcer or cancer, symptoms occur after eating which have been designated as a "dumping syndrome." J. M. Walker and his co-workers demonstrated that this results from a loss in the volume of the fluid portion of the blood. Usually sugar in high concentration causes this, and Walker and his associates showed that there is a secretion into the lumen of the intestine from the blood stream which causes the faintness and nausea of which the patient complains. M. A. Hayes, in studying the dietary control of the postgastrectomy "dumping syndrome," stated that it is caused by the ingestion of carbohydrates and proteins, which are easily absorbed, and this increases the activity of the intestine. Symptoms which the patients complain of are increased pulse rate, palpitation, sweating, dizziness and nausea. In order to prevent these symptoms, he suggested the use of a high-fat diet and a low carbohydrate and protein intake. The fat, which is slowly hydrolyzed, prevents the marked outpouring of fluid into the lumen of the intestine and the undesirable manifestations. The administration of a high-fat diet also favours a gain in weight, which many of these patients do slowly.

J. H. Mahaffey and J. M. Howard found that in 100 patients on a general surgical service 9% developed laboratory evidence of pancreatitis. The highest incidence was in a group in which resection of a large portion of the stomach had been done. The next largest was in a group of patients undergoing sympathectomy. Gynaecologic operations were not associated with any evidence of pancreatitis. Operations on the gall-bladder and bile tracts were associated with a low incidence of pancreatitis. In none of the 31 patients who had operations done outside the abdomen was there any evidence of pancreatitis. Mahaffey and Howard stated that postoperative pancreatitis is much commoner than is ordinarily thought, but is much less severe than spontaneously occurring pancreatitis. (See also ELECTRONICS.)

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Surinam (DUTCH GUIANA), an overseas territory of the Netherlands in northeastern South America, has an area of 55,143 sq.mi. and lies between British Guiana to the west and French Guiana to the east. Its population (est. 1954) of 220,000, engaged mainly in agriculture, lives along the narrow coastal plain, and only 30,000 dwell on the extensive plateau to the south, where they are engaged chiefly in mining and timber enterprises. The capital is Paramaribo (pop., 1952 est., 86,400). Half the population is of Asian origin, India and Indonesia being the areas of chief importance. Persons of European, African or indigenous stock, predominantly in mixed strains, constitute a minority. The official language is Dutch. The governor in 1955 was J. Klaasesz. The premier was J. Ferrier.

History.—The most important event in 1955 was the visit of the queen of the Netherlands, which occurred in October. It was the first time the sovereign had ever visited Surinam.

In March the first election under the new constitution took place, and the group formerly in power, known as the Coalition, dropped from 13 to 8 members of the national legislature (*staten van Suriname*) of 21 members. Various small parties, associated as the Unity group, took power with 13 members, including representation of the Progressive, Agrarian and Democratic parties and several independents.

During the year progress was made in implementing the program of public works originally put forward by the International Bank for Reconstruction and Development. A ten-year plan was evolved, which was to go beyond the program of the bank. A total outlay of approximately \$63,000,000 over the ten years on essential public works was contemplated. One-third of the cost would be borne by Surinam and one-third by the Netherlands, while the latter would lend the third portion to Surinam, repayable over a long period of time.

(See also NETHERLANDS ANTILLES.) (C. E. Mc.)

Education.—On Jan. 1, 1955, there were 141 elementary schools with 39,293 pupils and 1,016 teachers, 12 advanced and higher elementary schools with 4,165 pupils and 169 teachers and 2 secondary schools with 474 students and 34 teachers.

Finance.—The monetary unit is the Surinam gulden or florin, valued at 53.0264 cents U.S. currency, official rate, in 1955. The 1955 budget estimated revenue at 43,000,000 florins and expenditure at 43,733,000 florins; revenue in 1954 was 39,070,000 florins and expenditure 41,300,000 florins. Currency in circulation on Dec. 31, 1954, totalled 13,212,000 florins.

Trade and Communications.—Exports in 1954 totalled 55,183,000 florins; imports, 51,959,000 florins. Leading exports were bauxite (83%), timber (8%), rice (3%) and coffee (2%). Leading customers were the U.S. (81%), the Netherlands (6%) and Canada (3%); leading suppliers, the U.S. (38%), the Netherlands (29%), Trinidad (8%) and the U.K. (7%). Internal transportation is largely by water; in 1954 there were 83 mi. of railway, 525 mi. of roads, 3,186 telephones and 2,458 motor vehicles. Vessels entered in 1954 totalled 877 of 2,229,580 net registered tons; vessels cleared, 877 of 2,223,720 tons. In 1954, 696 aircraft landed at Zandery airfield.

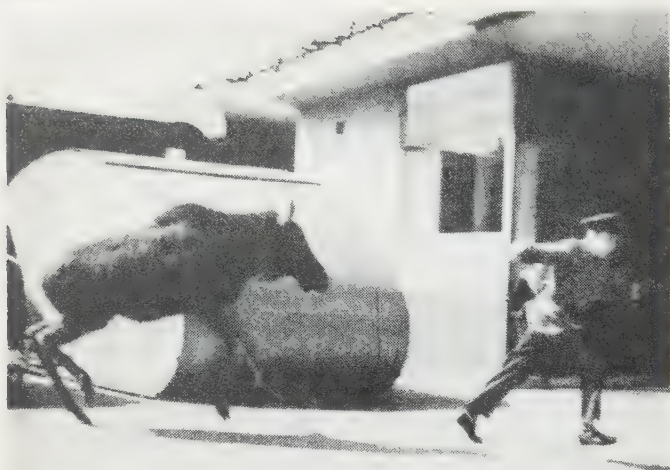
Production.—Figures for 1954 included bauxite 3,362,000 metric tons; gold 211 kg.; balata 116 tons; sugar 8,563 tons; rice (paddy) 66,659 tons; rum 505,000 l.; molasses 2,224,000 l. (J. W. Mw.)

Svalbard: see NORWAY.

Swains Island: see SAMOA, AMERICAN.

Swaziland: see BRITISH SOUTH AFRICAN TERRITORIES.

Sweden. A democratic monarchy of northern Europe, Sweden has an area of 173,564 sq.mi. Pop. (1955 est.) 7,241,000. Capital: Stockholm, pop. (1953 est.) 769,714; greater Stockholm had about 1,030,000. Other principal cities (pop., Jan. 1, 1954): Göteborg 367,569; Malmö 201,939; Norrköping 87,989; Helsingborg 72,660; Örebro 69,637; Uppsala 67,087. Religion: Lutheran Christian. Ruler in 1955: King Gus-



WILD MOOSE CHASING A SOLDIER down a street in the heart of Stockholm, Swed., in 1955. The animal, entering the city from nearby woods, finally leaped into a lake after frustrating capture by police, firemen, soldiers and citizens

tav VI Adolf. Prime minister: Tage Erlander.

History.—Prosperity continued to shine on Sweden, but it was accompanied with complexities. Swedish wages, already the highest in Europe, were increased by about 3% in the agreements of Jan. 1955, and later certain categories of seamen won up to 11%. Many imports from dollar lands were placed on the free list in the fall of 1954, and more on Jan. 1, 1955. Imports soared, and reserves of foreign currency declined—\$100,000,000 in 1954, and at an increasing rate in 1955. The wholesale price index rose by mid-1955 to 307 (1935=100).

In 1954 the government tried to retain the interest rate of 2½%, but in October offered a loan at 4% to try to entice some of the surplus funds. In April 1955, the discount rate was raised to 3½%, and the government offered a new loan at 4½%. A forced savings plan was vigorously debated and finally abandoned. But depositors could earn 4% on up to 1,000 kronor, and if they left their money in banks until 1961 they were promised a 20% premium on 1955 deposits and a 15% premium on 1956 deposits. Corporate taxation was to be increased from 40% to 45% in 1956 and 50% in 1957. A temporary tax of 12% was placed on certain investments for plant expansion; this, according to the opposition, would only further limit production and export, in which Sweden was already lagging.

The social welfare system was expanded in January with the introduction of compulsory sickness insurance. Costs were about \$5 per year for medical care plus \$6 for sickness benefits for the lower income groups; for an average family the total costs would be about \$30 per year. The individual could choose his own doctor and would get up to two years of medical and hospital care with almost no additional cost; earnings lost by illness would be compensated up to 65%–70% for the first 90 days, and at a lower rate thereafter. The sum of \$160,000,000 was expected to cover the total costs; of this 44% was to be paid by individual premiums, 27% by employers and 29% by general taxation.

Problems of defense plagued Sweden in various ways. Unidentifiable U-boats were observed off the east coast; fishing vessels were captured by the Russians and fined for violating their 12-mi. limit in the eastern Baltic. A major espionage ring was broken up with arrest or expulsion of five Swedes and six foreigners, several of the latter connected with the Czech and Rumanian legations. Within-the-rock defense shelters in Stockholm neared completion, and could accommodate 52,500 per-

sons, or 13,000 for sleeping.

In the field of Scandinavian co-operation a convention was signed in Copenhagen, Den., Sept. 15, 1955, permitting citizens of Denmark, Finland, Iceland, Norway and Sweden to get the full social security benefits of whichever one of the five countries they resided in.

The major governmental shift was the retirement of Per Edvin Skold as minister of finance, and his replacement by Gunnar Strang. (F. D. S.)

Education.—Schools (1953): primary 8,959, pupils 727,970, teacher 37,369; higher primary and intermediate 144, pupils 40,511; secondary 254, pupils 118,843; vocational 484, pupils 104,243; students at adult vocational schools 29,406. Teachers' training colleges 29, students 5,636. Universities 4, students (1952) 12,677, professors and lecturers 1,686; institutions of higher education (1953) 12, students 6,073.

Finance and Banking.—Monetary unit: krona (pl. kronor), with an exchange rate of 5.17 kronor to the U.S. dollar. Budget (1955 est.): revenue 9,023,000,000 kronor; expenditure 10,141,000,000 kronor. Public debt (1954) 13,587,000,000 kronor. Currency circulation: (Dec. 1954) 5,160,000,000 kronor; (June 1954) 4,640,000,000 kronor. Bank deposits: 5,930,000,000 kronor; (June 1954) 5,840,000,000 kronor. Gold and foreign exchange (March 1955): U.S. \$444,000,000.

Foreign Trade.—(1954) Imports 9,198,000,000 kronor; exports 8,217,000,000 kronor. Main sources of imports: Germany 20%; U.K. 16%; other continental European Payments Union countries 31%; U.S. and Canada 8%; Latin America 8%. Main destinations of exports: U.K. 19%; Germany 12%; other continental E.P.U. 38%; Latin America 8%; U.S. and Canada 5%. Main exports: wood pulp 18%; wood 14%; iron ore 9%; paper 10%.

Transport and Communications.—Roads (1953): 173,000 km. Motor vehicles in use (1954): cars 421,277, commercial vehicles 100,555. State railways (1954) 15,176 km.; passenger-km. (1953) 6,234,000,000; freight, ton-km. (1954) 8,553,000,000. Shipping: merchant vessels of 100 gross tons and over (July 1954): 1,256; total tonnage 2,703,467. Air transport (1954): 378,813,000 passenger-km.; freight, 11,215,000 ton-km.; km. flown (1953) 13,892,000. Telephones (Jan. 1954): 1,994,378. Radio receiving sets (Dec. 1953): 2,317,000.

Agriculture.—Main crops (metric tons, 1954): wheat 1,031,000; barley 364,000; oats 858,000; rye 308,000; potatoes 1,465,000. Livestock (Sept. 1954): cattle 2,582,000; sheep 234,000; horses 337,000; chickens 11,751,000; pigs (1953) 1,440,000. Fisheries (1953): 210,000 metric tons.

Industry.—Index of industrial production (1955: 1948=100): 122. Index of employment (Jan. 1955; 1948=100): 98. Electricity (1954): 23,720,000,000 kw.hr. Raw materials (metric tons, 1954): iron ore (metal content 60%) 15,418,000; pig iron 940,000; crude steel 1,861,000; (1953) copper ore 14,500; lead ore 25,000; zinc ore 43,000; gold 2,192 kg. Manufactured goods (metric tons 1953): wood pulp 3,223,000; cement 2,321,000; lumber (cu.m.) softwood 6,775,000; hardwood 125,000. Merchant shipping launched (1953): 484,622 tons.

Sweet Potatoes: see POTATOES.

Swimming. Athletes from the United States dominated swimming competition in the Pan-American games which were held at the University of Mexico, Mexico City, in March 1955, winning six of eight first places in the

Table I.—Pan-American Games Swimming and Diving Winners

Men's division:			
Event	Winner	Country	Time
100-m. free style	Clarke Scholes	U.S.	57.7 sec.*
400-m. free style	Jimmy McLane	U.S.	4 min. 51.3 sec.
1,500-m. free style	Jimmy McLane	U.S.	20 min. 4.0 sec.
100-m. backstroke	Frank McKinney, Jr.	U.S.	1 min. 7.1 sec.†
200-m. butterfly	Eulalio Rios	Mexico	2 min. 39.8 sec.
800-m. relay	U.S. (Martin Smith, Bill Zarzyk, Wayne Moore, Jimmy McLane)		9 min. 0.6 sec.
400-m. medley relay	U.S. (Frank McKinney, Jr., Fred McGuire, Buddy Boarcke, Clarke Scholes)		4 min. 29.1 sec.*
200-m. breast stroke	Hector Dominguez	Argentina	2 min. 46.9 sec.
3-m. diving	Joaquin Capilla	Mexico	
10-m. platform diving	Joaquin Capilla	Mexico	
Women's division:			
100-m. free style	Helen Stewart	Canada	1 min. 7.7 sec.
200-m. free style	Wanda Lee Werner	U.S.	2 min. 32.5 sec.
100-m. butterfly	Beth Whittall	Canada	1 min. 16.2 sec.
100-m. backstroke	Leonore Fisher	Canada	1 min. 16.7 sec.
200-m. breast stroke	Mary Lou Elenius	U.S.	3 min. 8.4 sec.
400-m. relay	U.S. (Gretchen Kluter, Carolyn Green, Judy Roberts, Wanda Lee Werner)		4 min. 31.8 sec.
3-m. diving	Patricia McCormick	U.S.	
10-m. platform diving	Patricia McCormick	U.S.	
Women's synchronized swimming:			
Individual	Beaulah Gundling	U.S.	
Pairs	U.S. (Ellen Richards and Connie Todoroff)		
Team	U.S. (Athens club, Oakland, Calif.)		

*Pan-American games record.

†Tied Pan-American games record.

men's division and three of six first places in the women's division. The Pan-American games diving gold medals were shared equally by Mexico (two) and the United States (two).

Clarke Scholes of the United States established a Pan-American games record in the 100-m. free style, while Frank McKinney, Jr., also of the U.S., tied the existing record in the 100-m. backstroke. Other record performances were those by the United States 400-m. medley relay team and by Canada's Leonardo Fisher, in the women's 100-m. backstroke.

National A.A.U. Indoor.—World, U.S. and championship records highlighted the National Amateur Athletic union swimming and diving indoor championships at Yale university on March 31–April 2, 1955. World and U.S. records were posted in the 220-yd. free style, 220-yd. breast stroke, 220-yd. butterfly, 400-yd. individual medley and 400-yd. medley relay. In addition, new championship marks were established in all events with the exception of the 1,500-m. free style and 100-yd. backstroke.

Ford Konno, Yoshi Oyakawa and Gerry Harrison, competing unattached from Columbus, O., each accounted for two winning performances. High-point honours went to Jack Wardrop, of Ann Arbor, Mich., via Motherwell, Scot., who swam to a world record in the 400-yd. individual medley and took second places in the 220-yd. and 440-yd. free-style events.

Team honours went to the New Haven Swim club.

Table II.—National A.A.U. Men's Indoor Swimming and Diving Winners

Event	Winner	Affiliation	Time
100-yd. free style	John Glover	New York A.C.	49.8 sec.
220-yd. free style	Ford Konno	Unattached, Columbus, O.	2 min. 4.0 sec.*
440-yd. free style	Ford Konno	Unattached, Columbus, O.	4 min. 28.2 sec.
500-m. free style	George Breen	Cortland State Teachers college	18 min. 52.4 sec.
100-yd. backstroke	Yoshi Oyakawa	Unattached, Columbus, O.	57.2 sec.
220-yd. backstroke	Yoshi Oyakawa	Unattached, Columbus, O.	2 min. 22.5 sec.
220-yd. butterfly	Eulalio Rios	Mexican Swimming Federation	2 min. 30.2 sec.*
220-yd. breast stroke	Robert Gawboy	Unattached, Minnesota	2 min. 38.0 sec.*
400-yd. individual medley	Jack Wardrop	Ann Arbor, Mich.	4 min. 36.9 sec.*
1-m. diving	Gerry Harrison	Unattached, Columbus, O.	
3-m. diving	Gerry Harrison	Unattached, Columbus, O.	
100-yd. medley relay	North Carolina State college		3 min. 51.5 sec.*
100-yd. free-style relay	New Haven S. C.		3 min. 21.8 sec.

*New world and U.S. record.

Ford Konno won both the 220-yd. and 440-yd. free-style events, the former in world and U.S. record times.

National A.A.U. Women's Indoor.—Scoring a total of 95 points, the Walter Reed Swim club, of Washington, D.C., swept the 1955 National A.A.U. women's swimming and diving championships, held at Welch pool, Daytona Beach, Fla., on April 7–9.

Shelley Mann of the Walter Reed Swim club gained high-point honours with 25 points, winning the 100-yd. and 250-yd. free-style events and taking third place in the 100-yd. back-

Table III.—National A.A.U. Women's Indoor Swimming and Diving Winners

Event	Winner	Affiliation	Time
100-yd. free style	Shelley Mann	Walter Reed S.C.	58.7 sec.
250-yd. free style	Shelley Mann	Walter Reed S.C.	2 min. 49.4 sec.
100-yd. free style	Carol Tait	Santa Clara (Calif.) S.C.	6 min. 1.4 sec.
100-yd. backstroke	Coralie O'Connor	Lafayette (Ind.) S.C.	1 min. 7.8 sec.
200-yd. backstroke	Maureen Murphy	Multnomah A.C., Portland, Ore.	2 min. 27.4 sec.
100-yd. butterfly	Betty Mullen	Walter Reed S.C.	1 min. 5.4 sec.*
220-yd. breast stroke	Mary Jane Sears	Walter Reed S.C.	3 min. 29.8 sec.
100-yd. individual medley	Shelley Mann	Walter Reed S.C.	5 min. 19.7 sec.
1-m. diving	Patricia McCormick	Los Angeles A.C.	
3-m. diving	Patricia McCormick	Los Angeles A.C.	
100-yd. medley relay	Walter Reed S.C.		4 min. 33.5 sec.*
100-yd. free-style relay	Walter Reed S.C.		4 min. 2.3 sec.

*New U.S. record.

stroke, as well as capturing the gold medal in the 400-yd. individual medley. Miss Mann also took turns in the winning of both relays by the Walter Reed Swim club.

National A.A.U. Men's Outdoor.—The 1952 Olympic games backstroke champion, Yoshi Oyakawa of the Hawaii Swimming club, sparkled brightest in the National A.A.U. swimming and diving championships which were held in Los Angeles on July 20–22, 1955, coming through with two record-breaking performances.

On July 21 Oyakawa bettered the championship meet record in the 100-m. backstroke. He followed this by bettering the championship meet record and the U.S. mark in the 200-m. backstroke.

The New Haven Swim club won the team title.

The National A.A.U. championships produced a number of new meet records, in addition to those posted by Oyakawa. Bob Mattson of North Carolina State college set one in the 200-m. breast stroke, Bill Woolsey of Hawaii in the 200-m. free style,

Table IV.—National A.A.U. Men's Outdoor Swimming Winners

Event	Winner	Affiliation	Time
100-m. free style	Sandy Gideonse	New Haven S.C.	57.6 sec.
200-m. free style	Bill Woolsey	Unattached, Hawaii	2 min. 8.2 sec.
400-m. free style	Ford Konno	Hawaii S.C.	4 min. 38.7 sec.
1,500-m. free style	George Oneke	Hawaii S.C.	18 min. 52.3 sec.
200-m. breast stroke	Bob Mattson	North Carolina State college	2 min. 46.8 sec.*
200-m. butterfly	Bill Yorzyk	New Haven S.C.	2 min. 29.1 sec.
100-m. backstroke	Yoshi Oyakawa	Hawaii S.C.	1 min. 5.3 sec.
200-m. backstroke	Yoshi Oyakawa	Hawaii S.C.	2 min. 26.1 sec.*
400-m. medley	George Harrison	Berkeley City club	5 min. 23.3 sec.*
400-m. medley relay	New Haven S.C., New Haven, Conn.		4 min. 28.6 sec.
800-m. free-style relay	New Haven S.C., New Haven, Conn.		8 min. 54.2 sec.

*New U.S. record.

Bill Yorzyk of the New Haven Swim club in the 200-m. butterfly and George Harrison of the Berkeley (Calif.) City club in the 400-m. individual medley. The New Haven Swim club also bettered the 400-m. medley relay mark.

National A.A.U. Women's Outdoor.—In the National A.A.U. women's outdoor swimming and diving championships, which were held at Philadelphia, Pa., Aug. 11–14, Wanda Werner, a 14-year-old girl representing the Walter Reed Swim club, paddled to the 100-m. free-style title; a 15-year-old, Carin Cone, of Ridgewood, N.J., gathered in two gold medals, in the 100-m. backstroke and the 200-m. backstroke; while 17-year-old Marie Gillett, of the Walter Reed Swim club, posted a new U.S. record in the 400-m. individual medley, bettering her previous mark made a year before.

The Walter Reed Swim club of Washington, D.C., won the national championships team crown.

Betty Mullen of the Walter Reed club came through with a world record-breaking performance in the 100-m. butterfly. In this event the competition was so spirited that the second- and third-place winners, Mary Jane Sears and Shelley Mann, also bettered the existing record.

In winning the 200-m. backstroke, Carin Cone tied the world record for a 50-m. course.

One of the big upsets of the championships came when Juno Stover Irwin of Pasadena, a veteran of the 1948 and 1952 Olympic games, won the platform diving title, besting the

Table V.—National A.A.U. Women's Outdoor Swimming and Diving Winners

Event	Winner	Affiliation	Time
100-m. free style	Wanda Werner	Walter Reed S.C.	1 min. 6.1 sec.
400-m. free style	Dougie Gray	Walter Reed S.C.	5 min. 16.1 sec.
800-m. free style	Carolyn Green	Ft. Lauderdale S.A.	10 min. 54.3 sec.
1,500-m. free style	Carolyn Green	Ft. Lauderdale S.A.	21 min. 15.4 sec.
200-m. breast stroke	Mary Jane Sears	Walter Reed S.C.	3 min. 1.4 sec.
100-m. butterfly	Betty Mullen	Walter Reed S.C.	1 min. 15.0 sec.*†
100-m. backstroke	Carin Cone	Unattached, Ridgewood, N.J.	1 min. 15.6 sec.†
200-m. backstroke	Carin Cone	Unattached, Ridgewood, N.J.	2 min. 45.6 sec.†
400-m. individual medley	Marie Gillett	Walter Reed S.C.	6 min. 1.5 sec.†
400-m. medley relay	Walter Reed S.C., Washington, D.C.		5 min. 7.0 sec.†
800-m. free-style relay	Walter Reed S.C., Washington, D.C.		10 min. 10.3 sec.†
1-m. diving	Patricia McCormick	Los Angeles A.C.	
3-m. diving	Patricia McCormick	Los Angeles A.C.	
Platform diving	Juno Stover Irwin	Pasadena A.C.	

*New world record.

†New U.S. record.

favourite and many times champion, Patricia McCormick of the Los Angeles Athletic club. (W. R. SR.)

Switzerland. A republican confederation of 22 cantons (three of which have half-cantons) in west central Europe, Switzerland is bounded west by France, north by Germany, east by Austria and Liechtenstein and south by Italy. Area: 15,941 sq.mi. Pop.: (1950 census) 4,714,992; (1955 est.) 4,978,000. Language (1941): German 72.6%; French 20.7%; Italian 5.2%; Romansh 1.1%. Religion (1941): Protestant 57.6%; Roman Catholic 41.4%; Jewish 0.5%; other 0.8%. Chief towns (pop., 1952 est.): Berne (cap.) 150,600; Zürich 400,300; Basle 187,800; Geneva 151,400; Lausanne 109,000. President of the confederation for 1955, Markus Feldman.

History.—In spite of the U.S. duty on watches which still hampered the Swiss watch industry, Swiss foreign trade, the index of Swiss prosperity, continued its unprecedented expansion. Imports from the German Federal Republic constantly increased and there was a steady development in other directions, even including the export of watches. While the shortage of labour began to make itself seriously felt, the revenue from postal services, railways, customs and direct taxes broke all former records. In order to curb inflationary pressure the government announced in April that the surplus revenue would be used to pay off the national debt but not to reduce taxation. When, however, the budget for 1956 was brought forward immediately before the general election on Oct. 30, it was stated that the national income for 1955 would approach 24,000,000,000 Fr., or 10,000,000,000 Fr. more than in 1945. At this point, therefore, the government proposed to reduce taxation in 1956 by 104,000,000 Fr.; at about the same time it was announced that cost of living bonuses to civil servants would be increased from 5½% to 7%.

Politically the year was dominated by the general election; thus, during the first ten months of 1955 the political parties were cautiously manoeuvring for position. The most discussed political theme before the opening of the election campaign was the "Chevallier initiative." This was the demand for a popular vote on the suggestion that Swiss military expenditure should be halved during either 1955 or 1956 and the consequent saving spent upon social welfare at home and abroad. The proposal came from the Vaud canton (Samuel Chevallier was a journalist in Lausanne) and had actually been handed in to the authorities with the constitutionally necessary backing (in this case 80,515 signatures) on Dec. 2, 1954.

It expressed a fairly widespread dislike of the magnitude of the military budget and also the obstructive feelings of the French Swiss toward the German-Swiss minister of defense, Karl Kobelt, who had resigned in 1954. The initiative was badly formulated, and after much discussion the Swiss government on Aug. 8 published a report in which it laid down that although the initiative had been correctly proposed (this was in doubt for some time) it could not be implemented since military expenditure in 1955 and 1956 was already contracted for; therefore, it was stated, a popular vote on the matter would not take place.

The new French-speaking minister of defense, Paul Chaudet, was thought to be better liked by the French Swiss than his predecessor, especially in his own Vaud canton. He showed great energy in the matter of mechanizing the Swiss army with the aid of Centurion tanks bought from Great Britain. He was however accused by the Socialist and Peasant party of endangering the traditional militia system of the Swiss. A general feeling that, with Moscow smiling, it was superfluous to take military matters so seriously, and a more particular feeling that the Chevallier initiative had been unfairly quashed, fed a certain mounting opposition to the policy of the federal council.

This became evident when the general election was held on

Oct. 30. A strict system of proportional representation means that the results of elections vary only slightly from one four-year period to another in Switzerland. In the circumstances the fact that the Social Democrats gained four seats, and, by doing so, became the strongest party, with 53 seats in the chamber, was impressive. The Radical party, with only 50 seats, was thus deposed to the second place; it was of interest that it lost a seat in the Vaud canton precisely where it had been expected that Chaudet's activities would have strengthened the party.

The small Party of Labour (Communist) gained a seat in Vaud, losing one, however, in its traditional headquarters of Geneva and also in Zürich; three of its four deputies were now French Swiss. The Catholic Conservative party was also weakened by one seat in the chamber, although, because of the influx of mainly Italian-speaking Catholics, it gained a seat in both Zürich and Geneva.

On the same day as the general election 14 cantons re-elected their representatives in the council of states. In six cases the nominations were accepted without a contest, but elections did in fact take place in Zürich, Lucerne, Basel *Land*, Schaffhausen, Aargau, Vaud, Valais and Geneva. Among these contests that at Zürich aroused the greatest interest because Gottlieb Duttweiler, the bad boy of Swiss politics with no policy but one of action, who had represented Zürich in the council of states from 1947 to 1951, put up for re-election and was only just beaten by a Radical and a Socialist. Duttweiler's Independent party (Landesring der Unabhängigen) also polled better in the election to the chamber than had been anticipated, fully maintaining its strength. The Radicals and Catholic Conservatives thus found themselves in office (three ministers each in the federal council) with both Socialists and Independents, respectively the largest and most enterprising parties, in opposition

(E. Wi.)

Education.—Schools (1951-52): primary, pupils 476,331, teachers 14,476; secondary and lower middle, pupils 80,207, teachers 3,310; vocational (1951, excluding agricultural schools) 89, pupils 21,112. Universities (1953-54) 7, students 12,444, professors and lecturers 1,460. Other institutions of higher education (1953-54) 2, students 3,161, teachers 473.

Finance and Banking.—Monetary unit: Swiss franc, with an exchange rate of 4.28 Fr. to the U.S. dollar. Budget (1954 est.): revenue 1,958,400,000 Fr., expenditure 1,922,000,000 Fr. Internal debt (Dec. 1953): 7,758,000,000 Fr. Currency circulation: (Dec. 1954) 5,830,000,000 Fr., (April 1955) 5,502,000,000 Fr. Bank deposits: (Dec. 1954) 7,369,000,000 Fr., (Feb. 1955) 7,438,000,000 Fr. Gold and foreign exchange holdings: (National bank, July 1955) U.S. \$1,602,000,000; (June 1954) U.S. \$1,542,000,000.

Foreign Trade.—(1954) Imports 5,587,000,000 Fr., exports 5,264,000,000 Fr. Main sources of imports: Germany 22%; France 13%; other continental European Payments union countries 24%; U.S. and Canada 16%; Latin America 7%; U.K. 6%. Main destinations of exports: U.S. and Canada 14%; Germany 12%; France 7%; other continental E.P.U. 28%; Latin America 8%; U.K. 5%.

Transport and Communications.—Roads (1953): 49,000 km. Motor vehicles in use (1953): cars 211,000; commercial vehicles 47,700. Railways (1954) 5,049 km. of which 2,976 km. federal system; passenger-km. (1953) 6,072,000,000; freight, ton-km. (1954, federal system only) 2,718,000,000. Shipping (July 1954): merchant vessels of 100 gross tons and over 34; total tonnage 124,000. Air transport (1954): passenger-km. 447,497,000; freight, ton-km. 9,035,700; km. flown (1953) 13,008,000. Telephones (Jan. 1954): 1,074,216. Radio receiving sets (1953): 1,161,000.

Agriculture.—Main crops (metric tons, 1954 revised figures): wheat 295,000; rye 45,000; barley 56,000; oats 68,000; beet sugar (raw) 28,000; potatoes 1,250,000. Wine production (metric tons, 1953) 63,000. Livestock (Sept. 1954): cattle 1,593,000; sheep 195,000; pigs 950,000; horses 126,000; chickens 6,260,000; ducks, geese and turkeys 70,000; goats (1951) 147,000. Meat production (metric tons, 1954): 78,000 (in 43 towns only, and including horse meat). Dairy production (metric tons, 1954): butter 30,000; cheese 50,400; milk 2,768,000.

Industry.—Index of employment (1948=100): manufacturing (Sept. 1954) 105; (March 1955) 107. Unemployed: (March 1954) 1.5% (March 1955) 1.4%. Fuel and power: manufactured gas (1953) 317,000,000 cu.m.; electricity (1954) 11,240,000,000 kw.hr. Cement (1953) 1,581,000 metric tons. Dwelling units completed (1954): 13,134. Watches and watch parts (exports, value, 1954): 1,039,915,622 Fr.

Symphony Orchestras: see MUSIC.

Synthetic Products: see CHEMISTRY; PLASTICS; RUBBER
TEXTILE INDUSTRY.

Syphilis: see VENEREAL DISEASES.

Syria. Syria, an Arab republic, is bounded west by the Mediterranean and Lebanon, northwest and north by Turkey, east and southeast by Iraq, south by Jordan and southwest by Israel. Area: 70,014 sq.mi. Pop. (1954 est.): 3,970,000. Language: Arabic (86%); also Kurdish, Armenian, Turkish, Circassian. Religion (1951 est.): Moslem (mainly Sunni) 85.7%; Christian 14%. Chief towns (pop., 1952 est.): Damascus (cap.) 372,708; Aleppo 380,919; Homs 261,904; Hama 155,671; Latakia 105,363. Presidents in 1955: Hashem el-Atassi and (from Sept. 6) Shukri el-Kowatli. Prime ministers: Faris el-Khuri (till Feb.); Sabri el-Assali (Feb. 13–Sept. 6); and (from Sept. 13) Said el-Ghazzi.

History.—Early in Feb. 1955 Faris el-Khuri, who had been prime minister since Oct. 1954, resigned. He was succeeded by Sabri el-Assali who, faced with the clash between Egypt and Iraq over the Turco-Iraqi treaty, at once declared that Syria would contract no alliances with states other than Arab and accepted an Egyptian invitation to participate in a new Arab defense treaty to replace the Arab league collective security pact which, as the Egyptian government had declared after Iraq's signature of the alliance with Turkey, no longer existed. The new treaty bound participants to assist other members in resisting aggression; not to conclude other outside military or political agreements—whether international or within the middle east orbit—without the consent of other members; and to establish unity of command covering all military organization—training, equipment, etc. Following the conclusion of the treaty the Turkish government protested against “aggressive declarations” by Syrian statesmen. Later the Turkish government refused to accept the Syrian government's explanation of the relations between the Arab countries resulting from the conclusion of the Turco-Iraqi treaty and described the Syrian version of Turco-Syrian relations and of the aims of the new Arab defense treaty as unacceptable and untruthful. This was followed by tension along the Turco-Syrian frontier which the Turks claimed had been violated by Syrian aircraft. The Syrians replied with charges that the Turks were mobilizing hostile forces on the border. But tension was eased after talks between the Syrian and Iraqi governments when it was agreed that both parties desired understanding and agreement between all Arab states.

In April differences among the political parties led to disturbances in Hama and Damascus. In August further party differences following the hotly contested election of Shukri el-Kowatli as president led to resignations from the cabinet and the formation of a coalition opposition composed of opponents to the new president; and in September the prime minister (Sabri el-Assali) resigned. He was succeeded by Said el-Ghazzi.

During the year Syria's relations with Israel progressively deteriorated. In the spring and early summer there were sporadic clashes in the Sea of Galilee and Lake Huleh areas; and when Egyptian-Israeli relations along the Gaza border became tense in June, Syria expressed its sympathy with Egypt. On taking office as president in September, Shukri el-Kowatli declared that “every Arab government and individual should help Egypt to repel Jewish attacks.” Thereupon trouble flared up in the Sea of Galilee area in the form of local attacks and counterattacks which led to the mobilization of the forces of both countries along the border.

In April the International Bank for Reconstruction and Development indicated that it would be prepared to grant a substantial loan toward the implementation of the five-year development plan that it had sponsored. (O. M. T.)

Education.—Schools (1954): primary 2,594; pupils (1952) 311,033, teachers (1952) 8,811; secondary 212, pupils (1952) 47,670, teachers (1952) 3,150; vocational 12, pupils (1952) 1,676, teachers (1952) 164. Teachers' training colleges (1952) 8, students 1,255. University of Damascus (1952): students 2,404, teaching staff 107.

Finance and Trade.—Monetary unit: Syrian pound, with a free exchange rate of L.S. 3.58 to U.S. \$1. Budget (1955 est.): balanced at L.S. 261,000,000. Currency circulation: (Dec. 1953) L.S. 297,000,000; (Dec. 1954) L.S. 360,000,000. Imports (1954) L.S. 634,000,000, exports L.S. 466,000,000.

Transport and Communications.—Roads (1953): 10,016 km., including 2,424 km. asphalted. Motor vehicles in use (1952): cars 6,100; commercial vehicles 5,700. Railways (1954): state 248 km.; Syria-Lebanon routes 583 km. Telephones (Jan. 1954): 27,155. Radio receivers (1950): 45,000.

Agriculture.—Main crops (metric tons, 1954): wheat 1,204,000; barley 561,000; rice 25,000; cotton, lint 70,000; cottonseed 135,000; lentils 58,000; oats (1953) 5,000; sesame (1953) 9,700; oranges, tangerines, etc. (1953) 3,000; apricots about 23,000; grapes (1953) 243,000; raisins (1952) 184,000; figs (1952) 48,200. Livestock (Sept. 1954): cattle 509,000; sheep 3,746,000; horses 98,000; mules 78,000; asses 260,000; chickens 2,836,000; goats (1951) 1,433,000. Wool production (metric tons, 1954) 5,000.

Industry.—Electricity 128,930,000 kw.hr. Production (metric tons): cement (1954) 248,800; cotton yarn (1950) 4,700; capacity (cotton and rayon) of 92,000 spindles in use (1954) about 12,250.

Table Tennis. The 22nd world championships in table tennis were held in Utrecht, Neth., April 15 to 24, 1955. Japan again won the Swaythling cup but lost the Corbillon cup to Rumania. The men's singles winner was Toshiaki Tanaka, Japan. Angelica Rozeanu, Rumania, won the women's singles for the sixth successive time. Men's doubles were won by Ivan Andreadis and Ladislav Stipek, Czechoslovakia; women's doubles by Angelica Rozeanu and Ella Zeller, Rumania; mixed doubles by K. Szepesi and Eva Koczian, Hungary. The 1956 world tournament was to be held in Japan.

The 25th U.S. national open championships were held at Rochester, N.Y., March 18 to 20, 1955. The winners were: men's singles, Richard Miles, New York city; women's singles, Mrs. Leah Neuberger, New York city; junior boys' singles, Erwin Klein, Los Angeles, Calif.; junior miss singles, Sharlene Krizman, South Bend, Ind.; boys' singles, Norbert Van De Walle, Chicago, Ill.; senior men's singles, Tibor Hazi, Chevy Chase, Md.; esquire singles, Bill Gunn, Mamaroneck, N.Y.; men's doubles, Erwin Klein and Richard Bergmann, London; women's doubles, Mrs. Leah Neuberger and Peggy Folke, New York city; mixed doubles, Richard Miles and Mildred Shahian, Chicago; senior doubles, Tibor Hazi and Mamfred Feher, Cleveland, O.

The English open championships were held at Empire Pool, Wembley, Eng., March 29 to April 2. The men's singles title was won by Zarko Dolinar, Yugoslavia; women's singles, Rosalind Rowe, England; men's doubles, Ivan Andreadis and Ladislav Stipek, Czechoslovakia; women's doubles, Rosalind Rowe and Diane Rowe, England; mixed doubles, Aubrey Simons and Helen Elliot, England; boys' doubles, Erwin Klein, Los Angeles, and B. Onnes, Netherlands; girls' doubles, Joice Fielder and Ann Haydon, England; junior mixed doubles, Erwin Klein and Wendy Bates, Wales.

The Canadian International table tennis championships were held at the Canadian National exhibition, Toronto, Ont., Sept. 9–11, 1954. Winners were: men's singles, Erwin Klein, Los Angeles; women's singles, Mrs. Leah Neuberger, New York city; senior men's singles, Max Marinko, Toronto; junior men's singles, Erwin Klein; junior miss singles, Carolee Liechty, South Bend, Ind.; boys' singles, Sandy Potiker, Cleveland, O.; men's doubles, Erwin Klein and Bernard Bukiet, Chicago; women's doubles, Mrs. Leah Neuberger and Pauline Robinson, New York city. In the International team matches the United States won the men's, junior men's and junior miss events.

The closed championships of the U.S.S.R. were held at Minsk March 3–6, 1955. Winners (full names not available) were as follows: men's singles, Frants; women's singles, Lestal; men's doubles, Frants and Kanepi; women's doubles, Balashene and Gelevechute; mixed doubles, Frants and Saar. (P. W. R.)

Taiwan: see FORMOSA.

Tanganyika: see BRITISH EAST AFRICA; TRUST TERRITORIES.

Tangerines: *see* FRUIT.

Tangier. From 1912 an international and demilitarized zone of Morocco, on the south side of the Straits of Gibraltar, Tangier is controlled by Belgium, France, Great Britain, Italy, the Netherlands, Portugal, Spain, Sweden and the United States, under the nominal sovereignty of the sultan of Morocco. Area: 135 sq.mi. Pop.: (1952 est.) 162,000, including 15,000 Moroccan Jews and 42,000 Europeans (35,000 Spaniards, 6,000 French, 1,000 others); (1954 est.) 183,000. Languages: Arabic, French and Spanish. Religion: mainly Moslem. Pop. of Tangier city, about 100,000. Administrator in 1955, Robert van de Kerchove d'Hallebast (Belgium). Sultan's representative (*mendub*), Haj Mohammed el-Tazi.

History.—In March 1954 Prince Étienne de Crouy-Roeulx (Belgium) had been designated administrator of the Tangier zone, but because of ill health he renounced his appointment. On Jan. 4, 1955, the committee of control nominated Robert van de Kerchove d'Hallebast, who was then serving as Belgian minister at Ankara. On May 23 Julius Cecil Holmes was appointed U.S. diplomatic agent at Tangier with minister's rank. Sultan Mulay Mohammed ben Arafa, who in Oct. 1954 had bought a palace at Tangier, retired there when he abdicated on Sept. 30, 1955. Mokhtar Aharhan, president of the Unity and Independence party of Tangier, was received on Nov. 29 at Rabat by Sultan Mohammed V ben Youssef. The party stood for the abolition of the international zone and the restoration of Moroccan territorial unity.

Economy.—Currency equivalent to metropolitan franc (350 fr.=U.S. \$1). Budget (1954 est.): revenue 2,130,000,000 fr.; expenditure (ordinary) 1,600,000,000 fr., (extraordinary) 413,000,000 fr. Foreign trade (1953): imports 11,628,000,000 fr.; exports 969,000,000 fr. Shipping handled in the port of Tangier (1952): ocean-going ships entered 382 (546,000 gross tons), coasters entered 2,786 (1,555,000 gross tons). Roads (1954) about 104 km. Telephones (Jan. 1954) 9,546.

Tariffs. Notwithstanding that a few changes of importance were made during the year, 1955 was primarily a period of stability, rather than of basic change, of the tariff structure of the world. Among the more significant activities relating to world tariffs were those centred around the operations of the G.A.T.T. organization (General Agreement on Tariffs and Trade). These activities, however, related primarily to the administration of programs previously undertaken and to the continuation or expansion of projects already under way, rather than to extensive changes of tariff policy or of prevailing tariff levels. Both gains and losses were experienced by the G.A.T.T. membership in its general objective of liberalizing world trade. Unilateral tariff action instituting important changes in the tariff schedules of individual countries occurred much less frequently than in any year during the decade. Most tariff changes of consequence made by individual countries during the year were by non-G.A.T.T. members and the general effect of such changes was to increase prevailing rates of duty.

The General Agreement on Tariffs and Trade.—Activities of G.A.T.T. were among the major developments in the field of tariffs and international commercial policy during 1955. At the ninth session of the contracting parties to the General agreement, held at Geneva, Switz., from Oct. 1954 to March 1955, the contracting parties proposed the establishment of an Organization for Trade Cooperation (O.T.C.), which would provide a permanent agency for administering the general agreement; they also revised the G.A.T.T. code of trade rules and extended until the end of 1957 the firm life of the tariff concessions in the general agreement. Negotiations for the accession of Japan to the general agreement were completed in June; accordingly, Japan became a contracting party on Sept. 10, thus increasing the number of G.A.T.T. members to 35. In the latter

part of the year, the contracting parties announced a fourth round of tariff negotiations to begin early in 1956.

The Projected Organization for Trade Cooperation.—At their ninth session the contracting parties initiated measures to create an official administrative agency to be known as the Organization for Trade Cooperation (O.T.C.). An agreement to create such an organization was opened for signature by the G.A.T.T. members at Geneva in March 1955. Should the O.T.C. be established by the G.A.T.T. members, functions that had been exercised jointly by them, in sessions of the contracting parties and at meetings of the intersessional committee, would become the responsibility of the O.T.C. In effect, the O.T.C. assembly would replace the sessions of the contracting parties; similarly the executive committee would function in place of the intersessional committee. The O.T.C. would serve, for example, as an intergovernmental forum for consultations on questions relating to international trade and G.A.T.T. obligations. The periodic multilateral tariff negotiations that had been sponsored by the contracting parties would be sponsored by the O.T.C. It would study questions relating to international trade and commercial policy and make appropriate recommendations thereon. It would also collect, analyze and publish statistical data and other information relating to international trade and commercial policy. The O.T.C., however, would have no authority to amend the provisions of the General agreement, or to impose on a member any obligations other than those in the provisions of the General agreement.

The new organization would consist of an assembly, an executive committee and a secretariat. The assembly would be comprised of all members of the O.T.C. The executive committee, which would provide a continuing organization between meetings of the assembly, would consist of 17 members of the O.T.C. elected periodically by the assembly. According to its provisions, the agreement would enter into force when accepted by countries accounting for 85% of the foreign trade conducted by the G.A.T.T. members. Since the United States accounted for more than 20% of such foreign trade, the O.T.C. could not come into existence unless the United States accepted it. As of late Oct. 1955 the agreement had been signed definitively by Greece and *ad referendum* by Chile, west Germany, the Netherlands, Turkey and the United States.

Revision of the G.A.T.T. Code.—At earlier sessions of the contracting parties to the General agreement, various G.A.T.T. members had suggested that, in light of the experience gained from the operations of the agreement as well as the demise of the International Trade organization (ITO), a review of the G.A.T.T. code (the general provisions) should be undertaken. In 1954 the members decided that the review of the trade rules would be held at their ninth session.

In their review, completed in 1955, the contracting parties reaffirmed the basic objectives and obligations of the General agreement—including the principle of nondiscrimination in international trade and the general prohibition against the use of quantitative restrictions on imports. In addition, numerous changes were made in the trade rules; many of them, however, constituted only technical alterations designed to correct or clarify certain provisions or to bring the rules into conformity with the proposed O.T.C.

Perhaps the most significant amendments made by the G.A.T.T. members were those which modified the provisions respecting quantitative restrictions (articles 11 and 12) and altered the rules relating to government assistance for economic development (article 18). As amended, the G.A.T.T. rules continued to prohibit the use of quantitative restrictions on imports, except (as had been the case previously) such restrictions might be used, temporarily, to safeguard a country's bal-

ance of payments or to effect a necessary increase in its monetary reserves. The proposed amendment, however, would require all countries employing quantitative controls to submit regularly to an examination of such restrictions to determine whether their policies conformed to the rules of G.A.T.T. and to assess the effect of their restrictions on other G.A.T.T. members. The projected O.T.C. would be authorized to recommend modifications of any restrictions inconsistent with the rules and to authorize retaliatory action against an offending member, if that member would not suitably modify its restrictions.

Because of the desire of the so-called underdeveloped countries to promote industrialization of their economies, the G.A.T.T. rules governing governmental assistance for economic development were completely revised. In general, the modified rules would permit freer use of protective import duties and other import restrictions when instituted to encourage the establishment of new industries.

The amendments to the G.A.T.T. code were embodied in three protocols that were opened for signature in March. Certain of the amendments were to become effective upon acceptance by all of the G.A.T.T. members, and the others upon their acceptance by two-thirds of the membership. As of Sept. 1, Chile, the Federal Republic of Germany, the Netherlands, Greece and the United States had signed the three protocols; the first three countries signed *ad referendum*.

Extending the Firm Life of Concessions.—During the review of the General agreement, the G.A.T.T. members agreed to extend the firm life of the numerous tariff concessions previously granted in negotiations sponsored under the General agreement; accordingly, the validity of the concessions was prolonged from July 1955—the then effective expiration date—to the end of 1957. It was also agreed that, thereafter, the tariff concessions would automatically be rebound for three-year periods unless two-thirds of the members voted otherwise. The G.A.T.T. members again adopted rules to permit renegotiation of individual tariff concessions at the close of each three-year period, as well as during such periods under special circumstances (so-called article 28 renegotiations). In each instance, the G.A.T.T. member taking article 28 action would be required to negotiate with other members having a principal trade interest in the items involved. In such renegotiations, the G.A.T.T. rules envisaged that the general level of tariff concessions granted by the country taking article 28 action or through the retaliatory withdrawal of concessions by the country or countries affected. Although individual concessions could thus be withdrawn or modified, the action of the G.A.T.T. members in extending the firm life of the concessions served to assure a measure of stability of tariff rates covering a substantial portion of world trade.

Before extending the firm life of the G.A.T.T. tariff schedules, the contracting parties were permitted under the provisions of article 28 to renegotiate any of the individual tariff concessions that they had granted. A considerable number of members, including Austria, Belgium, Canada, Cuba, the Dominican Republic, Finland, France, India, the Netherlands, Nicaragua, Pakistan, Peru and Sweden, indicated an intention to modify or withdraw certain concessions. To that end, renegotiations among the respective countries were scheduled; although the renegotiations were to be completed by Sept. 30, the results of such action had not been announced at that time.

Tariff Negotiations Under G.A.T.T.—From Feb. to June 1955 tariff negotiations for the accession of Japan to the General agreement were held at Geneva, Switz. In the negotiations between Japan and the United States, tariff concessions were granted by each on articles accounting for about half the value

of the imports from the other.

Following the conclusion of the tariff negotiations, the G.A.T.T. members were asked to vote on Japan's accession to the general agreement. All of the 34 members voted in favour of Japan's accession and, on Sept. 10, that country became a contracting party to the General agreement. Although voting for Japan's accession, 14 of the G.A.T.T. members that had not negotiated with Japan gave formal notice, as permitted by article 35, that their trade relations with Japan would not be governed by the provisions of the General agreement. Consequently, these countries among other things would not be required by the provisions of G.A.T.T. to extend to Japan most-favoured-nation treatment or to apply to imports from Japan the tariff concessions that they had previously granted in earlier negotiations. These countries, moreover, would not be bound by the G.A.T.T. rules should they decide to increase their tariffs or impose additional restrictions on imports from Japan. The 14 countries that invoked article 35—including several major trading countries—were Australia, Austria, Belgium, Brazil, Cuba, France, Haiti, India, Luxembourg, the Netherlands, New Zealand, the Rhodesia-Nyasaland federation, the Union of South Africa and the United Kingdom.

During the summer and fall of 1955 the contracting parties formulated plans for a fourth major round of tariff negotiations, to be held early in 1956. The chief factor governing the timing of new negotiations was the passage of legislation by the United States congress granting the president additional authority to negotiate tariff concessions. Most of the G.A.T.T. members were expected to participate in the negotiations.

General Tariff Revisions.—During 1955 Honduras, Nicaragua, Bolivia, Rhodesia, Brazil, Austria, Denmark, Sweden and Switzerland either completed or were in processes of making general revisions of their tariffs. Honduras and Nicaragua completed such revisions and both adopted the new N.A.U.C.A. nomenclature (*Nomenclatura Arancelaria Uniforme Centroamericano*) as a basis for their tariff commodity classification. These two countries not only consolidated various duties and surcharges into a single rate of duty for a given item, but also made increased utilization of ad valorem duties to bolster the declining revenues previously obtained from specific-type duties. Late in 1954 Bolivia published a new tariff, relying largely on its old tariff classification; the new schedule provided for higher rates of duty on most items. In July 1955 the Federation of Rhodesia and Nyasaland announced a new tariff schedule. The federation had considered joining in a customs union with the Union of South Africa, but decided instead to adopt a multiple-column tariff, with the rates of duty in the two lower columns being applicable, respectively, to the United Kingdom and colonial territories, and to the British dominions. The new schedule afforded additional protection to selected domestic industries. General tariff revisions were also completed in Formosa, Vietnam and Somalia.

During the year several countries, including Austria, Brazil, Denmark, Sweden and Switzerland, were in process of revising their tariffs. Of these, Austria, Brazil and Switzerland announced that they were utilizing the Brussels nomenclature as the basis of their new tariff classifications. Moreover, Austria, Denmark and Brazil indicated that they were making predominant use of ad valorem rather than specific duties. By the close of the year no concrete proposals had been made regarding the projected Swedish tariff, but it was expected that higher rates of duty would be recommended.

Less Extensive Modifications.—The following countries made piecemeal revisions which increased import duties on a substantial number of items: Finland, Greece, Bolivia, Chile, Colombia, Ecuador, Guatemala, Mexico, Syria, Lebanon, Egypt,

Liberia and Malaya. Few of these countries were members of G.A.T.T. and, hence, most of them were free to take unilateral action without the obligation of consultation. The somewhat extensive upward revisions of duties by a number of these countries (e.g., Finland and Greece) involved the adjustment of specific duties to compensate for the decreased purchasing power of domestic currencies; in other countries (e.g., Colombia, Ecuador and Lebanon) the increases reflected the desire of the respective governments to afford additional protection to selected domestic industries; and in still others (e.g., Liberia and Malaya) the higher rates of duty were imposed largely for the purpose of increasing government revenues. The most extensive modification of an individual country's tariff by cumulative piecemeal action in recent years had, in effect, resulted in an across-the-board revision of Mexico's tariff providing generally for increased rates of duty.

During the year no country effected a general reduction in duty. Germany and Costa Rica, however, reduced duties on an extensive number of import items; in both cases, the modified duties were in effect adjustments of rates which only recently had been applied when the respective country completely revised its tariff.

United States Tariff Policy.—There was no striking departure from policies which had been pursued by the United States in the immediately preceding year or any significant alteration in the prevailing level of duty. Some further liberalization of tariff rates was achieved through negotiations under the trade agreements program; on the other hand, various United States measures, unilateral in character, resulted in additional import restrictions.

Trade Agreement Proceedings.—During the year the United States extended somewhat the scope of its trade agreement concessions through the aforementioned negotiations with Japan, the new concessions becoming effective in September. In other negotiations at Geneva, from April to June, concessions were granted to Switzerland to compensate that country for the increased import duties that the United States had imposed on watches and watch movements in 1954 under the escape-clause procedure. In midyear the United States and Philippine congresses approved the revision of the 1946 trade agreement between the two countries. Bilateral trade agreements with Guatemala and Ecuador were terminated.

In January the president requested that his authority to negotiate tariff reductions with other countries be extended for a three-year period. The president's request followed in large part recommendations made in 1954 by the Commission on Foreign Economic Policy (the Randall commission). He stated that the legislation should authorize: (1) reduction of tariff rates by not more than 5% in each of three successive years; (2) reduction of rates in excess of 50% ad valorem, or its equivalent, to that level in three annual stages; and (3) reduction by one-half of rates in effect on Jan. 1, 1945, on products that were not being imported or were being imported in negligible amounts. The Trade Agreements Extension act of 1955, as enacted, granted the president the authority to reduce tariff rates as set forth in items (1) and (2) above, but not as in item (3). The authority to reduce tariff rates was not cumulative; for example, if the president should fail to reduce a given duty by 5% during the first year (ending June 30, 1956), that portion of his authority would lapse. The administration, therefore, began planning new trade agreement negotiations. In April the president requested that the congress authorize United States membership in the Organization for Trade Cooperation. The congress, however, did not take action during the year.

Import Restrictions.—During the first nine months of the year the United States tariff commission had pending before

it eight investigations under the escape-clause provisions of the Trade Agreements act, as amended. Under the law, if the commission found that a domestic industry was being seriously injured or threatened with serious injury as the result of the customs treatment reflecting a trade agreement concession, the president could impose increased import duties or an import quota. The number of investigations thus undertaken in 1955 was much smaller than in any of the previous three years, when the number of escape-clause investigations before the commission varied from 15 to 22. By the end of September the commission had completed five of the eight investigations. In two instances the commission recommended the imposition of increased import duties. Pursuant to these recommendations, the president imposed higher import duties on alsike clover seed and bicycles.

Under the provisions of section 22 of the Agricultural Adjustment act, the tariff commission conducted four investigations during the first nine months of 1955. Section 22 permits the president to impose fees or quotas on imports of commodities if the commission finds that imports of the products concerned interfere materially with programs administered by the department of agriculture. By the end of September the commission had completed all of the investigations. In response to the commission's recommendations, the president imposed a quota on imports of rye, rye flour and rye meal and removed or liberalized previous import restrictions imposed under the provisions of section 22 on filberts and peanuts to permit larger imports of those products.

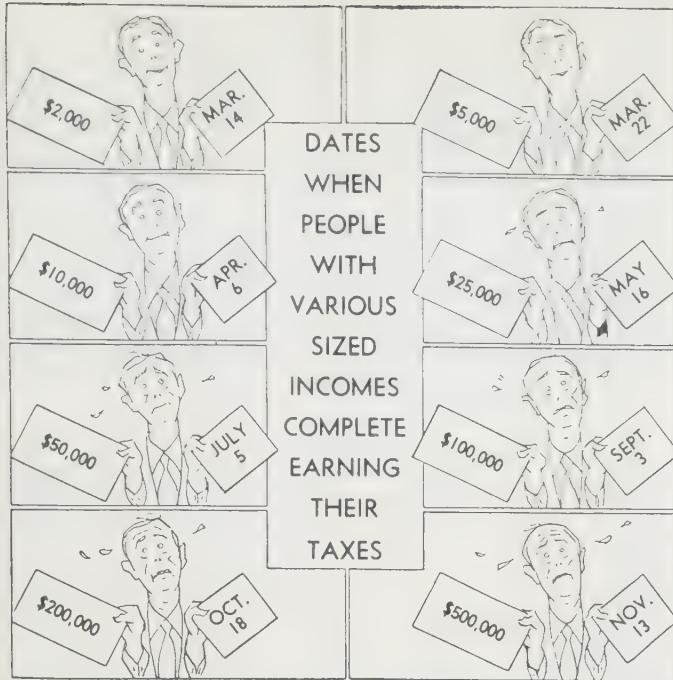
In response to congressional legislation, the United States import duties on certain fish sticks and on tennis shoes were increased during 1955. To compensate the foreign countries to which the United States had trade agreement obligations on those products, concessions on other products were granted to Canada and to the Netherlands during the course of the negotiations sponsored by the contracting parties at Geneva in the early part of the year. (See also INTERNATIONAL TRADE.)

(D. L.H.; G. P. H.)

Taxation. In 1955 rising personal income and corporate profits in the United States increased the current and prospective level of federal government receipts. To a smaller extent federal expenditures also exceeded the estimates made in the budget presented in January, largely because of unexpected increases in expenditures for agricultural price support programs. For the fiscal year ending June 30, 1955, budget receipts were \$60,303,000,000, budget expenditures were \$64,494,000,000 and the deficit was \$4,192,000,000. For the fiscal year ending June 30, 1956, it was estimated in August that the deficit would be reduced to \$1,732,000,000, as compared with the estimate of \$2,408,000,000 made in January. This reduction in the estimated deficit, combined with prospects of further increases in receipts and continued efforts by the administration to reduce expenditures, gave rise to speculation that a tax cut would be possible in 1956, perhaps with a balanced budget.

U.S. Legislation.—Because of the substantial current deficit, Pres. Dwight D. Eisenhower recommended in January and congress passed in March a measure to postpone for one year reductions in the corporation income tax rate and in various excises which had been scheduled for April 1, 1955. At the time of this extension, the house of representatives voted a \$20 per capita credit against the individual income tax but this measure was rejected by the senate.

Other tax legislation was of lesser importance. Congress passed more than 20 tax bills, nearly all of which amended in some respect the internal revenue code of 1954. Among these were the repeal of two provisions of the code dealing with prepaid income and estimated expenses, repeal of the excise tax on



"HOW LONG IT TAKES TO EARN YOUR INCOME TAXES," a 1955 editorial cartoon from the *Chicago Tribune* (Ill.). Figures are based on net income after exemptions for a single person without dependents

radios, television sets, phonographs, etc., used for business purposes (except entertainment), repeal of the excise tax on motorcycles and extension of the retirement income credit to servicemen under 65 who get military pensions. In addition, the house of representatives passed 22 other tax bills which were not acted on by the senate.

U.S. State Taxation.—Except for Kentucky and Virginia, all the states held legislative sessions in 1955, and the volume of tax legislation was unusually large. This reflected the pressure for expanded services and the tendency of state expenditures to exceed revenues. State tax collections in the fiscal year 1955 totalled \$11,584,000,000, which was an increase of 4.5% over 1954. The table shows collections from various taxes and the percentage distribution for the fiscal year 1955. Collections in the fiscal year 1955 were largely unaffected by the tax rate increases enacted in 1955.

Various increases were enacted in general sales taxes, the largest single source of state revenue. Illinois, Iowa, Mississippi, South Dakota, Tennessee and Washington increased their sales tax rates. Wyoming removed certain use tax exemptions. Connecticut, North Dakota and Rhode Island extended their sales taxes for two years. Nevada for the first time adopted a general sales tax.

In West Virginia a previous reduction in the occupational gross income tax was cut from 10% to 5%.

Motor fuel taxes were increased in Alabama, Connecticut, Georgia, Iowa, Maine, Michigan, Montana, Nevada, New York (subject to voters' approval of a new highway bond issue), North Dakota, Texas, Vermont and West Virginia. California, Nebraska and Pennsylvania extended "temporary" higher rates. Kansas and Oklahoma made their temporary rates permanent. Utah adopted a four cents per gallon tax on jet fuels.

Motor vehicle and operators' license fees were increased in Arizona, Idaho, Indiana, Maryland, Minnesota, Montana (on trucks and buses), Nevada, North Dakota, Tennessee and Wyoming. Colorado revised its ton-mile tax on trucks.

Alcoholic beverage tax rates were increased in Alabama, California, Georgia, Maine, Maryland, North Carolina, South Carolina and Texas. A 7.5% surcharge was imposed on liquor sales

in Idaho. In Iowa beer and in South Dakota alcoholic beverages were made subject to the sales and use tax. Maine and Washington made permanent several of their temporary alcoholic beverage taxes. Indiana levied a \$30 additional fee on alcoholic beverage permits.

Alabama, Georgia, Idaho, Maine, Mississippi, New Mexico, South Dakota, Texas, Washington and Wisconsin increased their cigarette taxes. Missouri and Oregon levied cigarette taxes for the first time, subject to voter approval. In Iowa cigarettes were made subject to the sales and use tax.

Michigan extended its business receipts tax to Dec. 31, 1955. In New York the governor vetoed extension of the temporary 1% reduction in the unincorporated business tax. The business and occupations tax was increased in Washington and West Virginia. Delaware, Georgia, Minnesota and West Virginia increased fees or taxes on insurance companies, and Mississippi levied a surtax on its insurance company tax. Idaho doubled corporation license fees. Alabama, Maine, Mississippi and Utah increased corporation franchise rates.

Idaho imposed a new schedule of tax rates on gross intrastate receipts of public utilities. Rhode Island assessed public utilities annually at 45% of the expenses of the Public Utilities administrator's office. West Virginia reduced from 10% to 5% a credit formerly allowed on the utilities tax. Washington made permanent a 10% surtax on the existing utilities tax.

Corporate income tax rates were increased in Iowa, Maryland, Minnesota, South Carolina, Utah and Vermont. Idaho and Mississippi imposed surtaxes on their rates, and Idaho also repealed a 15% credit previously allowed. Connecticut and Rhode Island extended their "emergency" rates on corporate income. Georgia reduced its corporate rate from 5.5% to 4% but disallowed deduction of the federal income tax.

A surtax on individual income tax rates was imposed in Idaho (where also a 15% credit was repealed), Mississippi, Oregon and Wisconsin. Rates were increased in Alabama (by constitutional amendment to be approved by the voters), Iowa and Vermont. Georgia reduced its individual income tax rate in the higher brackets.

Colorado, Montana and South Dakota increased their state property taxes. Nebraska extended a one-half mill state property tax levy for teacher retirement. In Utah the state levy for schools was increased by about six mills. Wyoming repealed or reduced certain property tax exemptions. A statewide equalization and reassessment program was authorized or strengthened in Arkansas, Idaho, Montana, Nevada, New Mexico and Washington.

Similar programs were considered in other states.

Idaho and Maine increased their tax on potatoes. Florida increased its tax on grapefruits and adopted a new tax on limes

State Tax Collections by Source*

Tax	Fiscal Year 1955†	
	Amount (millions)	Percentage distribution
Total	\$11,584	100.0
Sales and gross receipts	6,864	59.3
General sales or gross receipts	2,637	22.8
Motor fuels	2,353	20.3
Liquors, alcoholic beverages	471	4.1
Tobacco products	459	4.0
Other	944	8.2
Licenses	1,823	15.7
Motor vehicles and operators	1,184	10.2
Corporations in general	266	2.3
Other	373	3.2
Income taxes‡	1,821	15.7
Individual income	1,084	9.4
Corporation net income	737	6.4
Property taxes	412	3.6
Death and gift	249	2.2
Severance	303	2.6
Other	112	1.0

*Preliminary; detail will not necessarily add to totals because of rounding. †Data are for state fiscal years ending June 30, except for four states with earlier closing dates. ‡Combined corporation and individual income taxes for four states are tabulated with individual income tax.

Source: Department of Commerce.

and avocados. Nevada increased its gambling tax, and West Virginia raised its pari-mutuel taxes. Utah levied a new 1% tax on gas and oil production. Minor changes in state taxes were made by many states.

Canada.—In April 1955, in his annual financial statement, Walter Harris, the minister of finance, announced that for the fiscal year ending March 31, 1955, total budgetary revenues were \$4,107,000,000, expenditures \$4,301,000,000 and the deficit \$194,000,000.

For the fiscal year ending March 31, 1956, he estimated revenues at \$4,350,000,000 on the basis of existing tax rates, expenditures at \$4,362,000,000, and a deficit of \$12,000,000. On tax policy Harris introduced a novel proposal. He estimated that if the economy were operating at full capacity in 1955, the gross national product would amount to a little more than \$26,000,000,000, although he forecast that the realized gross national product in 1955 would be \$25,250,000,000. He then recommended "a tax structure which, as closely as I can estimate, would produce a balanced budget if we had a gross national product of about \$26 billion."

The major tax reductions were as follows: (1) a reduction in standard corporate income tax rate from 47% to 45% effective Jan. 1, 1955; (2) a two percentage point reduction, effective July 1, 1955, in each bracket rate of the personal income tax, which for most taxpayers meant a reduction of 12% to 13% in the tax payable; (3) a reduction from 15% to 10% in the special excise tax on automobiles and repeal of the excise tax on tires and tubes; (4) certain additions to exemptions from the general sales tax. The revenue loss from these changes was estimated at \$207,000,000 in a full year and \$148,000,000 in the fiscal year 1955-56. Including the effect of these tax reductions the deficit for the fiscal year 1955-56 was estimated at \$160,000,000. (See also BUDGET, NATIONAL; DEBT, NATIONAL; MOTOR TRANSPORTATION; MUNICIPAL GOVERNMENT.)

(H. J. Mr.)

Taylor, Maxwell Davenport (1901-), U.S. army officer, was born on Aug. 26 at Keytesville, Mo., and was graduated from the U.S. military academy at West Point, N.Y., in 1922. Later he studied at the army's engineer and field artillery schools, at the Command and General Staff school, Fort Leavenworth, Kan., and at the Army War college in Washington, D.C. After three years in Hawaii (1923-26) he transferred to the field artillery. He taught at the U.S. military academy from 1927 to 1932 and later (1945-49) was academy superintendent. He was stationed at Tokyo, Japan, from 1935 to 1939.

After U.S. entry into World War II Taylor helped train the first U.S. air-borne divisions and was made artillery commander of the 82nd air-borne division which participated in the Sicilian and Italian campaigns. In March 1944, prior to the Normandy landings, he became commander of the 101st air-borne division, which saw some of the war's fiercest fighting, including the Battle of the Bulge in Dec. 1944.

After his retirement as superintendent of West Point, Taylor was U.S. commandant in Berlin, Ger. (1949-51), and assistant, then deputy army chief of staff in charge of operations (1951-53). In Feb. 1953 he took command of the U.S. 8th army in Korea, soon being advanced to the rank of full general. After the Korean armistice in July 1953 Taylor remained to assure observation of the armistice terms and to direct the rehabilitation of South Korea. He became commander of the U.S. army far eastern forces on Nov. 20, 1954.

On May 13, 1955, Pres. Dwight D. Eisenhower named Taylor chief of staff of the U.S. army, to succeed Gen. Matthew B. Ridgway as of June 30.

Tea. Production and consumption of tea apparently increased in 1955; the price situation became erratic. No reliable current data were available on China's undoubtedly large production, estimated for 1952 at 400,000,000 lb. as compared with more than 600,000,000 lb. before World War II, of which about 80,000,000 lb. were exported.

Tea prices, which had been increased six times in the U.K. in 1954, ran into strong consumer resistance early in 1955 at the \$1 to \$1.15 per pound level, as the government refused to reintroduce price controls. Major auctions, Calcutta, Colombo, Cochin and Chittagong, were also depressed as north India tea for the London auctions was restricted to 140,000,000 lb. and Ceylon restored export quota restrictions on medium- and high-grade teas at 55,000,000 lb. India increased the export duty

World Tea Production

Country	(In 000,000 lb.)		Average, Average,	
	Prospective, 1955	1954	1946-51	1935-39
India	630	637	576	428*
Ceylon	370	365	343	232
Indonesia . . . . .	...	100	81	46
Japan . . . . .	...	130	126	69
Pakistan . . . . .	...	55	54	46
Other Asia . . . . .	...	60	64	56
Africa . . . . .	...	45	35	20
Approximate world total (excluding China and U.S.S.R.)	1,390	...	1,311	1,020

*Including Pakistan.

on tea. Retail tea prices in the U.S. increased to an average of 40.3 cents per quarter pound in mid-1955, as compared with an average price of 34.2 cents in 1954.

Apparently most consuming countries dipped into reserves. The U.K. continued to take about 50% of the export tea. Imports of tea into the U.S. in 1954 reached an all-time high of 115,000,000 lb., 6.5% above the previous year and valued at about \$63,000,000. Tea imports into the U.S. Jan.-Aug. 1955 were 69,966,960 lb. as compared with 87,022,870 lb. in the same period of 1954. U.S. average consumption continued at .68 lb. per capita as in 1954. Canadian consumption was 4.43 lb. per capita for those 15 years and older, or about 45,000,000 lb. total in 1954.

The International Tea agreement expired in March.

(J. K. R.)

Telegraphy. The telegraph industry in the United States in 1955 had one of the busiest and most progressive years in its history. Having completed its nationwide network of high-speed message centres through which messages flash coast-to-coast automatically, without manual relay, the industry concentrated on further wide-scale expansion of facsimile and on meeting the continued upsurge of demands for private wire systems for volume telegraph users.

Desk-Fax.—By the end of 1955 Western Union Telegraph company had placed compact Desk-Fax facsimile machines in the offices of about 26,000 firms, providing businessmen with the means of sending and receiving telegrams instantly in picture form by pressing a button. Another 23,000 business offices were equipped with Western Union teleprinter printing telegraph machines. These Desk-Faxes and teleprinters were serving nearly 50,000 customers, all directly connected with Western Union's high-speed electronic network.

Intrafax.—Intrafax (facsimile systems leased to customers) are used by a wide variety of businesses throughout the nation to connect their scattered departments, offices and buildings with fast and efficient communications. The newest form of Intrafax sends and receives a standard size letter in less than three minutes and transmits brief memoranda in a matter of seconds, eliminating bottlenecks in intracompany communications.

Ticketfax.—Another newly developed electronic facsimile system, Ticketfax, was placed in use to flash Pullman and reserved

Statistics of the Telegraph Industry, U.S.

(Fiscal Year Ended Dec. 31, 1954)

Item	Amount	Item	Amount
Gross operating revenues	\$222,288,218	Average hourly earnings of employees, apart from messengers	\$1.86
Income from operations (after federal income tax)	\$9,384,986	Miles of telegraph circuits	3,439,479
Telegraph offices and agencies	24,816	Miles of carrier-equipped telegraph circuits	2,711,312
Number of employees	39,128	Nautical miles of ocean cable	30,258
Salaries, wages, social security taxes, pensions and other benefits	\$140,013,781		

coach tickets from one railroad station to another and provide the tickets almost instantaneously to customers at the counter. This system, which was helping to revolutionize railroad reservations and speed ticket sales, delivered a ticket in eight seconds ready for immediate use by the passenger.

Private Wire Networks.—During 1955, more than 1,500,000 mi. of circuits were used in private wire networks leased to American business firms. Revenues from private wire services had grown from \$11,500,000 in 1950 to \$27,000,000 in 1955, an increase of 126%. The largest new networks placed in operation in 1955 were in the trucking, aviation, air line, railroad, paper, aluminum, fruit and vegetable and oil industries.

The most recent stimulant to the sale of private wire systems was their growing use for automation, or integrated data processing. This enabled industry to expedite and co-ordinate its sales, production, shipping, accounting and other operations, and provided efficiency never before possible. Systems which were being installed included a 12,000-mi. network for Sylvania Electric Products, Inc. This nationwide system, the first designed specially for integrated data processing, linked 51 cities with Sylvania's data processing centre at Camillus, N.Y. A 9,600-mi. transcontinental network linking 20 cities, being installed for E. F. Hutton and Co., one of the leading stock brokerage concerns, was completely automatic and included many radically new features to meet brokerage needs for maximum speed and accuracy.

Radio Beam System.—In 1948 Western Union installed and put into operation the world's first commercial microwave transmission network, linking New York city, Philadelphia, Pa., Washington, D.C., and Pittsburgh, Pa. During 1955 the company was extending its microwave system to Cincinnati and Chicago.

Submarine Cables.—Western Union announced it had reached an agreement on basic terms governing the sale of its cable system to Tectron American, Inc., subject to the execution of a definitive agreement and to necessary regulatory, stockholder and other approvals. The purchase price would be based on net book value of the properties plus net current assets, which combined were approximately \$18,000,000.

Financial.—Western Union split its stock 4-for-1 on May 17, 1955, one of the considerations being the aim to increase investor interest in the company. In less than four months the number of the company's share owners increased 20%. It also refunded its entire bonded indebtedness, issuing \$38,500,000 of 25-yr. 4½% debentures to replace \$35,000,000 5% bonds maturing in 1960, and \$2,000,000 4¾% debentures due in 1980. The company offered an additional 1,000,000 shares of stock to the share owners. These were promptly subscribed for, and the proceeds were being used to finance plant expansion. (See also FEDERAL COMMUNICATIONS COMMISSION.) (W. P. MA.)

Telephone. At the end of 1955 there were an estimated 101,000,000 telephones in the world. Of these, approximately 56,000,000 were in the United States.

Thirteen countries had more than 1,000,000 telephones each. In addition to the U.S., they were the United Kingdom (with more than 6,500,000 phones), Canada (with more than 4,000,000),

the German Federal Republic, France, Japan, Sweden, Italy, Australia, Switzerland, Argentina, the Netherlands and Spain.

U.S. Telephone Statistics

(As of July 1, 1955)

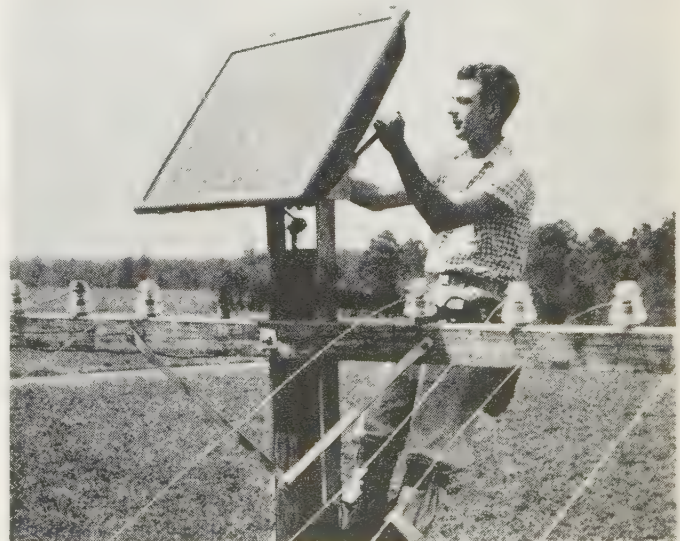
	Bell system*	Total U.S.
Number of telephones	44,557,000	54,315,000†
Dial telephones	37,946,000	44,500,000
Manual telephones	6,611,000	9,815,000
Miles of wire	189,110,000‡	209,200,000
Number of central offices	9,621	20,738
Average daily conversations (Jan.-June 1955)	169,000,000	205,000,000
Total investment in plant and equipment	\$14,660,645,000	\$16,800,000,000

*American Telephone and Telegraph company and its principal telephone subsidiaries. †In addition to Bell system, includes: Bell Associated (Southern New England and Cincinnati & Suburban Bell Telephone companies), 1,420,000; Bell Service (principally telephones on rural or former lines connecting directly with Bell system), 338,000; Independent (4,800 companies), 8,000,000. ‡96% in cable.

In March Bell system overseas service was extended to Ascension Island in the South Atlantic, in November to French Equatorial Africa and in December to Oman, on the Arabian peninsula, bringing the total number of connecting countries or territories to 112. This made it possible for a telephone user in the U.S. to call any one of 97,000,000 telephones throughout the world. About 84% of all U.S. telephones were dial operated.

Transoceanic Cables.—In 1955 work was progressing on three underwater twin-cable systems, between North America and the United Kingdom, Alaska and Hawaii. Farthest along was the project which would span the Atlantic between Newfoundland and Scotland—a distance of 1,950 nautical miles. A joint undertaking of the American Telephone and Telegraph company, the British post office and the Canadian Overseas Telecommunication corporation, it would provide 36 telephone channels and was scheduled to go into service late in 1956. Construction work had started on the one linking Port Angeles, Wash., and Ketchikan, Alsk.—800 mi. away. Similar to the Atlantic cable in many respects, it would also supply 36 telephone channels and would be completed late in 1956. The third cable system, which would stretch 2,100 mi. from Koko head in the Hawaiian Islands to Point Reyes, Calif., was in the planning stage and was expected to be completed in 1958. Cables on the floors of oceans make overseas telephoning more reliable because cables are not subject to atmospheric disturbances that sometimes affect radiotelephone.

Financing.—The total investment in telephone plant and equipment reached \$17,150,000,000 by Sept. 30, 1955. For example, in the fall of 1955, the American Telephone and Tele-



SOLAR POWER operating telephone equipment at Americus, Ga., in Sept. 1955. The lineman is shown adjusting the solar battery



FIRST SECTION OF TRANSATLANTIC TELEPHONE CABLE being hauled ashore at Clarenville, Nfd., in June 1955

graph company, parent company in the Bell system, sold a \$637,165,800 issue of convertible debentures. This was the largest single corporate financing job ever undertaken by any business. With more than 1,400,000 share owners, the Bell system was the most widely owned of all businesses.

Harnessing the Sun.—The Bell solar battery, the first successful device to convert sunlight directly and efficiently into electricity, underwent further development during 1955. In April Bell laboratories announced that the battery's efficiency had been almost doubled, to 11%. This was said to be comparable with that of the best gasoline engines and more than 20 times higher than that of the best photovoltaic devices available. In October tests began of a new type of rural telephone system powered by the solar battery. The experiment was being conducted near Americus, Ga.

Defense Developments.—Announced during the year was TRADIC—short for "transistor digital computer." It is an electronic brain especially devised to go into an aeroplane. It can make thousands of calculations a second while the plane is in flight. Instead of vacuum tubes it uses hundreds of tiny transistors, an invention of Bell laboratories. The transistors enable the machine to operate on less than 100 w.—one-twentieth of the power needed by comparable vacuum-tube computers. It appeared that when design work had been completed, the machine would probably occupy less than three cubic feet of space in a modern military aircraft.

At the request of the U.S. air force, a project to integrate U.S. radar and defense weapons into a nation-wide semiautomatic system was begun. When completed, it would include numerous centres where radar information would be electronically computed to guide defensive weapons.

Thousands of communications channels would be needed to provide the interconnecting network.

Just below the Arctic circle, across the northern rim of the North American continent, construction started on the Distant Early Warning line—a series of radar stations to give the U.S. and Canada advance warning of an air attack. Western Electric,

manufacturing and supply unit of the Bell system, was prime contractor for the U.S. air force in construction of the radar fence, a joint venture of Canada and the U.S.

(See also FEDERAL COMMUNICATIONS COMMISSION; RURAL ELECTRIFICATION ADMINISTRATION.) (C. F. Cg.)

Television: see FEDERAL COMMUNICATIONS COMMISSION; RADIO AND TELEVISION.

Tellurium: see MINERAL AND METAL PRODUCTION AND PRICES.

Tennessee. A south central state of the United States, 16th to enter the union, Tennessee is called the "Volunteer state." Land area, 41,797 sq.mi., water area about 447 sq.mi. Population (1950): 3,291,718; rural 1,839,116; urban 1,452,602; rural farm 1,016,204; white 2,760,250; non-white 531,468. The July 1, 1955, estimated population was 3,399,000. The population of principal cities in 1950: Nashville (cap.) 174,307; Memphis 396,000; Chattanooga 131,041; and Knoxville 124,769.

History.—Major legislation enacted by the 1955 general assembly included an increase in the sales tax from two cents to three cents, with the increase earmarked for education; increase in gasoline tax and automobile registration fees; increased appropriations for teachers' salaries and highways; and a strict antigambling bill. Efforts to reapportion representation in the general assembly met with defeat, despite a constitutional requirement that the state be reapportioned every ten years. Tennessee's last reapportionment was in 1907.

The most serious labour strife in many years accompanied strikes against the Louisville and Nashville railroad, the Nashville, Chattanooga and St. Louis railway and the Southern Bell Telephone and Telegraph company in March, April and May 1955. Cable slashings, dynamiting and derailment of the N. C. & St. L. passenger streamliner, the "Dixie Flyer," accompanied the strikes. More violence occurred in a strike against the Serbin Garment company in Fayetteville.

The state board of education began the process of desegregation of schools by calling on state colleges and the University of Tennessee, Knoxville, to end segregation on the graduate level in the fall term of 1955, and extending this policy to college freshman classes in the fall of 1959. Desegregation of public elementary and high schools was left in the hands of local school boards.

Frank G. Clement was re-elected governor in Nov. 1954 and began his second term in January. Other chief state officers were: lieutenant governor, Jared Maddux; secretary of state, G. Edward Friar; treasurer, Ramon Davis; comptroller, William R. Snodgrass; attorney general, George F. McCanless; and adjutant general, Joe Henry, Jr.

Education.—Enrolment in elementary and high schools during the school year 1954-55 was 740,933, with an average daily attendance of 663,738. The total number of public-school teachers was 25,307. Grand total expenditures for public schools from all sources during 1953-54, the latest year for which figures were available, were \$125,632,905; for special schools \$1,218,100; and for six state colleges and the University of Tennessee \$10,783,198.12 out of state funds. The commissioner of education was Quill Cope.

Social Insurance and Assistance, Public Welfare and Related Programs.—During 1954 the total amount of unemployment compensation was \$37,538,200 for 1,994,728 man-weeks of unemployment. Other public assistance during 1954-55 totalled \$46,761,244.80, of which \$28,222,611.90 was for old-age assistance, \$16,260,168.90 for dependent children, \$1,623,583.20 for aid to the blind and \$654,880.80 for disabled persons. As of June 30, 1955, there were 65,694 recipients of old-age assistance, 21,102 dependent children, 3,292 blind and 1,469 disabled persons receiving public assistance.

In 1954-55 there were 4 juvenile and correctional institutions with 694 inmates and expenditures of \$734,195.77; 3 penal institutions with 2,774 inmates and expenditures of \$1,621,207.77; and 3 state hospitals for the insane with an average population of 7,420 inmates and expenditures of \$4,112,150.38.

Communications.—Of the 70,064 mi. of public roads on Dec. 31, 1954, 8,202 were state highways. There were 56,433 mi. of county rural roads and 4,367 mi. of county urban roads. State and federal parks and reser-

vations contained an additional 1,062 mi. of roads. Total highway expenditures were \$98,059,196 of which \$54,200,206 was from the state, \$26,303,951 from counties and \$17,555,039 from municipalities. There were 3,443.34 mi. of railroad on Oct. 1, 1955.

Banking and Finance.—On June 30, 1955, there were 219 state banks with 58 branches and assets of \$752,455,697.02; and 76 national banks with assets of \$1,901,714,000. Savings and loan associations on June 30, 1955, numbered 43 with total assets of \$326,450,154.16. Of these 42 were federal associations with assets of \$325,968,688.51.

Total state revenue from all sources in 1954-55 was \$276,583,464.33. Federal aid was \$59,026,713.74. Proceeds from bonds sold were \$5,350,000, and debt outstanding decreased \$5,686,000 to a total of \$113,845,000 on June 30, 1955. Of total disbursements from state appropriations of \$291,934,679.49, \$85,770,159.37 was for education, \$51,671,720.26 for highways, \$51,388,002.43 for public welfare and \$35,172,741.79 for cities and local governments. Accrued surplus on June 30, 1955, was \$36,748,484.62.

Table I.—Principal Crops of Tennessee

Crop	Indicated 1955	1954	Average 1944-53
Corn, bu..	60,410,000	40,484,000	59,793,000
Oats, bu..	9,630,000	8,906,000	6,144,000
Soybeans, bu..	3,700,000	2,160,000	2,333,000
Barley, bu..	1,866,000	1,578,000	1,445,000
Hay, tons	1,868,000	1,311,000	1,908,000
Peanuts, lbs.	2,400,000	2,175,000	3,948,000
Tobacco, lbs.	126,800,000	148,118,000	143,556,000
Apples, bu..	94,000	376,000	388,000
Peaches, bu..	—	355,000	478,000
Pears, bu..	—	151,000	115,000
Potatoes, bu..	1,224,000	1,425,000	2,366,000
Potatoes, sweet, bu..	1,200,000	1,020,000	2,048,000
Wheat, bu..	3,417,000	3,959,000	4,320,000
Cotton, bales	560,000	548,000	565,000

Source: U. S. Department of Agriculture.

Agriculture.—Tennessee had another drought year in 1954 with a drop in farm income from \$484,937,000 in 1953 to \$478,130,000 in 1954. Income from livestock and products was \$224,982,000; from crops \$244,522,000; and from government payments \$8,626,000. During 1954, 147,814 ac. of forestland were burned by 5,492 forest fires. Estimated forest area in Oct. 1955 was 12,916,000 ac.

Table II.—Principal Industries of Tennessee

	All employees 1953	Salaries and wages 1953 (in 000s)	Value added by manu- facture 1953 (in 000s)	Value added by manu- facture 1952 (in 000s)
Food and kindred products	23,081	\$73,261	\$173,420	\$131,520
Textile mill products	34,581	89,851	141,422	127,875
Apparel and related products	26,494	50,300	78,486	79,955
Lumber and products (except furniture).	20,294	43,374	66,138	69,007
Furniture and fixtures	10,494	28,781	46,394	—
Paper and allied products	7,109	27,481	58,514	49,702
Printing and publishing industries.	*	*	*	57,013
Leather and leather products.	9,210	22,508	55,229	52,019
Primary metal industries.	13,121	49,948	104,911	97,898
Fabricated metal products.	15,538	51,922	79,617	71,769
Machinery (except electrical).	11,008	40,240	58,381	49,696
Electrical machinery	*	*	*	40,591
Transportation equipment.	6,096	25,287	38,920	*

*Withheld because the estimate did not meet publication standards, either on the basis of the associated standard error of estimate or on the basis of a consistency review.

Source: U. S. Department of Commerce, *Annual Survey of Manufactures*, 1953.

Manufacturing.—The total estimated value of manufactures in 1954 was \$3,344,000,000, a decline of \$211,000,000 from 1953. An estimated 281,000 persons were engaged in manufacturing in 5,100 establishments. Total wages paid to persons covered by unemployment compensation were \$882,956,288. In July 1955, 179,500 persons were engaged in the manufacture of nondurable goods and 103,300 in the manufacture of durable goods. Leading employing industries were chemicals with 47,000, textiles with 34,400, fabricated metal products and ordnance with 20,700 and lumber with 21,500.

(W. T. A.)

Table III.—Mineral Production of Tennessee

(In short tons, except as noted)

Mineral	Quantity 1953	Value 1953	Quantity 1952	Value 1952
Cement (bbl.).	7,277,000	\$18,283,000	7,429,000	\$17,834,000
Clays	1,037,000	3,479,000	1,042,000	3,519,000
Coal	5,467,000	25,152,000	5,265,000	25,560,000
Coke*	231,000	?	254,000	?
Lime	114,000	1,177,000	100,000	1,005,000
Phosphate rock	1,701,000	11,305,000	1,618,000	11,306,000
Sand and gravel	5,231,000	5,270,000	5,173,000	5,303,000
Stone	10,485,000	16,948,000	10,377,000	17,653,000
Zinc	38,000	8,847,000	38,000	12,623,000
Other minerals	...	7,589,000	...	6,129,000
Total	...	\$98,050,000	...	\$100,932,000

*Values for processed materials are not included in the totals.

Mineral Production.—Table III shows the tonnage and value of those mineral commodities produced in Tennessee in 1952 and 1953 (preliminary) whose value exceeded \$100,000. In 1953 Tennessee was first among the states in output of pyrite, second in phosphate rock, fifth in zinc and ranked 26th in the value of its mineral output, with 0.68% of the U. S. total.

Tennessee Valley Authority. The Tennessee Valley authority's multiple-purpose dam and reservoir system averted nearly \$1,000,000 of flood damage early in 1955, while traffic on the waterway steadily increased. In March the crest of a moderate flood was lowered by 13.5 ft. at Chattanooga, Tenn., and by lesser amounts elsewhere in the valley, saving \$400,000 damage; regulation of the Tennessee river outflow averted \$580,000 damage in the lower Ohio and Mississippi basins. Total flood damage averted since 1936, only a partial measure of flood-control benefits, reached \$59,846,000, or about one-third of the original cost of the flood-control facilities. Traffic on the river reached 1,250,000,000 ton-miles in 1954, with savings to shippers of \$14,000,000. Traffic in the first seven months of 1955 was 895,000,000 ton-miles, 27% higher than the same period of 1954.

More than half the 42,044,954,000 kw.hr. sold by TVA in the fiscal year 1955 went to federal defense agencies, chiefly the Atomic Energy commission. The federal agencies received 21,770,451,000 kw.hr., compared with 11,800,000,000 kw.hr. the year before. Installed generating capacity of the integrated system increased by 1,734,300 kw. This brought the system total to 7,809,985 kw., of which 3,502,735 kw. was in hydro plants and 4,307,250 kw. in steam plants. Continuing construction, mainly to supply the Atomic Energy commission, was expected to bring the total installed capacity to 9,039,985 kw. by Dec. 31, 1955.

With power revenues of \$188,163,000, net operating revenues of \$47,901,000 in the fiscal year amounted to a return of about 4½% on the net average power investment, somewhat above the 4% annual average of the past 22 years. TVA paid \$50,000,000 to the U. S. treasury, partly to the general fund and partly to retire bonds, bringing the total of such payments to \$151,132,000. After June 30, 1955, a \$14,000,000 payment retired the last of \$65,000,000 of bonds.

Municipal and co-operative systems, purchasing 13,556,622,000 kw.hr. for distribution to 1,376,000 consumers, had revenues of \$138,500,000 and a combined net income of \$24,100,000. They added 43,000 consumers during the year, half in rural areas. Average annual use per residential customer exceeded 5,200 kw.hr. compared with about 2,650 kw.hr. in the nation as a whole.

Industry continued to draw upon the results of TVA's research in chemical engineering for fertilizer and munitions development, particularly in the expansion of phosphorus production facilities. About 350,000 tons of fertilizer materials were produced in the fiscal year and distributed in 36 states in an experimental sales program and farm test demonstrations, de-



"THE NATIVES DO SEEM TO BE A BIT UNFRIENDLY," a 1955 cartoon by Yardley of the *Baltimore Sun* (Md.)

signed to help improve fertilization and land-use practices and encourage the demand for improved commercial fertilizers.

During fiscal 1955 TVA, working with 14 state agencies, provided about 15,000,000 seedlings for planting on 15,000 ac. of valley lands by 4,000 landowners. About 280,000,000 seedlings had been provided by TVA for planting on 240,000 ac., about one-sixth the valley area needing reforestation. The value of nonfederal recreation facilities and equipment along TVA lakes increased to \$47,700,000, including 300 boat docks and 12 state and 50 local parks.

The TVA board of directors consisted in 1955 of Brig. Gen. Herbert D. Vogel, ret., chairman, Harry A. Curtis and Raymond R. Paty. (See also ELECTRICAL INDUSTRIES.)

(K. R. K.)

Tennis. The outstanding play of Tony Trabert, who won the French, British and U.S. titles, and the brief eight months' tenure of the Davis cup by the U.S., marked the year 1955 in amateur tennis. A month after he became U.S. champion for the second time, Trabert accepted an offer by Jack Kramer to join his professional troupe.

Davis Cup.—Trabert and E. Victor Seixas, Jr., 1954 U.S. champion, surprised Australia's team of Kenneth Rosewall, 1954 Australian champion, and Lewis Hoad to win the 1954 Davis Cup Challenge round at White City stadium, Sydney, Austr., Dec. 27-29, 1954. Before record-breaking daily crowds of more than 25,000, the Americans won 3 matches to 2 as they broke Australia's four-year reign. Just eight months later Australia regained the cup when its team of Rosewall, Hoad and Rex Hartwig, captained by Harry Hopman, scored a decisive 5-0 victory over the U.S. team of Trabert, Seixas and Hamilton Richardson, captained by William F. Talbert. The matches were played at the stadium of the West Side Tennis club, Forest Hills, N.Y., Aug. 26-28, 1955. Many Australians were in the crowds which nearly filled the 13,500-seat stadium each day. Thirty-four nations challenged for the cup in 1955.

Men's Singles.—Trabert won his titles at Wimbledon, Eng., Forest Hills and the U.S. Clay court at Atlanta, Ga., without the loss of a set, an exceptional performance. In the final at Wimbledon he beat Kurt Nielsen of Denmark, 6-3, 7-5, 6-1; at Forest Hills he defeated Rosewall, 9-7, 6-3, 6-3, for the U.S. championship, and at Atlanta he beat the defending champion, Bernard "Tut" Bartzen, 10-8, 6-1, 6-4. Trabert won the French championship by defeating Sven Davidson of Sweden in a four-set final. Trabert also won the last two tournaments in which he competed as an amateur. In the Pacific Southwest at Los Angeles, Calif., he beat Herbert Flam in the final and in the Pacific Coast at Berkeley, Calif., he defeated Seixas for the title.

Men's Doubles.—By their victories at Wimbledon and in the Challenge round and other Davis cup ties, the Australian pair of Hoad and Hartwig replaced Seixas and Trabert as the world's foremost doubles team. The Australians repeated their 1955 Davis Cup Challenge round victory over the American pair by defeating them in another five-set match in the Pacific Southwest final. Seixas and Trabert won the French doubles over Italy's rising Davis cup stars, Nicola Pietrangeli and Orlando Sirola, and early in the year the Americans won the Australian title. Hurricane weather forced postponement of the U.S. doubles championships at the Longwood Cricket club, Chestnut Hill, Mass., in August and with the Challenge round in the offing several of the top seeded teams had to withdraw. In the scramble for the title left undefended by Seixas and Trabert, a Japanese team for the first time emerged victorious. Kosei Kamo and Atsushi Miyagi, Japan's Davis cup team, defeated the young Americans Gerald Moss and William Quillian in a five-set final.

Women's Champions.—With the continued retirement of former champion Maureen Connolly (now Mrs. Norman E.

Brinker), the important women's titles were distributed. Louise Brough won her fourth singles title at Wimbledon, defeating Mrs. Beverly Baker Fleitz in the final. Doris Hart retained her U.S. title by beating Patricia Ward, Great Britain. It was the first time since 1931 that an English girl had reached the final of the U.S. championship. Angela Mortimer, Great Britain, won the French crown. In the final she defeated Mrs. Dorothy Head Knode, U.S. Miss Mortimer also defeated Miss Hart in the Wightman cup matches played at the Westchester Country club in Rye, N.Y., although the favoured U.S. team (Misses Hart, Brough, Shirley Fry and Mrs. Knode) won again, 6 to 1. The English girls between them won the doubles in three important tournaments in the U.S.—Essex, Maidstone and Pacific Coast—and Miss Mortimer won the singles over Shirley Bloomer in the latter tournament. For the first time in many years two English teams reached the final of the women's doubles at Wimbledon when Miss Mortimer and Anne Shilcock defeated Misses Ward and Bloomer. Resuming where they left off in 1950 after setting a record of nine successive U.S. doubles championships, Miss Brough and Mrs. Margaret Osborn du Pont captured their tenth title at the Longwood Cricket club. They defeated Misses Hart and Fry who had held the title for the last four years.

Miss Hart set a record by winning both the British and U.S. mixed doubles championships for the fifth successive year. The first two years she was partnered by Frank Sedgman and the last three years by Seixas.

(E. S. Br.)

Texas. Texas is a west south central state of the United States, bordered on the southeast and southwest by the Gulf of Mexico and Mexico, respectively. It became a state through annexation Dec. 29, 1845, of the republic of Texas, 1836-45. Known as the "Lone Star state" from the single star in the flag of the republic, it is the largest state in the union. Land area 263,513 sq.mi., inland water 3,826 sq.mi.; total 267,339 sq.mi. Population: (1950 census) 7,711,194; (U.S. census est. July 1, 1955) 8,351,000. Urban population (1950) 4,838,060, or 62.7%; total rural 2,873,134, or 37.3%, divided into 1,580,867 nonfarm rural and 1,292,267 farm rural; white 6,726,534, nonwhite 984,660. Capital, Austin, with 132,459 pop. (1950). Other cities ranked by population in 1950: Houston 596,163; Dallas 434,462; San Antonio 408,442; Ft. Worth 278,778; El Paso 130,485; Corpus Christi 108,287; Beaumont 94,014; Waco 84,706; Amarillo 74,246; Lubbock 71,747; Wichita Falls 68,042.

History.—Scandal involving the \$100,000,000 state bond issue to help war veterans purchase farm lands was the principal political development of 1954-55. State Land Commissioner Bascom Giles and several citizens in private life were charged with bribery and misappropriation of public funds. Giles, who had been re-elected state land commissioner in 1954, declined to qualify with the oath of office in Jan. 1955, soon after charges had been brought against him, and J. Earl Rudder was appointed by the governor in his place. Giles was convicted during 1955 in district courts at Austin and San Antonio and given three- and six-year prison sentences, respectively. These cases were on appeal as of Oct. 15, 1955.

The 54th legislature convened in regular session Jan. 11, 1955, and adjourned June 7 after a 148-day session. During the session 1,431 bills were introduced, of which 551 were passed. Notable among them were laws (1) putting tighter regulation on life, fire and casualty insurance companies, (2) reorganizing the state health department with abolishment of the office of state health officer and creation of the office of state commissioner of health, (3) creating a Texas commission on higher education to survey the whole field of tax-supported state universities and colleges and (4) 23 laws which, in effect, were amendments of the Texas water code. A serious drought and



JOHN NANCE GARNER, former vice-president of the U.S., watching chickens feeding on his ranch at Uvalde, Tex., where he was interviewed in 1955 after a report that he might return to Washington, D.C., to attend a testimonial dinner for speaker of the house of representatives Sam Rayburn

municipal water shortage prevailed in most of the state during 1954 and 1955, and there was lengthy legislative debate in an attempt at a complete recodification of the Texas water laws, which only partly succeeded.

The 54th legislature submitted nine constitutional amendments to be voted on by the people Nov. 6, 1956. The most important of these proposed (1) broadening tax powers of the county commissioners' courts, (2) giving the legislature wider authority to use its own discretion in providing old-age and other assistance, (3) providing for different procedure in trial of lunacy cases, including waiver of jury trial, (4) providing greater freedom in investing the permanent fund of the University of Texas and the Agricultural and Mechanical college, which, on Aug. 31, 1955, amounted to \$226,273,156, and (5) reorganizing the Veterans' Land board, increasing regulation of its activities and increasing from \$100,000,000 to \$200,000,000 the amount of bonds it may issue for assisting in the veterans' land-purchase program.

The principal state officials for the term ending Dec. 31, 1956, were: governor, Allan Shivers; lieutenant governor, Ben Ramsey; attorney general, John Ben Shepperd; comptroller of public accounts, Robert S. Calvert; treasurer, Jesse James; state commissioner of education, J. W. Edgar (indefinite appointive term).

Education.—The scholastic population for the school year 1954-55 was 1,781,027 (preliminary figure). Administration under the Texas Education agency was through 991 independent and 954 common school districts. The number of teachers (1953-54) was 63,495; average salary \$3,484.35. All revenues for public school operation totalled \$441,073,763.

Social Insurance and Assistance, Public Welfare and Related Programs.—At the end of the fiscal year, Aug. 31, 1955, there were 224,004 recipients of old-age assistance with an average of \$38.22 monthly per recipient, according to the state public welfare department. There were 69,246 dependent and neglected children, representing 23,610 families, with average assistance of \$19.22 per child or \$56.36 per family. There were 6,519 receiving aid to the blind, with average of \$41.31 per person. Beginning in Sept. 1955 old-age payments were raised \$4 and aid to the blind \$3 monthly, as the result of a constitutional amendment adopted in Nov. 1954 raising the public welfare fund limit from \$35,000,000 to \$42,000,000, for the fiscal year beginning Sept. 1, 1955.

Transportation and Communications.—The Texas public road system on Aug. 31, 1955, totalled approximately 200,000 mi., including all types, according to the state highway department. There were 16,500 mi. in the federal-aid primary system, 10,500 mi. of state highways and 26,000 mi.

of farm-to-market roads, the remaining mileage being locally maintained. In the combined federal, state and farm-to-market systems, as of Aug. 31, 1955, there were 45,900 mi. of asphalt, concrete and brick paving. Total receipts to the highway department for the year ended Aug. 31, 1955, were \$190,516,110. Total disbursements were \$192,497,898, of which \$137,452,580 was for construction, \$38,696,225 for maintenance and \$16,349,093 for administration, highway patrol and miscellaneous expense. Total motor vehicles registered for the year ending March 31, 1955, were 3,781,235.

There were on Jan. 1, 1955, 15,324 mi. of first main line railroad track in the state and 6,251 mi. of auxiliary track. Total airports recorded with the Civil Aeronautics administration numbered 654 as of May 31, 1955, with 47 in use by standard air lines. Shipping at Texas Gulf ports for the calendar year 1954 amounted to 4,333,634 tons of foreign imports and 9,961,084 tons of exports; 5,169,327 tons of receipts in coastwise domestic shipping and 79,918,107 tons of outbound shipments (largely between Gulf ports and Atlantic seaboard); 13,101,149 tons of internal shipping receipts (Gulf Intracoastal canal) and 14,745,405 tons of outbound shipments. As of Jan. 1, 1955, there were 2,398,521 telephones in the state.

State Government and Private Finance.—State government receipts for the fiscal year ended Aug. 31, 1955, were \$838,009,264. Texas has neither state income tax nor general sales tax. Total expenditures by the state for the year ended Aug. 31, 1955, were \$777,558,950 for the following purposes: education, including administration, eleemosynary-educational and higher education, \$299,464,274; public welfare, \$157,270,375; highway construction and maintenance, \$189,363,084; eleemosynary-correctional, \$45,214,615. The state's authorized bonded debt was \$104,000,000, including \$100,000,000 of veterans' land purchase bonds. On Jan. 1, 1955, there were 441 national banks in Texas with \$8,295,685,966 resources and \$7,698,690,443 deposits. There were 465 state banks with \$1,981,482,580 resources and \$1,851,723,724 deposits. The total was 906 banks with \$10,277,168,546 resources and \$9,550,414,167 deposits.

Table I.—Leading Agricultural Products of Texas

Crop	Indicated 1955	1954	Average 1944-53
Cotton, bales	4,000,000	3,940,000	3,388,000
Cottonseed, tons	1,732,500	1,773,000	...
Wheat, bu.	14,212,000	30,894,000	55,404,000
Corn, bu.	50,196,000	33,184,000	47,111,000
Sorghum grain, bu.	138,424,000	117,386,000	77,502,000
Rice, 100-lb. bags	14,036,000	16,120,000	10,918,000
Peanuts, lb.	237,250,000	108,185,000	272,522,000
Hay, tons	1,810,000	1,389,000	1,570,000
Flaxseed, bu.	78,000	578,000	879,000
Oats, bu.	34,615,000	41,354,000	28,167,000
Barley, bu.	2,208,000	3,135,000	2,481,000
Tomatoes, bu.	3,140,000	4,124,000	...
Potatoes, bu.	2,772,000	2,033,000	3,479,000
Sweet potatoes, bu.	2,600,000	1,350,000	3,664,000
Pecans, lb.	22,000,000	24,000,000	32,665,000
Peaches, bu. . . . .	...	180,000	1,064,000

Source: U.S. Department of Agriculture.

Agriculture.—Total Texas crop acreage, 1955 (August estimate), was 23,100,000, as against 24,884,775 in 1954. Total 1955 income from crops (basis of six months' estimate) was \$964,224,000, income from livestock \$776,000,000; total 1955 estimated income from crops and livestock, \$1,740,224,000. Income from crops, 1954, was \$1,063,201,000, income from livestock \$774,880,000; total, \$1,838,081,000.

The number and value of livestock on farms, Jan. 1, 1955, were as follows: all cattle, 8,501,000, valued at \$561,066,000; milk cows, 1,031,000, valued at \$96,914,000; hogs, 1,087,000, valued at \$23,588,000; sheep, 5,331,000, valued at \$53,829,000; goats, 2,249,000, valued at \$12,370,000; horses, 252,000, valued at \$9,828,000; mules, 68,000, valued at \$2,584,000; chickens, 21,388,000, valued at \$19,249,000; turkeys, 621,000, valued at \$2,794,000.

Table II.—Principal Industries of Texas

	All employees 1953	Salaries and wages 1953 (in 000s)	Value added by manufacture 1953 (in 000s)	Value added by manufacture 1952 (in 000s)
Food and kindred products . . .	59,209	\$191,575	\$498,226	\$458,279
Textile mill products	*	*	*	29,591
Apparel and related products . .	29,439	64,223	103,189	*
Lumber and products (except furniture)	25,624	58,279	94,225	84,881
Furniture and fixtures	8,822	27,464	49,764	*
Paper and allied products	6,893	29,482	54,607	54,149
Printing and publishing industries .	23,102	90,909	156,928	*
Chemicals and allied products . .	37,608	173,981	777,092	691,783
Petroleum and coal products . . .	41,372	215,363	542,104	552,608
Stone, clay and glass products . .	12,609	40,344	99,694	*
Primary metal industries	24,179	102,339	181,124	138,111
Fabricated metal products	15,260	60,624	106,836	89,494
Machinery (except electrical) . .	31,597	137,786	275,975	266,820
Electrical machinery	*	*	*	17,299
Transportation equipment	58,322	262,743	366,391	305,955
Instruments and related products .	2,504	10,423	21,850	16,941
Miscellaneous manufactures . . .	*	*	*	60,158
Administrative and auxiliary . . .	11,661	62,512	...	...

*Withheld because the estimate did not meet publication standards, either on the basis of the associated standard error of estimate or on the basis of a consistency review.

Source: U.S. Department of Commerce, Annual Survey of Manufactures, 1953.

Manufacturing and Industry.—Employment and net value of production of leading Texas industries, 1953 and 1952, were as shown in Table II, according to the U.S. department of commerce Annual Survey of Manufactures.

Employment in manufacturing in Texas on Aug. 31, 1955, was 442,800, as compared with 426,800 on Aug. 31, 1954, according to the Texas Employment commission, Austin. Leading industries as indicated by

employment on Aug. 31, 1955, were: food, 61,600; transportation equipment, 57,200; petroleum products, 48,000; chemicals, 40,900; machinery, 38,200; apparel, 31,400; lumber and wood products, 26,900; printing and publishing, 26,500; primary metals, 26,400. (S. McG.)

Mineral Production.—Table III shows the tonnage and value of those mineral commodities produced in Texas in 1952 and 1953 (preliminary) whose value exceeded \$100,000. In 1953 Texas was far in the lead among

Table III.—Mineral Production of Texas

(In short tons, except as noted)

Mineral	1952		1953	
	Quantity	Value	Quantity	Value
Cement (bbl.) . . .	19,849,000	\$ 48,043,000	19,140,000	\$ 48,498,000
Clays	2,069,000	4,470,000	2,371,000	4,679,000
Coke*	652,000	?	752,000	?
Gypsum	1,021,000	2,682,000	1,068,000	2,861,000
Helium (000 cu. ft.) .	1,07,000	1,400,000	104,000	1,392,000
Iron ore	882,000	†	1,137,000	†
Lime	282,000	2,623,000	476,000	4,381,000
Natural gas	4,147,805,000	257,164,000	4,383,158,000	333,120,000
(000 cu. ft.) . . .				
Natural gasoline . .	2,590,000	188,500,000	2,750,000	200,479,000
(000 gal.)				
Petroleum (bbl.) . .	1,022,139,000	2,641,860,000	1,019,164,000	2,777,900,000
Petroleum gases . .	2,457,000	88,635,000	2,778,000	109,131,000
(000 gal.)				
Salt	2,640,000	4,402,000	2,845,000	5,011,000
Sand and gravel . .	18,661,000	17,275,000	15,101,000	12,846,000
Stone	7,604,000	8,665,000	9,095,000	8,550,000
Sulphur	4,135,000	78,910,000	4,049,000	97,601,000
Other minerals . . .	...	35,179,000	...	41,357,000
Total		\$3,379,808,000		\$3,647,806,000

*Values for processed materials are not included in the totals.

†Values included with other minerals.

the states in output of natural gas and petroleum and was also first in bromine and sulphur, third in cement and potash, fourth in gypsum and fifth in clay. Texas has the only commercial production of helium in the world. It was first among the states in the value of its mineral output in 1953, with 25.37% of the U.S. total.

Textile Industry. Consumption of the four major textile fibres (cotton, wool, silk and the man-made fibres) in the United States for 1952 through the first half of 1955 is shown in Table I.

Table I.—United States Fibre Consumption

(In millions of pounds)

	1952	1953	1954	1st half 1955
Raw cotton	4,437	4,521	4,124	2,212
Raw wool*	478	505	392	214
Apparel class	358	369	277	149
Carpet class	120	136	115	65
Raw silk	7	5	6	4
Man-made fibres†	1,470	1,522	1,497	949
Rayon plus acetate	1,215	1,223	1,155	732
Noncellulosic‡	255	299	342	217
Total, four fibres	6,392	6,553	6,019	3,379

*Scoured basis. †The rayon plus acetate data are U.S. producers' domestic shipments plus imports for consumption, while the noncellulosic fibre data are U.S. producers' production less exports plus imports for consumption. ‡Includes nylon, acrylic, polyester, polyethylene, polyvinyl-acetate, protein, saran and textile glass fibre for textile applications.

During the first half of 1955, consumption rose to an annual rate of about 6,800,000,000 lb. or 13% over 1954. These recent data compare with a 1939 consumption figure of 4,500,000,000 lb.

The relative importance of the various fibres as percentages of total consumption had changed significantly since pre-World War II days. In 1939, for example, cotton represented 80% of the poundage of all fibres consumed; by 1955, cotton's share had fallen to 66%, in spite of the fact that its poundage consumption had increased 794,000,000 lb. or 22% over the period. Wool's prewar share was 9% of the total, but this dropped in 1955 to 6%.

Use of the man-made fibres, on the other hand, rose sharply from a 10% share in 1939 to 28% in 1955; poundagewise, consumption increased 1,439,000,000 lb. or 314%. Prior to the war, the only man-made fibres of commercial importance in the United States were rayon and acetate. Since then, the noncellulosic fibres had become increasingly important.

Prices.—Textile fibre prices remained fairly steady during the first half of 1955 except for wool, which showed a steady downward trend. Table II shows the annual averages from 1950 through Sept. 1955.

Wool prices were characterized by great fluctuations over the period, rising to a high of \$3.75 a pound in March 1951, then dropping to \$1.58 only 13 months later. After increasing to \$1.77 per pound in Sept. 1954, there was a steady downward trend to a new low of \$1.32 in Sept. 1955.

Cotton also reached its peak of 45.2 cents about the same time as wool, as a result of the Korean outbreak the year before. The price trend then was downward until the end of 1953, when a slight upturn occurred. Late in 1954, the trend again was downward.

Rayon filament yarn prices were remarkably steady over the period, holding at 78 cents a pound from Jan. 1951 until March 1955 when the price was raised to 83 cents. Rayon staple prices

Table II.—Selected Textile Prices in the United States*

(In cents per pound)

Annual Averages	Raw Cotton		Raw Wool	Raw Silk	Rayon Yarn	Rayon Staple
	Cotton	Wool				
1950	36.2	199.2	349.4	73.2	36.1	
1951	41.4	270.5	480.5	78.0	40.0	
1952	38.8	165.3	515.6	78.0	39.7	
1953	32.9	172.9	539.5	78.0	35.0	
1954	34.1	170.6	492.0	78.0	34.0	
1955†	33.6	146.5	464.4	81.7	34.0	

*Cotton is the 10-market spot price for 1½-in. middling cotton, except for 1955 which relates to the new 14-market average basis. Wool is fine-grade territory wool, scoured basis, at Boston, Mass. Silk is the 20-22 AA grade. Rayon yarn is 150-denier viscose rayon yarn, Rayon staple is 1½-denier, 1½-in. bright viscose rayon staple. †First nine months of 1955 only.

reached a high of 40 cents a pound in Jan. 1951, which price held until Nov. 1952 when the price was lowered to 37 cents. A further decrease to 34 cents was put into effect in April 1953.

Silk prices reached a high of \$5.62 a pound in Feb. 1951. After several cycles of lower and higher prices, an upswing began in May 1955, which brought the price to \$4.85 in August.

Broad Woven Goods.—Broad woven goods constitute the most important single branch of the textile fabricating industry in the United States and Table III delineates the production of that industry for the years 1952-1954 and for the first half of 1955.

Table III.—Broad Woven Goods and Tire Cord Production

	1952	1953	1954	1st half 1955
Broad woven fabrics (millions of linear yards)				
Cotton fabrics	9,515	10,203	9,768	5,045
Man-made fibre fabrics*	2,294	2,405	2,242	1,288
Woolen and worsted fabrics†	351	339	279	158
Total	12,160	12,947	12,289	6,491
Tire cord and fabric (millions of pounds)				
Cotton (except chaffer fabric)	91	16	13	34
Nylon	8	19	30	
Rayon	384	429	324	201
Cotton chaffer fabric	48	57	46	26
Total	531	521	413	261

*Including silk. †Excluding carpets, rugs and felts.

Output in the first half of 1955 was at an annual rate of nearly 13,000,000,000 yd., 6% above 1954 and approximately equal to 1953.

Total output of tire cord and fabric tended downward from 1952 to 1954, but showed a good recovery in the first half of 1955.

Per Capita Fibre Consumption.—Civilian per capita consumption of cotton, wool and the man-made fibres in the first

Table IV.—U.S. Civilian Per Capita Consumption of Certain Textile Fibres

(In pounds)

Year	Total	Man-made	Wool	Cotton
1950	40.4	9.2	4.4	26.8
1951	36.4	8.5	2.6	25.3
1952	34.9	8.5	3.1	23.3
1953	36.2	8.6	3.4	24.2
1954	32.6	8.2	2.6	21.8
1955*	36.6	10.5	2.9	23.2

*First half 1955 data multiplied by two to determine the annual rate.

half of 1955 was at an annual rate of 36.6 lb., a gain of 4 lb. over 1954 but 3.8 lb. below the postwar peak of 40.4 lb. per person in 1950, as shown in Table IV. Per capita consumption of man-made fibres hit an all-time annual high rate of 10.5 lb. per person in the first half of 1955, greater by 1.3 lb. per person than the previous high in 1950.

These per capita data are calculated as the mill consumption of the fibres, minus exports and plus imports of fabricated products, and less unusual military consumption, all divided by the population.

Imports and Exports.—Exports of all textile fibres and products thereof from the United States amounted to \$1,416,000,000 in 1954, an increase of 21% over the 1953 total of \$1,167,000,000. The 1954 imports were valued at \$795,000,000 or 14% less than the 1953 total of \$926,000,000. For the first half of 1955, however, imports increased to an annual rate of \$967,000,000 or 22% above 1954, while exports decreased to an annual rate of \$1,322,000,000 or 7% below the 1954 total.

The largest United States export items are raw cotton and manufactured textiles of cotton and the man-made fibres. Among imports, the most important categories are raw wool and manufactured wool textiles, although rayon staple imports also are significant.

Canadian Textile Developments.—During the first half of 1955, the Canadian textile industry showed increased output in all three main weaving divisions (cotton, woollen and worsted, and man-made fibres).

Production of cotton broad woven fabrics during the first six months of 1955 was at an annual rate of about 280,000,000 yd. as compared with 255,000,000 yd. and 268,000,000 yd. in 1954 and 1953 respectively. Imports in 1954 totalled 210,000,000 yd., making the Canadian industry's share of the total Canadian market about 55% compared with 53% in 1953. The major part of the cotton fabric imports was from the United States, although the supply from Japan was growing.

Production of man-made fibre fabrics in Canada during the first five months of 1955 was at an annual rate of 100,000,000 yd., or 10,000,000 yd. more than in 1954. With imports at the rate of about 28,000,000 yd. a year, the Canadian industry of the total Canadian market was 78% in 1955 and 77% in 1954 compared with 91% in both 1950 and 1951.

Here, too, the United States was the chief supplier of the imported fabrics.

Woollen and worsted fabric output during the first part of 1955 was at an annual rate of about 20,000,000 yd., slightly above the 19,000,000 yd. produced in 1954 but below the 22,000,000 yd. of 1953. Imports were also an important factor in this group, totalling about 12,000,000 yd. in 1954 and 16,000,000 yd. in 1953. Hence the Canadian producers' share of the total Canadian market was 61% in 1954 and 58% in 1953. Practically all of the Canadian imports of woollen and worsted fabrics were from the United Kingdom. (See also LINEN AND FLAX; SILK; WOOL.) (S. B. H.)

Thailand (SIAM). A kingdom of southeastern Asia, Thailand is bounded west and northwest by Burma, northeast and east by Laos and Cambodia and south by Malaya. Area: 198,270 sq.mi. Pop.: (1947 census) 17,442,689; (1955 est.) 20,302,000. Language: Thai (Siamese) 74%; Chinese 20%; Indian and Malayan 6%. Religion (1947 est.): Buddhist 95%; Moslem 4%. Capital (1947 census): Bangkok 620,830. Ruler, King Phumiphon Adundet (or Bhumibol Aduladej); prime minister in 1955, Marshal Pibul Songgram.

History.—External policy in 1955 was primarily concerned with the danger of communist aggression. Relations with Burma, Laos and Cambodia were developed further. In the speech from the throne on June 24 the king stated that the Burmese government was being given facilities to enable it to eliminate the remaining foreign troops along the Burma-Thailand border and that technical and economic aid was being given to Laos and Cambodia. Thailand and Laos signed a temporary customs agreement which came into force on Nov. 1, and the railway to Udon in northeastern Thailand was extended to Nongkhai on the Mekong river only a short distance downstream from Vientiane, the administrative capital of Laos. On Feb. 24 agreement was reached to make Bangkok the headquarters of the South-

east Asia Defence Treaty council, and to set up a secretariat there, though not a military headquarters. The council and its committees held a number of meetings in Bangkok during the year.

The foreign minister attended the Asian-African conference at Bandung, Indonesia, in April.

The balance of power within the government appeared to shift during the year. The prime minister, Marshal Pibul, left on April 14 on a world tour from which he returned on June 22. Soon after his return a scandal broke out over opium. The allegations involved General Phao, who was chief of police, deputy minister of finance and deputy minister of the interior, and had been spoken of as likely to succeed Pibul in the near future. On Aug. 3 Pibul added to his own portfolios that of minister of the interior and made a number of ministerial changes which involved relieving Phao of his post as deputy minister of finance and bringing the deputy commander in chief of the army and the commander of the First army in the Bangkok area into the government. As minister of the interior and minister of defense Pibul made it clear that he intended to exercise direct control over both police and army. He announced measures to stop opium smuggling and official corruption, which he regarded as damaging to Thailand's prestige abroad, and to introduce a greater measure of democracy. He also lifted the press censorship operated by the police. Provincial council elections were held in July under the provisions made at the end of 1954 for new legislative bodies in the provinces. On Sept. 20 the house of assembly passed a bill to authorize the formation of political parties and several parties were subsequently registered with the ministry of the interior. A general election was promised for 1957.

The economic position improved during the year because of increased exports of rice and improved prices for rubber and tin. Many of the controls on trade and exchange were abolished or simplified. The German steel firm of Krupps was commissioned to survey the possibilities of establishing an iron and steel works at Kanchanaburi, and the International Bank for Reconstruction and Development approved a loan of U.S. \$12,000,000 to finance railway development. A reparations agreement was concluded with Japan. (A. S. B. O.)

Education.—Schools: state primary (1954) 19,331, pupils (1951) 2,857,411, teachers (1951) 79,627; state secondary (1954) 267, pupils 96,300; pupils at private secondary schools 110,797. Institutions of higher education (1954) 5, including one university with 10,656 students in 1952.

Finance and Banking.—Monetary unit: *baht* or *tical*, with a buying rate of 21.56 baht to the U.S. dollar and a selling rate of 21.73 baht to the U.S. dollar (from Sept. 1955). Budget (1955 est.): revenue 4,180,000,000 baht, expenditure 5,416,000,000 baht. Currency circulation (Dec. 1954) 4,548,000,000 baht, (March 1955) 4,863,000,000 baht. Bank deposits (May 1954) 1,461,000,000 baht, (Nov. 1954) 1,416,000,000 baht. Gold and foreign exchange (Dec. 1954) U.S. \$273,000,000, (June 1955) U.S. \$316,000,000.

Foreign Trade.—(1954) Imports 1,798,000,000 baht, exports 1,184,000,000 baht. Main sources of imports (1953): U.S. and Canada 19%; Japan 17%; Malaya and Singapore 11%; Hong Kong 12%; U.K. 13%; other continental European Payments Union countries 21%. Main destinations of exports (1953): Malaya and Singapore 29%; Japan 25%; U.S. and Canada 21%; Hong Kong 15%; continental E.P.U. 3%. Chief exports (1954): rice 49%; rubber 16%; tin 7%.

Transport and Communications.—Roads (1953) 6,700 km. Motor vehicles in use (1951): cars 11,000; commercial vehicles 7,000. Railways (1954): 3,354 km.; traffic (1953) 2,294,000,000 passenger-km.; freight (1954) 669,200,000 ton-km. Shipping (1953): merchant vessels of 500 gross tons and over 10, gross tonnage 13,900. Air transport (1954): 41,032,000 passenger-km.; freight, 1,808,000 ton-km.; km. flown (1953) 2,652,000. Telephones (Jan. 1954) 8,020. Radio receiving sets (1949) 74,000.

Agriculture.—Main crops (metric tons, 1954): rice 5,800,000; sugar, crude brown 19,000; soybeans 20,000; sesame 9,900; peanuts 92,000; cotton, lint (1953) 9,000, (1954 est., 9,000); cottonseed 18,000; tobacco (1953) 49,800. Livestock (1953): cattle 5,548,734; buffaloes 5,402,210; pigs 3,327,281; horses 213,868; elephants 12,695; poultry 46,061,371. Fish landings (metric tons, 1953): 205,000.

Industry.—Electricity production (Bangkok only, 1954) 156,840,000 kw.hr. Production (metric tons, 1954): rubber (exports) 118,600; tin concentrates (metal content) 9,930; cement 383,400; tungsten ore (metal content, 1953) 1,054. Estimated cotton cloth output (1954): 40,000,000 yd.

Theatre. The year 1955 proved an active and profitable one in the theatre in the United States and one that the majority of the critics decided was slightly above the post-World War II average as far as artistic achievement was concerned.

The problems caused by the shortage of playhouses in Manhattan (there were only 25 available in the Broadway district), rising production costs and the resulting rise in theatre ticket prices remained unsolved, and dramatists, it appeared, had been cautioned to confine the action of their plays to one set and to bear in mind possible motion-picture sales. One affluent producer, stung by the severe press reception that greeted his negligible staging of a negligible musical comedy, announced his retirement.

Both the Pulitzer prize and the Drama Critics' circle prize were again awarded to the same play, *Cat on a Hot Tin Roof* by Tennessee Williams, a sensational and bluntly spoken melodrama about a decaying southern household and its prospective heir, an incipient homosexual who had taken to the bottle to avoid the amorous attentions of his determined wife. Though often substituting violence and lurid language for dramatic strength, it contained some of Williams' best "mood" writing and was brilliantly directed by Elia Kazan and brilliantly acted by a capable company headed by Ben Gazzara, Barbara Bel Geddes, Burl Ives and Mildred Dunnock.

Bus Stop by William Inge, a comedy about some travellers who spent the night in a Kansas diner when a March blizzard halted their journey, demonstrated its author's unique talent for amusing observation and skill at transforming everyday chatter into arresting dialogue. Two young playwrights, Jerome Lawrence and Robert E. Lee, found immediate success with their initial effort, *Inherit the Wind*, a dramatization of the farcical Scopes "monkey" trial of 30 years ago. Craftsmen of promise, these collaborating novices caught persuasively both the spirit of the trial and the personalities of its well-known chief figures, William Jennings Bryan, Clarence Darrow and H. L. Mencken. Paul Muni, until illness forced his retirement from the cast, gave one of the year's outstanding performances as Darrow, and Ed Begley's Bryan and Tony Randall's Mencken were memorable characterizations.

The suspense play enjoyed a renaissance, and among the profitable melodramas were Guy Bolton's adaptation of the French play *Anastasia*, concerning the adventures of the tsar's surviving daughter in Berlin; Maxwell Anderson's thriller about a nine-year-old girl who is already a homicidal maniac, *The Bad Seed*; Joseph Hayes's *The Desperate Hours*, in which gangsters invade a middle-class home and hold its inhabitants prisoners; and *Witness for the Prosecution*, an Agatha Christie version of a murder trial, imported from London.

There were no new comedies of extraordinary merit. Sidney Kingsley's rowdy sex farce *Lunatics and Lovers* found a following, but Harry Kurnitz' mildly diverting satire of art collectors, *Reclining Figure*, did not, and Noel Coward's costumed frolic about runaway couples, *Quadrille*, ran for only a few months despite the presence of the Lunts.

Christopher Fry's adaptation of Jean Giraudoux's *La Guerre de Troie n'aura pas lieu*, entitled *Tiger at the Gates*, was the most successful of the more serious plays brought from abroad, while the quick failures in this category included Fry's own play *The Dark Is Light Enough*, Paul Vincent Carroll's Irish fantasy *The Wayward Saint*, Jacques Deval's *Tonight in Samarkand* and Ugo Betti's *Island of Goats*.

The demand for bright musical shows was satisfied by *Fanny*, S. N. Behrman's adaptation of Marcel Pagnol's plays of the Marseilles waterfront set to music by Harold Rome with Ezio Pinza in the leading role; Cole Porter's *Silk Stockings*, based on

Melchior Lengyel's play, *Ninotchka*, which Greta Garbo had played on the screen, a hilarious caricature of Soviet officials having their first glimpse of the west; *Plain and Fancy*, a quaint and melodious operetta with an Amish hamlet in Pennsylvania as its background; *Damn Yankees*, with a score by Richard Adler, which told how a baseball fan sold his soul to the devil; and the British *The Boy Friend*, a parody of musical comedies of the 1920s.

Gian-Carlo Menotti's fine opera with its scene of New York's Little Italy, *The Saint of Bleecker Street*, thrilled the critics and once more revealed its creator's dual talent for musical and dramatic composition, but it was unable to attract the paying playgoers and closed after a desperate struggle. *House of Flowers*, for which Truman Capote wrote the libretto and Harold Arlen the music, an entertaining and handsomely staged show dealing with romance in the West Indies, ran through the season but failed to earn back its original investment, and the musical *Peter Pan* with Mary Martin as its star left much to be desired.

The off-Broadway theatres continued to thrive, drawing eager audiences with their productions of Shakespeare, Chekhov, Schnitzler and Wedekind.

A 1955 event of importance was the United States' initial participation in the International Festival of Dramatic Arts in Paris. Backed by the approval of the United States government, the U.S. theatre was represented by Thornton Wilder's *The Skin of Our Teeth* with Helen Hayes and Mary Martin, Robinson Jeffers' *Medea* with Judith Anderson, and a production of the Richard Rodgers-Oscar Hammerstein II musical comedy *Oklahoma*, directed by Rouben Mamoulian. (T. Q. C.)

Statistics of the Theatre in New York City			
	Season* 1954-55	Season* 1953-54	Season† 1927-28
Productions	74	87	302
Musical comedies	21	18	69
Plays	53	69	233
Premières	50	58	255
Successful productions	26	30	66
Performers employed	1,358	1,384	6,621
Tickets sold	6,890,000	7,780,000	
Approximate cost of production	\$4,350,000	\$4,900,000	
Number of shows booked for other cities	56	63	

*The theatrical season is considered to begin Aug. 1 and end July 31.
†The peak season on Broadway.

Canada.—The third annual Shakespearean festival at Stratford, Ont., was the main focus of Canadian theatre interest in 1955, although the year was a lively and satisfying one for drama people throughout the whole country. The Stratford festival drew 126,500 customers and a \$421,000 box office for its nine summer weeks of *Julius Caesar*, *The Merchant of Venice* and *Oedipus Rex*, directed by Tyrone Guthrie and Michael Langham. The Dominion Drama festival, held at Regina, Sask., May 9-14, brought into competition eight top-flight amateur theatre groups from all parts of Canada. Winner was the University of British Columbia Players Club Alumni, presenting Arthur Miller's *The Crucible*. The festival had its first woman adjudicator in 23 years, Gerda Wrede, an outstanding actress from Finland and drama teacher and managing director of the noted Helsinki Swedish theatre.

Of special interest to Canadians was the trip to France of Montreal's Théâtre du Nouveau Monde, at the invitation of the Paris drama festival. It was the first time a Canadian company had ever been invited to this distinguished European event, and Paris' tough drama critics were notably warm in their approval of the Canadian offering of three one-act Molière comedies. Full-season repertory was available in two Canadian cities, at the Crest theatre, Toronto, and the Canadian Repertory theatre, Ottawa. The well-established Canadian little theatre movement and many university drama groups kept Canada's bilingual amateur theatre moving at a lively pitch throughout the year. Chil-

dren's theatre operated with notable success in Ottawa, London, Winnipeg, Regina, Edmonton and Vancouver. Short-term summer stock companies were more numerous in 1955 than ever before, playing in barns, small theatres and outdoor settings for the entertainment of tourists. Among the most successful were the Peterborough Summer theatre (*When We Are Married*), Niagara Barn theatre (*Private Lives*), Vine-land Garden centre (*The Moon Is Blue*), Montreal Mountain playhouse (*Harvey*) and Kingsmere Summer festival (*Come Back, Little Sheba*). The seventh annual Earle Grey players Shakespearean festival, performed outdoors in the quadrangle of Trinity college, Toronto, was an outstanding success. The autumn Canadian visit (pre-Broadway) to Montreal, Ottawa, Toronto and Quebec of the famous Comédie Française troupe, with a Molière repertory, was memorable for theatre followers in those areas.

(WR. B. H.)

Great Britain.—The year 1955 might be joined in memory to those many years in which the British theatre was more distinguished by fine acting and production than by any upsurge of new creative talent. Menaced by the new cinema of size and colour and by the attractions of competing television undertakings, the theatre held its ground but did not show itself to be adventurous. Few of the better-known dramatists produced a fine new work. J. B. Priestley contented himself with a thin comedy, *Mr. Kettle and Mrs. Moon*, and Dennis Cannan, with *Misery Me*, offered a knockabout intellectual farce which failed to catch on in the theatre, though paradoxically succeeded well enough on television. Christopher Fry, Peter Ustinov, T. S. Eliot, John Whiting and Charles Morgan remained silent, and Terence Rattigan's *Separate Tables* for many weeks almost alone upheld the honour of serious modern theatre in the capital. In these twin plays Eric Portman's two studies in failure which redeems itself continued to give lustre to a playhouse, the St. James's, which was under threat of demolition: a comment on the times.

There were many imports from France, of which Jean Anouilh's *The Lark* was the best, though it had to meet the direct competition of Shaw's masterpiece on the subject of Joan of Arc. Dorothy Tutin played the saint at the same time Shaw's St. Joan was being played by the Irish actress Siobhan McKenna. Of lighter French pieces, André Husson's *My Three Angels* did well, but André Roussin's *Nina* and Marcel Aymé's *The Count of Clérambard* were, respectively, ill cast and misconceived and did not wear well. Jean Giraudoux's Trojan War morality now called *Tiger at the Gates* and his *Ondine* were revived with success, the former going to New York. Alexandre Dumas's outmoded *La Dame aux camélias* excited much public interest for a surprisingly light but finely judged central study. A French revue called *La Plume de ma tante*, with the clown Robert Dhéry, came directly from Paris; and the exotic was



COURTROOM SCENE from 1955 play *Inherit the Wind*, a dramatization of the Scopes trial of 1925, starring Ed Begley (left) and Paul Muni in roles based on William Jennings Bryan and Clarence Darrow

much in evidence. The Azuma Kabuki musicians and dancers from Tokyo were rather lost in the Royal Opera house, but the Chinese classical theatre or opera from Peking was a three weeks' wonder at the Palace. Dance ensembles and operas from elsewhere were applauded.

United States musicals, some with British casts, such as *Wonderful Town* and *The Pajama Game*, were popular. The home-made article, such as *The Water Gypsies* by Sir Alan Herbert and Vivian Ellis, was more grudgingly received but found its own public eventually. Sandy Wilson in *The Buccaneer* did not repeat the success of *The Boy Friend*. An unknown actress, Peggy Mount, achieved overnight stardom in *Sailor Beware*, a lusty farce of middle-class family life by Philip King. Philip Mackie offered an ingenious detective play in *The Whole Truth*, though in this field Agatha Christie continued to queen it with *The Spider's Web* and the endless *The Mousetrap*.

The humorous journal *Punch* sponsored its own revue, which was unremarkable and not characteristic except for a political pungency.

The Italian Ugo Betti's *Burnt Flower-Bed* (posthumous), *The Queen and the Rebels* and *Summertime*, all translated by Henry Reed, were generally well thought of, and Irene Worth as the heroine of the first of these plays gave what some critics rated the performance of the year. She had earlier shown a great development of power in the play commissioned for open stage by the Edinburgh festival from Thornton Wilder, *A Life in the Sun*, a variant of some Alcestis legends which hardly received its critical due, the experimental staging seeming to detract from its impact as a tract. The high thinking was called homespun.

William Douglas Home in *The Reluctant Debutante* struck a vein of mild social comedy likely to appeal to a group (girls and parents about to be "presented at court") which make theatre-

going a rite, as attendance at the opera once was. The play was saved from feebleness by neat acting from Celia Johnson, Anna Massey and Wilfred Hyde White and enjoyed a long run; whereas Fritz Hochwalder's earnest story of spiritual crisis in a Jesuit monastery, *The Strong Are Lonely*, with Donald Wolfitt in the leading part, was coaxed into London only grudgingly. This was a pointer to the decrease in theatrical participation of the more intelligent members of the community.

Graham Greene, whose play from the book *The Power and the Glory* was among the autumn season choices of a Peter Brook-Paul Scofield company, maintained a foot in the worlds of the novel and the drama. It was this company which took to Moscow a production of *Hamlet* which had been asked for by the Soviet cultural authorities during the warm spell prevailing after the Geneva conference of the heads of the Big Four Powers. The expedition was the first for many years to the Soviet Union. The Stratford-on-Avon company toured Europe in 1955 with a *King Lear* (in oddly matching Japanese dress) and *Much Ado About Nothing* in which Sir John Gielgud and Peggy Ashcroft gave magnificent performances. On its home ground, Stratford was fortunate in having the resident company headed by Sir Laurence Olivier, who, in Peter Brook's production of the gory *Titus Andronicus*, and to some extent also in *Macbeth*, gave performances of great originality, imagination and striking power. As Malvolio in *Twelfth Night*, with his wife, Vivien Leigh, as Viola, his playing was more open to discussion. At the Old Vic the standard of Shakespearean playing had not risen. John Neville emerged as a well-graced romantic actor and was named as a possible successor to Gielgud. Paul Rogers was an unusually good Falstaff in the two parts of Henry IV in a production by Douglas Seale which was a model of simple and effective interpretation of the "histories."

At least one top-line actor and playwright, Emlyn Williams, found solo recitations of short stories and poems by his countryman Dylan Thomas more rewarding than any play.

Theorell, Axel Hugo Teodor (1903—), Swedish biochemist, was born at Linköping, Swed., July 6. He was awarded the 1955 Nobel prize for medicine for his discoveries concerning the nature and mode of action of oxidation enzymes. After taking his M.D. degree at Stockholm in 1930 he commenced general practice but an attack of poliomyelitis left him crippled and he decided to devote himself to a life of research. He worked at Uppsala university, 1932–36, and also studied in Germany while holding a Rockefeller fellowship.

In 1934 Theorell produced for the first time in pure form the yellow enzyme which influences combustion in living cells. He later divided the enzyme into two parts, the coenzyme and the apoenzyme, and worked out the chemical chain reaction by which enzymes enable living cells to burn oxygen; that is, to breathe. Theorell also did much work on lipoids in blood and on cytochrome C and was the first to produce pure myoglobin, the red colouring substance of muscle. He devised the method of blood examination which is widely used in Sweden as a test for drunkenness and also discovered an antibiotic called proaptin. These discoveries were, however, overshadowed by his work on enzyme chemistry. Theorell was appointed director of the biochemical department of the Nobel institute at Stockholm in 1937 and became a member of the Swedish Society for Medical Research and the Swedish Academy of Science in 1942.

(W. J. BP.)

Thermonuclear Weapons: see ATOMIC ENERGY.

Thomas, Charles S. (1897—), U.S. secretary of the navy, was born on Sept. 28 at Inde-

pendence, Mo. He studied at the University of California and at Cornell university, Ithaca, N.Y., from 1916 to 1918 but did not receive a degree. He later moved to Los Angeles, Calif., becoming a successful business executive there. Appointed under-secretary of the navy by Pres. Dwight D. Eisenhower, he was confirmed by the senate on Feb. 6, 1953, and served until August, when he took office as assistant secretary of defense for supply and logistics. In this position he assumed charge of the U.S. program of stock-piling essential defense materials. On March 11, 1954, Thomas was nominated secretary of the navy.

In a speech at Chicago, Ill., on Sept. 23, 1954, Thomas predicted that the United States would be victorious over the U.S.S.R. in a submarine war, despite Soviet possession of what was thought to be the world's largest submarine fleet. On April 5, 1955, he declared that the U.S. navy would be able to meet "any initial onslaught" in another global war, then expand rapidly to take the offensive.

Throat: see EAR, NOSE AND THROAT, DISEASES OF.

Tibet. This is a country of central Asia, north and northeast of the Himalayas, having autonomous status within the People's Republic of China. Area: 469,413 sq.mi. Pop. (1953 census): 1,273,969. Language: Tibetan. Religion: lamaistic Buddhism. Capital, Lhasa, pop. about 20,000. Ruler, the Ling Erh ("divine child") Pamo Tontrup or Lamu Fankha, the 14th dalai lama.

History.—The opening in Nov. 1954 of two highways connecting Lhasa with China proper, one via Lanchow-Sining and another via Chengtu-Yaan, did more than anything else to strengthen Chinese rule in Tibet. Supplies for the Chinese forces of occupation were assured.

The 20-year-old dalai lama, who, with the 18-year-old pan-chen lama, "on the instruction of the chairman Mao Tse-tung," had been studying for the last six months the future regime of his country, left Peking on March 13, 1955, and arrived at Lhasa on June 29. On March 12 it was announced in Peking that the dalai lama would head a special committee of 51 members to prepare Tibet for regional autonomy within the Chinese People's Republic; 15 of these would be from Tibetan local government organizations, 11 from the major monasteries and other religious bodies. The military and administrative commission for Tibet, set up in Sept. 1951, was abolished.

The Chinese government decided to build a hydroelectric



LHASA CHILDREN enjoying a ride on a truck during the ceremonies celebrating the completion of a new highway from Yaan, China, to Tibet in Dec. 1954

power station at Lhasa and a smaller power station at Shigatse. The Sining-Lhasa highway was being extended to Shigatse.

Thubten Jigme Norbu, 34-year-old brother of the dalai lama, arrived in New York city on Oct. 4 to seek U.S. citizenship.

Timber: see FORESTS; LUMBER.

Timor: see PORTUGUESE OVERSEAS TERRITORIES.

Tin. World production of the tin mines declined slightly in 1954 from 1953, as shown in Table I, reported by the U.S. bureau of mines. Information on smelter output in 1954 is given in the article on MINERAL AND METAL PRODUCTION AND PRICES. World mine production of tin, based on the first seven months of 1955, excluding China and U.S.S.R., was equivalent

Table I.—World Mine Production of Tin

	1949	1950	1951	1952	1953	1954
(In short tons)						
Australia	2,112	2,076	1,746	1,804	1,739	2,216
Belgian Congo	15,411	15,080	15,309	15,450	17,128	16,894
Bolivia	38,209	34,959	37,108	35,794	39,004	32,283
Burma	1,995	1,702	1,568	1,792	1,568	1,064
China	4,800?	8,400?	8,400?	9,600?	10,750?	11,200?
Indonesia	32,441	35,954	34,704	39,203	37,880	40,164
Malaya	61,499	64,441	64,027	63,659	63,004	67,973
Nigeria	9,883	9,249	9,552	9,316	9,215	8,877
Thailand	8,753	11,608	10,642	10,616	11,341	10,949
United Kingdom	1,006	997	942	1,011	1,235	1,053
Others	4,591	5,134	5,702	6,755	8,336	7,627
Total	180,700	189,600	189,700	195,000	201,200	200,300

to an annual rate of 183,680 short tons, compared with 189,280 tons in the same period of 1954. World consumption of tin in the same period of 1955 was estimated at 163,520 tons compared with 154,560 tons in the same period of 1954.

United States.—Table II gives the features of the tin industry in the U.S. based on U.S. bureau of mines reports. The

Table II.—Data of the Tin Industry in the United States

	1949	1950	1951	1952	1953	1954*
(In thousands of short tons)						
Imports, total	110.3	121.9	64.8	119.9	123.3	98.3
In concentrates	42.9	29.2	33.2	29.7	39.8	24.8
Metal	67.4	92.8	31.6	90.2	83.5	73.5
Smelter output	40.4	37.1	35.7	25.5	42.1	30.2
Secondary recovery	24.9	35.5	34.4	32.3	30.5	31.2
Consumption, total	81.0	117.0	98.7	87.8	95.9	92.5
Primary	52.8	79.7	63.7	50.8	60.4	61.3
Secondary	28.2	37.3	35.0	37.1	35.5	31.2
Stocks, industry	25.4	28.9	23.3	25.6	27.4	26.1

*Preliminary.

joint resolution of the senate and house, approved in the second quarter of 1955, permitted the Texas City tin smelter to continue until June 30, 1956. Primary tin consumption in the United States was 50,624 short tons in the first nine months of 1955, an increase of 8% compared with the same period of 1954.

(F. E. H.; B. B. M.)

Tires: see RUBBER.

Titanium: see MINERAL AND METAL PRODUCTION AND PRICES.

Tito (JOSIP BROZ) (1892–), Yugoslav statesman and soldier, was born at Kumrovec, Croatia, May 25, the son of a blacksmith. He served as a private in the Austro-Hungarian army in World War I and was captured in March 1915 by the Russians. In 1920 he returned to Yugoslavia, and was one of the organizers of the Yugoslav Communist party. He was arrested many times, and was sentenced in 1928 to six years' imprisonment for conspiracy. On his release in 1934 he went to Moscow. In 1936, while in Paris, he helped to organize the transport to Spain of volunteers for the international brigades. In 1937 he became secretary-general of the Yugoslav Communist party. After the German attack on the U.S.S.R. he started guerrilla warfare in Yugoslavia. In the first months of 1945 all Yugoslavia was liberated and on March 7, 1945, Tito, who meanwhile had appointed himself marshal, became prime minister and commander in chief.



"FOOTSIES," a 1955 cartoon by Pratt of the McClatchy newspapers

On Jan. 14, 1953, the national assembly elected Tito president of the Yugoslav federation, chairman of the federal executive council and supreme commander of the armed forces.

Tito visited Moscow in April 1945. He paid state visits in 1946 to Warsaw and Prague, and in 1947 to Sofia, Budapest and Bucharest, signing on each occasion a bilateral treaty of friendship and mutual aid. On June 28, 1948, the Cominform published a statement denouncing Tito for his "hateful policy in relation to the U.S.S.R." But Tito's real heresy was his brand of Yugoslav patriotism. In June 1950 he proclaimed that Yugoslavia was the only neutral country in the contemporary world. He pursued, however, his qualified approach to the west. On Nov. 14, 1951, the United States agreed to make available to Yugoslavia military equipment, materials and other services. In Feb. 1953 a Graeco-Turco-Yugoslav treaty of friendship and co-operation was signed, which in 1954 was transformed into a military alliance. In March 1953, at the invitation of the British government, Tito visited Great Britain. During 1954 he paid official visits to Turkey, Greece and India, and in 1955 to Burma, Ethiopia and Egypt.

In a speech on July 28, 1955, at Karlovac (Croatia), referring to the recent visit of N. A. Bulganin and N. S. Khrushchev to Yugoslavia, Tito said that the Soviet leaders could see that Yugoslavia had not betrayed the ideals of Karl Marx. "We are Communists," he went on, "but we do not wish to belong to any camp." On Aug. 5, talking to a group of U.S. visitors, Tito commented that in the new situation the Balkan alliance "should acquire more the character of peaceful collaboration in the economic, political and cultural spheres."

Tobacco. U.S. tobacco consumption in 1955 recovered slightly from the reverses of 1954 to an estimated 12.3 lb. per person 15 years of age and older but was still 4½% below the high levels of 1953 and 1952. Manufacturers and merchants of tobacco in July held a full three-year supply of 4,402,000,000 lb., of which 882,000,000 lb. was owned by the Commodity Credit corporation. Leaf tobacco exports in 1954-55 were valued at \$305,139,000 as compared with \$300,333,000 in

the preceding year. Exports in the first quarter of 1955-56 (July through Sept. 1955) of 175,000,000 lb. were three-fourths larger than a year earlier. Supplementary imports, mostly of the Turkish and cigar types for blending, were valued at \$79,-295,000 in 1954-55 as compared with \$75,344,000 in 1953-54.

About 38,000,000 Americans, including 13,000,000 women, continued as regular smokers of cigarettes. Cigarette production was 415,000,000,000, or 3% more than in 1954 but well below the record level of 435,500,000,000 in 1952; of the total, about 383,000,000 were used domestically. The five-cent cigar was reported as having survived and to be gaining in favour.

The indicated U.S. 1955 crop of all tobaccos was 2,308,028,000 lb., as compared with 2,236,408,000 lb. in 1954 and an average for 1944-53 of 2,098,738,000 lb. Acreage, long under strict official control, was further reduced in 1955 for most types. The 1,520,000 ac. harvested was almost 8% less than the 1,666,000 ac. of 1954 and even more reduced by comparison with the 1,734,000-ac. average for the previous decade. The indicated yield of 1,498 lb. per acre was a new record; 1954 was 1,342 lb. and 1944-53 averaged 1,213 lb. per acre.

Table I.—U.S. Tobacco Production by Leading States

State	(In thousands of pounds) Indicated 1955	1954	Average 1944-53
North Carolina	1,024,365	913,874	855,264
Kentucky	394,885	502,972	442,376
South Carolina	195,800	148,050	154,874
Virginia	177,564	166,458	158,699
Georgia	146,740	124,220	114,536
Tennessee	128,297	148,118	143,556
Pennsylvania	40,815	43,416	49,472
Florida	34,528	32,941	24,748
Maryland	35,700	42,500	37,919
Ohio	24,500	28,840	25,315
Wisconsin	20,522	22,680	30,178
Connecticut	21,248	22,674	25,446
Indiana	12,540	16,137	13,470
Massachusetts	10,965	11,629	11,114

Table II.—Tobacco Production of the Principal Producing Countries

Country	1955-56	1954-55	Average 1947-51	Average 1935-39
United States	2,308,028	2,236,408	2,082,727	1,460,054
China	1,425,000	1,340,000	1,425,000	1,254,539
India	555,500	573,440	547,150	761,600
Brazil . . . . .	...	296,018	233,120	202,703
Japan	294,222	248,366	208,092	148,680
Turkey	236,995	215,367	194,109	128,505
Pakistan . . . . .	...	200,627	156,511	324,056
Greece	175,000	148,750	113,320	132,320
Canada	141,900	184,156	129,445	76,556
Italy	116,844	124,626	167,900	90,500
Southern Rhodesia . . . . .	...	120,250	84,679	26,150
Indonesia . . . . .	...	115,000	62,230	222,372
France	105,291	126,460	109,070	72,995

The flue-cured crop, basic to cigarette and export supplies, was the largest in history, 1,514,043,000 lb. Much of the crop sold at an average of 51.7 cents per pound as compared with 52.3 cents in 1954 and a support level of 48.3 cents per pound. The total supply, including carry-over, was at least 3,573,000,000 lb. against a probable usage of about 1,200,000,000 lb. including exports. Growers in July overwhelmingly approved marketing quotas for the 1956, 1957 and 1958 crops, including a 12% acreage reduction and a proposed marketing quota of 1,130,000,000 lb. for the 1956 crop, as compared with 1,270,000,000 lb. for the 1955 crop.

The air-cured burley crop was a light one of 519,915,000 lb. The 1955 crop plus large carry-over provided a total supply of about 1,835,000,000 lb., as compared with usage not likely to greatly exceed 530,000,000 lb. The price support was 46.2 cents per pound. Southern Maryland tobacco (type 32), without government price support since 1953, was indicated at 35,700,000 lb. Carry-over plus the new crop totalled about 107,000,000 lb. as compared with total disappearance, including 8,000,000 lb. exported, during the previous year of 37,500,000 lb. The average price received for the 1954 crop (sold in mid-1955) declined to 39.5 cents per pound as compared with 54.5 cents per

pound for the previous crop.

Fire-cured types (class 2) were indicated at 64,831,000 lb. Carry-over plus stocks provided a total supply of 199,500,000 lb., as compared with total usage in the previous year of 60,000,000 lb. It appeared that the price would be near the official support of 34.6 cents per pound.

Production of dark air-cured types was indicated at 34,410,000 lb., approximately the same as in 1954. Total supplies of 112,000,000 lb. were more than three times the probable usage of about 32,000,000 lb., and prices were expected to approximate the support level of 30.8 cents per pound. All cigar types, some of which were grown without price supports, totalled 108,660,000 lb. as compared with 115,289,000 lb. in 1954.

The tobacco harvest of the principal producing countries of the northern hemisphere in 1955 was estimated at 5,830,000,000 lb., about 2.2% more than in 1954. In spite of extensive control over tobacco plantings in several of the producing countries, about 5,452,000 ac. were devoted to the crop, as compared with 5,436,000 ac. in 1954 and only 4,593,000 ac. prewar. World trade in tobacco expanded, particularly in the second half of 1955 to Europe, to a level probably in excess of the 600,000 metric tons of recent years.

(J. K. R.)

Tobago: see TRINIDAD AND TOBAGO.

Togoland: see BRITISH WEST AFRICA; FRENCH WEST AFRICA; TRUST TERRITORIES.

Tonga. (FRIENDLY ISLANDS). Tonga is a kingdom under British protection, exercised through the governor of Fiji and a local British agent. There are three main island groups, Vava'u, Ha'apai and Tongatapu. Total area: 270 sq.mi. (Tongatapu Island 99.2 sq.mi.). Pop. (Dec. 1954 est.): 52,000, mainly Tongans, racially and linguistically Polynesian with Melanesian admixture. Religion: Christian. Capital, Nukualofa (pop. 1950 est., 5,500), on Tongatapu. Queen, Salote Tupou; premier in 1955, Crown Prince Tungi; British agent and consul, C. R. H. Nott.

History.—The premier of Tonga, Prince Tungi, visited the United Kingdom and the Netherlands on official business in April 1955, calling upon Queen Elizabeth II in London and returning home via Canada and the U.S.

(J. J. Ty.)

Tornadoes: see DISASTERS; METEOROLOGY.

Toronto. Capital of the province of Ontario, Can., Toronto is situated on the north shore of Lake Ontario, almost opposite the mouth of the Niagara river, 60 mi. N. of Buffalo. Pop. (est. 1954): city proper 675,754. Mayor of the city of Toronto in 1955: Nathan Phillips.

As of Dec. 31, 1954, the city's outstanding gross debenture debt issued by the city was \$132,187,987, of which \$98,565,536 remained outstanding with respect to debentures originally assumed by the metropolitan government. Debentures issued by the metropolitan government on behalf of the city: \$22,625,126. The debenture debt outstanding, Dec. 31, 1954, for which the city is liable: \$56,247,577. The city's estimated expenditures for 1955: \$83,910,160. Estimated revenues for 1955 (other than taxation and including surplus brought forward from 1954): \$16,764,337. Estimated taxation revenues for 1955: \$67,145,823. Total taxable assessment for 1955: \$1,543,974,668.

On June 13, 1955, the board of control set a tax rate of 44.75 mills for Toronto public schools, 1.25 mills higher than in 1954. The employment index (based on 1949=100) was: 1954 monthly average, 120.1; July 1, 1955, 121.6. The aggregate pay-rolls index, same base, was: 1954 monthly average, 168.9; July 1955, 178.3. The average weekly earnings in wages and salaries

were: 1954, \$62,23; July 1, 1955, \$64.85. The total value of buildings constructed in 1954 was \$86,584,144; up to Sept. 30, 1955, \$43,290,072. The total foreign cargo imports and exports passing through the port of Toronto in 1954: 122,319 tons; up to the end of Aug. 1955, 63,910 tons. Total over-all exports and imports (domestic and foreign combined): 1954, 4,784,937 tons; up to the end of Aug. 1955, 2,686,535 tons.

Covering an area of 240 sq.mi., the municipality of metropolitan Toronto consists of a federation of the city of Toronto and 12 suburban municipalities, administered by a council composed of 25 members—a chairman, five mayors, eight reeves, two controllers and nine aldermen, representing the member municipalities. The metropolitan estimates for 1955 anticipated a gross expenditure for current purposes of \$62,528,455, of which it was estimated \$26,493,899 would be met by provincial government grants, water charges and sundry other revenues, and \$36,034,556 met by a tax-rate levy of 13.7 mills against the area municipalities. Of the total gross expenditures the larger items were \$33,924,773 for education, \$5,787,753 for water-works, \$7,393,439 for welfare and housing and \$4,088,000 for roads.

Retail sales within the metropolitan area stood at \$1,481,245,000 in 1953, a total representing 12.1% of the total Canadian market, according to an estimate of the magazine *Sales Management*.

(K. A. K.)

Tourist Travel. Vacationists were out in full force in the United States during 1955, spending more time on the road and taking more trips. It was estimated that at least 80,000,000 persons made at least one journey and that their combined expenditures totalled between \$15,000,000,000 and \$20,000,000,000.

The number of vacationists travelling at home rose about 5% and those going abroad about 15%. About 85% of all trips were made by private passenger car.

An important development for the motor traveller was the opening in October of the 241-mi. Ohio turnpike. The only remaining links still to be completed in a connecting chain of thruways between New York and Chicago were the Indiana turnpike and a Delaware river bridge between the New Jersey and Pennsylvania turnpikes; those were due to be finished by Nov. 1956.

The national parks showed an increased attendance of 5% during the first nine months of 1955. Visitors to all areas under the jurisdiction of the national park service totalled 37,532,104, and to the 28 principal national parks 14,687,253. The most visited national park was Great Smoky mountain (1,935,757), followed by Rocky mountain (1,215,004), Shenandoah (1,043,675), and Yellowstone (1,176,659). Attendance declines were noted at these national parks: Crater Lake, Hawaii, Hot Springs, Kings Canyon, Shenandoah, Wind Cave, Yosemite and Zion.

Motels continued to spring up all over the country; their total number exceeded 50,000, but the latest establishments incorporated many of the features of a hotel. The Sheraton corporation began the first of a series of "motor lodges" or "highway inns."

Canadians went abroad in record numbers. In the full year 1954 Canadians spent \$80,000,000 more on travel in other countries than foreign visitors spent in Canada. Visitors from the United States spent \$280,700,000 in Canada, while Canadians spent \$313,250,000 in the U.S. Receipts from Europeans and other overseas visitors in Canada amounted to \$22,000,000, while Canadians spent approximately \$69,000,000 in countries other than the United States.

The number of individual entries into Canada from the U.S.

in 1954 was 26,413,000, a decline of nearly 6%, although their expenditures were close to the record. The entries, which include commuter crossings and other repeat visits, do not give a relevant figure on long-stay vacationists, but the Canadian government estimated that approximately 7,000,000 U.S. travellers spent all or part of their vacations in Canada.

Automobile travel from the U.S. to Mexico during 1955 rose appreciably through all four of the principal gateways. Through Laredo, Tex., the most heavily used point of entry, 21,000 visitors crossed into Mexico during July alone—three times more than in the same month of the previous year.

More than 900,000 U.S. travellers went to foreign countries more distant than Canada and Mexico during the complete year 1954. The total expenditure by U.S. visitors in all foreign countries was estimated at \$1,360,000,000, or about \$80,000,000 higher than the preceding year. About 430,000 or nearly half visited the West Indies, but Europe and the Mediterranean ranked close behind with 420,000.

The total to Europe, however, began to rise sharply, probably as a result of the growing popularity of "fly now, pay later plans" being advertised by all the international airlines.

U.S. travellers spent about \$400,000,000 for transportation between the U.S. and other countries during 1954, with foreign flag carriers receiving \$186,000,000.

The passport division of the U.S. department of state issued a record number of passports (452,000 in 1954 and an estimated 500,000 in 1955) and prepared for an even greater demand on its facilities. The passport figures showed that residents of New York city were the leaders in foreign travel. They received 82,855 passports, and were followed by residents of California (33,458), Pennsylvania (28,293), New York state, excluding the city (27,337), New Jersey (26,813) and Illinois (26,114). By occupation, housewives (70,242) led all others, followed by clerks-secretaries (35,114), executives (34,576), skilled labourers (31,567) and students (29,080).

A surprising development on the international travel scene was an expression of interest by the Soviet government in developing its tourist trade. A number of visitors from the U.S. were admitted to the Soviet union, while tour groups were invited from the Scandinavian countries. (See also AMERICAN CITIZENS ABROAD; NATIONAL PARKS AND MONUMENTS.)

(M. L. FE.)

Town and Regional Planning. The greatest factor which influenced planning in European and U.S. cities during 1955 and prior years was the rapid increase in population in urban regions and the congestion which had developed in downtown districts. In England, Canada, Australia and Sweden the emphasis was on the building of new towns. The United States launched redevelopment and renewal programs.

United States.—The population of the United States increased nearly 10% between 1950 and 1955, and the greatest increase was in urban areas. The insistent demand for street space and off-street parking had led to proposed encroachments on parks and parkways in spite of the increasing need for outdoor recreation.

According to the *Municipal Year Book* for 1955, 716 of the 835 reporting cities of more than 10,000 population had official planning agencies, and 215 had full-time planning directors. More than 60,000,000 motor vehicles were registered in the United States in 1955, and the resulting congestion in urban centres was greater than in other parts of the world. Further complicating the use of existing streets and highways was the volume of freight being carried in large motor trucks, in competition with rail and air transport.

In many cities the downtown businessmen had organized to

stimulate the replanning and rebuilding of their downtown districts. The Urban Land Institute led a fight for the rehabilitation of downtown business, and late in 1954 issued a book called *The City Fights Back*. Nearly every city in the country had undertaken an extensive program for well-located, off-street parking, and retail stores and shops co-operated to make parking available without cost for a reasonable time to their patrons.

Most cities in the United States had made studies leading to the revision of zoning ordinances. In addition to cities which set aside industrial areas protected from mixed uses, a growing number adopted laws and regulations to bring to an end the nonconforming uses which existed when the zoning ordinance was first adopted. The increase in the number and size of airports had brought demands for more comprehensive zoning of surrounding areas.

Applications to the Housing and Home Finance agency under the Housing act of 1954 had come from four states, involving assistance to 50 small municipalities, and these had received approval; applications from three states proposing assistance for 38 small communities were being processed. The sum of \$104,045 had been approved for work in four metropolitan or regional areas, and applications for six additional metropolitan areas, requesting \$168,025, were in process. Up to Sept. 1, 1955, workable programs had been approved for 61 cities, 16 were under review and 71 were reported to be in preparation. These planning loans and grants-in-aid under the Housing act of 1954 proved to be a great stimulus to local comprehensive planning.

In Rochester, N.Y., the Citizens Council for a Better Rochester and the Junior Chamber of Commerce proposed the reclamation of the banks of the Genesee river which runs through the city. The improvement would provide space for parking, public buildings and new roadways as well as for recreation areas.

A planning report on *Modernizing Downtown San Francisco*, issued by that city's department of planning in Jan. 1955, analyzed the functions of the downtown area. Its future, it was pointed out, would depend on the ability of the businessmen to capitalize on their advantages and overcome their deficiencies. There was needed a regional rapid transit system tied in with local transit; parking facilities distributed around the downtown areas; systems of downtown streets to handle pedestrian, surface transit and vehicular movement; and completion of the planned freeway distribution system to handle traffic around the downtown area.

A planning report in Buffalo, N.Y., recommended changes in public transit vehicles, especially on the streets in the downtown district; provision of adequate off-street parking around the central business core; and bold changes for the central area to incorporate some of the creative planning ideas which had been developed in suburban plazas. A downtown pedestrian shopping concourse, with ornamental sculpture and fountains, was planned.

Other Countries.—In England the construction and development of new towns had progressed around 140 urban areas at the rate of 306,000 new houses a year.

In New Zealand progress was made under the Town and Country Planning act of 1953, by which cities were required to produce population and economic base analyses before zoning codes were drawn up. Residential districts were protected from billboards. Places of historic interest or scenic beauty had to be registered and plans made to preserve them. Continuous commercial frontages were protected from intrusions, and covered sidewalks and arcades were designated for streets in certain commercial zones.

In Canada the development of the St. Lawrence seaway was stimulating planning of adjacent communities. In Montreal there was a redevelopment program for the dock area. At

Ottawa, the capital, railways were being removed from the centre of the city and rerouted around the rim. Parkways and arterial roads were to replace the rail lines. Under the plan there would be a new city hall, an auditorium, a national institute of fine arts, a civic theatre and new office and governmental buildings. About 4,000 ac. of land along the new railway lines were acquired for industrial development.

Kitimat, B.C., 100 mi. S. of the Alaskan border, said to be the first wholly new town in North America, was designed to serve the Aluminum Company of Canada's power and smelter plant, estimated to cost \$700,000,000. The town site, 6 mi. from the plant, provides modern community facilities. At Don Mills, a new town near Toronto covering 2,200 ac., the emphasis was on neighbourhoods built around elementary schools. Architectural control was maintained over all the buildings.

In Sweden, Vallingby was the first of several new neighbourhood communities to be located in the confines of greater Stockholm on land owned by the city. Air, sunshine, comfortable and pleasant transportation, recreational and educational opportunities and adequate community facilities were declared requisite for the environs of a great world capital. Features of the plan included a "centrum" to serve the whole area and a new and airy "tunnelbana" to provide rapid transit from Kungs Gatan station in the centre of the old town to Vallingby station. Close by the station would be a four-story car park for 700 automobiles and a general repair shop.

Recent street changes in rebuilding European cities included Plymouth's Armada way, laid out for vistas as well as for function, and a ring road to encircle the central city. Frankfurt and Hanover, Ger., had made impressive street improvements. In the reconstruction of Milan and Rouen, underground garages were built. (See also ARCHITECTURE; BUILDING AND CONSTRUCTION INDUSTRY; HOUSING; MUNICIPAL GOVERNMENT; URBAN TRANSPORTATION, U.S.).

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Toy Industry. World toy production continued to increase in 1955, with an estimated gain of 18% over 1954 production. In the United States the estimated total sales of toys at retail in 1955 were placed at \$1,250,000,000, the highest in the history of the industry and an increase of approximately 20% over 1954 sales.

Imports of toys into the U.S. showed an increase of 23% for the first eight months of 1955 over the comparable period of 1954. Japan continued to be the principal supplier to the U.S., accounting for 80% of all U.S. toy imports, while Germany was the second largest supplier of toys to the U.S.

On the basis of preliminary figures, Japan displaced the United States as leading exporter of toys to world markets, while the U.S. came second and western Germany was third.

Exports of toys from the U.S. in 1955 were slightly above the 1954 volume of \$13,974,329, with Canada and South America as the two principal markets.

The U.S. continued to lead the world in toy manufacturing facilities with about 2,000 plants employing 60,000 people who received total wages of \$180,000,000. The plants were located in virtually every state of the union, with heavy concentrations in the northeast, middle Atlantic and Pacific coast areas.

During the year the first official market and opinion survey of the American toy industry was completed. Sponsored by the Toy Manufacturers of the U.S.A., Inc., the report dealt with Christmas purchases of toys and covered consumer buying habits, preferences, dollar purchases and market facts. The principal facts revealed by the survey were: that more than \$920,000,000 was spent at Christmas time in 1954 by American families on toys; about 33,000,000 families, or 78% of total U.S. families, bought toys during the Christmas season; the age bracket of 33 to 44 years comprized the largest toy buying group; the average family spent \$28 for Christmas toys; the major market in toys was for children from two to six years old; department stores, variety stores and five-and-ten-cent stores accounted for three-fifths of the toy sales. Supermarkets, discount houses and mail-order houses (having no retail stores) each sold about 2% of the Christmas toys.

Prices of toy products remained in 1955 at about the 1954 level.

The 52nd annual toy fair, sponsored by the Toy Manufacturers of the U.S.A., Inc., was held in New York city in March 1955, and attracted 1,350 manufacturers and more than 14,000 buyers. This annual show features the latest developments in toys.

(H. D. C.)

Track and Field Sports. The approach of another Olympic year (1956) sparked competition in 1955 and resulted in more than the average number of records. Chief interest was focused on the distance stars, and, although they accounted for several new standards, none was able to break the clocking of 3 min. 58 sec. set by John Landy of Australia the year before. For the first time in history three runners in the same race were timed under 4 min. for the mile. On May 28 at London, Eng., Laszlo Tabori of Hungary won in 3 min. 59 sec., defeating Chris Chataway of England and Brian Hewson, another Briton, both of whom were clocked at 3 min. 59.8 sec. Wes Santee, former University of Kansas star and top miler of the United States, continued his quest of the 4-min. time outdoors after a successful campaign on the boards and established a new American record when he was clocked in 4 min. 0.5 sec. in the Texas relays. The time was 0.1 sec. better than his former U.S. mark.

Sandor Iharos, a Hungarian, was among the year's chief record makers, numbering among his many feats new records at 1,500 m., 5,000 m. and at 2 mi. He ran the 1,500 m. in 3 min. 40.8 sec. to beat John Landy's listed mark of 3 min. 41.8 sec. The new mark was tied at Oslo, Nor., when Tabori defeated Gunnar Nielsen of Denmark in a close finish in which both were clocked at 3 min. 40.8 sec. Iharos won at 5,000 m. in 13 min. 50.8 sec. and was clocked in 13 min. 25 sec. for 3 mi. to improve on the universal standards of 13 min. 51.2 sec. and 13 min. 26.4 sec. that had been set by Vladimir Kuts of the U.S.S.R. Kuts later ran the 5,000 m. in 13 min. 46.8 sec. to regain his record at that distance. A crowd of 50,000 at London on May 30 saw Iharos win a two-mile event in 8 min. 33.4 sec.

Jim Golliday of Northwestern university, Evanston, Ill., tied the world clocking of 9.3 sec. for 100 yd. in the western conference relays on May 14. Bob Morrow of Abilene Christian college, Abilene, Tex., ran a sensational 9.1 sec. in the N.A.I.A.

championships at Abilene, Tex., but the record was nullified by a strong helping wind. Arnie Sowell ran the 440 yd. anchor leg in a mile relay for the University of Pittsburgh in 45.4 sec. to better the record of 46 sec. for 440 yd., but split times in relays are not recognized as individual marks. Lou Jones accounted for a new world 400-m. clocking with a 45.4-sec. victory in the Pan-American contests.

One of the oldest world standards, that for 800 m., was broken on Aug. 3 at Oslo, when R. Moens of Belgium won in 1 min. 45.7 sec. The 880-yd. record was tied or bettered a number of times by Sowell, Hewson, Santee and Lon Spurrier, the last-named being caught at 1 min. 47.5 sec. for the fastest of the campaign.

Amateur Athletic Union and College Championships.—The A.A.U. senior national championships in Colorado in June featured the American outdoor campaign and the competition resulted in two new American records as well as three other meet marks. Harold Connolly of the Boston (Mass.) Athletic association established an American and games standard for the hammer throw with a toss of 199 ft. 8 in. The former record of 195 ft. 4½ in. was set by Martin Engel in 1953. Bob Backus achieved new American and meet marks with a heave of 43 ft. 5 in. in the 56-lb. weight event. The best previous throw, also by Backus, was 42 ft. 5½ in. Sowell ran the 880 yards in 1 min. 47.6 sec.; Frank Held of the San Francisco Olympic club hurled the javelin 260 ft. 3 in. and Rod Richard, U.S. army, won the 220-yd. dash in 21 sec. for the other new meet standards. Sowell, one of 1955's stars, was voted the meet's outstanding athlete and received the Charles J. Dieges memorial award. The New York Athletic club captured the team scoring trophy with 111 points, the Los Angeles Athletic club being runner-up with 87½ points.

Richard, Morrow and John Haines, University of Pennsylvania ace, were among the year's leaders in the sprints. Tom Courtney, Fordham university, New York, star, shone in the distance events, both in the United States and abroad. Manhattan college of New York city carried off the Intercollegiate A.A.A.A. team laurels indoors and out and the University of Southern California, Los Angeles, triumphed in the National Collegiate A.A. outdoor games for the 7th consecutive time.

Mal Whitfield, twice Olympic 800-m. champion, became the first Negro to win the James E. Sullivan memorial trophy when he was voted to receive the honour for 1954. The prize is given to "the amateur athlete who, by performance, example and good influence, did most to advance the cause of good sportsmanship during the year."

Mile stars, aided by Nielsen, furnished the big thrills of the American indoor season. The Danish ace made a spectacular debut in the Massachusetts Knights of Columbus meet at Boston, Mass., Jan. 15 when he won the mile in 4 min. 7.9 sec. for a meet record. He led home Fred Dwyer of the armed forces by 5 yd. Six other marks for the games were shattered, including one for the pole vault when Bob Richards leaped 15 ft. 3¼ in. Santee defeated Nielsen in a 4 min. 10.5 sec. race at the Philadelphia (Pa.) *Inquirer* contests Jan. 21. Rod Perry of Pennsylvania State university, State College, Pa., tied the world indoor standard of 6 sec. as he defeated Harrison Dillard in the hurdles. Richards reached 15 ft. 5 in. in vaulting over the 15-ft. level for the 59th time. Nielsen surprised Santee in the Washington (D.C.) *Evening Star* games of Jan. 22, winning in 4 min. 10.5 sec. Art Bragg won the sprints, tying a meet mark of 7.1 sec. at 70 yd. and establishing an indoor time of 9.7 sec. for 100 yd.

In the Boston Athletic association meet Jan. 29, Santee set a new world indoor time of 4 min. 3.8 sec. as he led home Nielsen by 25 yd. Dillard maintained his reputation of never losing

a hurdles race in Boston when he won the 45-yd. high event in 5.6 sec. Nielsen improved on Santee's young world mark on Feb. 5 when he took the mile in the Millrose games in New York's Madison Square Garden in 4 min. 3.6 sec. A collision between Santee and Dwyer resulted in disqualification for Dwyer. On the way, Santee broke Glenn Cunningham's 17-year-old standard for 1,500 metres when he was clocked in 3 min. 48.3 sec. Dwyer beat both Nielsen and Santee in setting a New York Athletic club meet mark of 4 min. 6.2 sec. on Feb. 12. Norway's Audun Boysen easily won at 1,000 yd. in 2 min. 10.2 sec., a record for the games.

A crowd of 13,000 saw one world record established and two others tied in the A.A.U. championships at Madison Square Garden on Feb. 19. Parry O'Brien of the Los Angeles Athletic club and the armed forces put the 16-lb. shot 59 ft. 5½ in. to better his own universal indoor standard by 1½ in. Haines tied the world. American indoor and meet mark of 6.1 sec. in winning the 60-yd. dash. Sowell won the 1,000-yd. in 2 min. 8.2 sec. to tie the world standard. He was selected as the meet's outstanding performer. Manhattan college took the team crown in the Intercollegiate 4-A championships of Feb. 26 although it had only one individual champion, Charley Pratt in the hurdles. Santee, with Nielsen and Dwyer missing, breezed to a 4 min. 10.4 sec. mile triumph in the New York Knights of Columbus contests March 5. Richards set a Madison Square Garden mark when he vaulted 15 ft. 4½ in. Tom Courtney ran a 1 min. 52.6 sec. half mile, fastest in history on a flat board track, in the New York Pioneer-369th A. A. games in New York on March 12. Richards and Santee shone in the Milwaukee *Journal* meet at Milwaukee, Wis., on March 12. Richards again cleared 15 ft. in the vault and Santee won the mile in 4 min. 8.3 sec.

Hall of Fame.—Three coaches were among the many personalities in the sport added to the Helms Hall Track and Field Hall of Fame in 1955. Mentors honoured were Robert Allison Fetzer, coach at the University of North Carolina for 34 years; William Hayward, coach at the University of Oregon during 44 campaigns, and Earle (Billy) Hayes, whose career ended with a 19-year tenure at Indiana university. Harold Davis, former University of California sprinter; Louis Gregory, distance star of the Millrose Athletic association; and Harrison Dillard, who won the 1948 Olympics high hurdles and 100-m. dash at the 1952 games, were selected. Others named were Horace Ashenfelter, distance star; John Borican, middle distance man; James Donahue, all-around athlete; G. W. Orton, 1900 Olympic steeplechase victor and founder of the Penn relays; Eulace Peacock, stellar sprinter, broad jumper and Pentathlon athlete; J. Gregory Rice, distance runner, and Bob Richards, pole vaulter. Three walking stars, Harry Hinkel, Henry Laskau and William Mihalo, were the first of their specialty selected. Women athletes chosen during 1955 were Mrs. Frances Kaszubski, chairman of the women's A.A.U. track and field committee; Alice Coachman; Lillian Copeland; Mildred (Babe) Didrikson Zaharias; Dorothy Dodson; Helen Stephens and Stella Walsh.

Pan-American Games.—The second Pan-American meet,

Table I.—Major World Records Improved in 1955

Event	Name and nationality	Place	Date	Performance	Approved record
400 m.	L. Jones (U.S.)	Mexico City, Mex.	March 18	45.4 sec.	0:45.8
	J. Lea (U.S.)	Mexico City	March 18	45.6 sec.	0:45.8
800 m.	R. Moens (Belg.)	Oslo, Nor.	Aug. 3	1 min. 45.7 sec.	1:46.6
	A. Boysen (Nor.)	Oslo	Aug. 3	1 min. 45.9 sec.	1:46.6
880 yd.	L. Spurrier (U.S.)	Berkeley, Calif.	March 26	1 min. 47.5 sec.	1:48.6
	A. Sowell (U.S.)	Boulder, Colo.	June 25	1 min. 47.6 sec.	1:48.6
	W. Santee (U.S.)	Modesto, Calif.	May 21	1 min. 48.5 sec.	1:48.6
1,000 m.	A. Boysen (Nor.)	Gothenburg, Swed.	Aug. 30	2 min. 19 sec.	2:19.5
	I. Rozsavolgyi (Hung.)	Budapest, Hung.	Sept. 21	2 min. 19 sec.	2:19.5
1,500 m.	S. Iharos (Hung.)	Helsinki, Fin.	July 28	3 min. 40.8 sec.	3:41.8
	L. Tabori (Hung.)	Oslo	Sept. 6	3 min. 40.8 sec.	3:41.8
	G. Nielsen (Den.)	Oslo	Sept. 6	3 min. 40.8 sec.	3:41.8
2,000 m.	I. Rozsavolgyi (Hung.)	Budapest	Oct. 2	5 min. 2.2 sec.	5:07
5,000 m.	S. Iharos (Hung.)	Vienna, Aus.	Sept. 10	13 min. 50.8 sec.	13:51.2
	V. Kuts (U.S.S.R.)	Belgrade, Yugos.	Sept. 18	13 min. 46.8 sec.	13:51.2
2 mi.	S. Iharos (Hung.)	London, Eng.	May 30	8 min. 33.4 sec.	8:40.4
3 mi.	C. Chataway (Eng.)	London	July 30	13 min. 23.2 sec.	13:26.4
	S. Iharos (Hung.)	Vienna	Sept. 10	13 min. 25 sec.	13:26.4
440-yd. relay	Texas U. (U.S.)	Modesto	May 21	41.2 sec.	0:40.5
3,200-m. relay	U.S.S.R.	Riga, Latvia	Aug. 1	7 min. 26.4 sec.	7:26.8
6,000-m. relay	Hungary	Budapest	Sept. 29	15 min. 14.8 sec.	15:21.2
3,000-m. steeplechase	P. Karvonen (Fin.)	Oslo	July 15	8 min. 45.4 sec.	8:49.6
	J. Chromik (Pol.)	Budapest	Sept. 11	8 min. 40.2 sec.	8:49.6
Hammer throw	M. Krivonozov (U.S.S.R.)	Belgrade	Sept. 19	211 ft. 8¼ in.	200 ft. 11 in.
Javelin throw	F. Held (U.S.)	Modesto	May 21	268 ft. 2½ in.	263 ft. 10 in.
Hop, step and jump	A. F. da Silva (Brazil)	Mexico City	March 16	54 ft. 4 in.	53 ft. 2¾ in.
Women's 800 m.	N. Ortolenko (U.S.S.R.)	Belgrade	Sept. 24	2 min. 5 sec.	2:06.6
Women's 80-m. hurdles	G. Ermolenko (U.S.S.R.)	Leningrad, U.S.S.R.	July 6	10.8 sec.	0:10.9
Women's 400 m.	M. Itkina (U.S.S.R.)	Bucharest, Rum.	Oct. 1	53.9 sec.	0:54.4

held at Mexico City March 12-26, 1955, attracted 2,000 athletes from 22 nations. A crowd of 100,000 saw the parade of stars after Pres. Don Adolfo Ruiz Cortines of Mexico officially started the games. The track and field competition was featured by two world record-breaking feats while numerous meet marks were established. Leading a host of United States victors was Lou Jones who captured the 400-m. dash in 45.4 sec. for a new universal standard. The other world record was established by Brazil's 1952 Olympic champion, Adhemar Ferreira da Silva, who covered 54 ft. 4 in. in the hop, step and jump. Double gold medal winners were Rodney Richard of the United States, who was first at 100-m. and 200-m. events, and Oswaldo Suarez of Argentina, who won the 5,000-m. and 10,000-m. events. The 1959 Pan-American games were awarded to Cleveland, O.

A list of the champions in the 1955 meet is given in Table III.

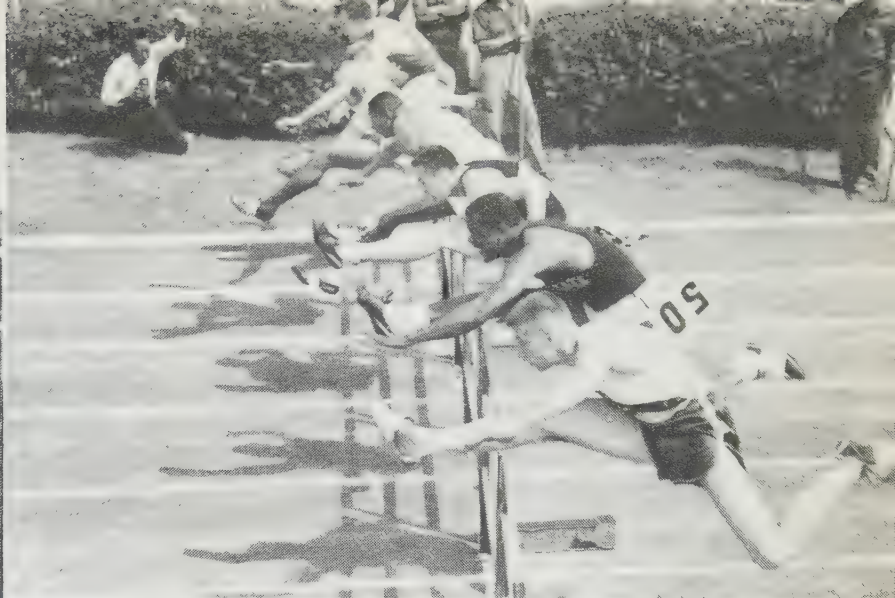
Table II.—National A.A.U. Men's Championships

(Indoors, at New York, Feb. 19, 1955)

60 yd.—John Haines, U. of Pennsylvania (6.1 sec.; tied world, American indoor and championship record)
 60-yd. high hurdles—Harrison Dillard, unattached, Cleveland, O. (7.3)
 600 yd.—Charles Jenkins, Villanova U. (1 min. 11.9 sec.)
 1,000 yd.—Arnold Sowell, U. of Pittsburgh (2:08.2, tied world, American indoor and championship record)
 One mile—Wes Santee, unattached, Lawrence, Kan. (4:07.9, new championship record)
 Three mile—Horace Ashenfelter, New York A.C. (13:54.0)
 One-mile walk—Henry Laskau, 92d St. Y.M.H.A., N.Y. (6:30.4)
 One-mile sprint medley relay—New York Pioneer club, team A (Frank Bowens, James Ryan, James Gathers, Andy Stanfield), (1:53.8)
 One-mile relay—Morgan State college (Herman Wade, Rudy Solomon, James Rogers, Josh Culbreath), (3:18.5)
 Two-mile relay—Syracuse U. (Bob Milner, Les Vielbig, Steve Armstrong, Don Shupe), (7:39.7)
 35-lb. weight throw—Robert Backus, New York A.C. (60 ft. 4½ in.)
 Running broad jump—Pvt. R. Range, armed forces (25 ft. 1 in.)
 16-lb. shot-put—Parry O'Brien, Los Angeles A.C. (59 ft. 5½ in.; new world, American indoor and championship record)
 Pole vault—Bob Richards (15 ft. 4 in., new championship record)
 Running high jump—Lt. John Hall, armed forces, and Ernie Shelton, unattached, Los Angeles, Calif. tied (6 ft. 8¾ in.)
 Leading team scores—New York Pioneer club 24; New York A.C. 15; Los Angeles A.C. 13
 (Outdoors, at Boulder, Colo., June 24-25, 1955)
 100 yd.—Bobby Morrow, Abilene Christian (9.5 sec.)
 220 yd.—Rod Richard, army (21; meet record; former mark 21.1)
 440 yd.—Charles Jenkins, Villanova (46.7)
 880 yd.—Arnold Sowell, Pittsburgh (1 min. 47.6 sec. meet record; old mark 1:50.8)
 One mile—Wes Santee, Marine corps (4:11.5)
 Three mile—Horace Ashenfelter, New York A.C. (14:45.2)
 Six mile—Dick Hart, Collegiate Track & Field Club, Philadelphia, Pa. (31:58.5)
 Two-mile walk—Henry Laskau, 92d St. Y.M.H.A. (15:09.4)
 Two-mile steeplechase—Ken Reiser, Eugene Town club (10:20.7)
 120-yd. high hurdles—Milt Campbell, Indiana (13.9)
 220-yd. low hurdles—Charles Pratt, New York Pioneer club (23.5)
 440-yd. low hurdles—Josh Culbreath, Morgan State college (52, tied meet record)
 Hop, step and jump—Victor Paredez, Cuban National Physical Education club (50 ft. 4 in.)
 Broad Jump—Gregory Bell, unattached, Terre Haute, Ind. (26 ft. ½ in.)
 High jump—Ernie Shelton, Los Angeles A.C. and Charles Dumas, Centennial high school (Compton, Calif.) tied (6 ft. 10 in.)
 Pole vault—Bob Richards, Los Angeles A.C. (15 ft.)
 Shot-put—Parry O'Brien, air force (58 ft. 5¾ in.)
 Discus—Parry O'Brien (175 ft. 7 in.)
 Javelin—Franklin Held, San Francisco Olympic club (260 ft. 3 in.; meet record; former mark 252 ft. 11½ in.)
 56-lb. weight—Bob Backus, New York A.C. (43 ft. 5 in.; meet record; former mark, 42 ft. 5¼ in.; American record; former mark, 42 ft. 5¼ in.)
 Hammer throw—Harold Connolly, Boston A.A. (199 ft. 8 in.; meet record; former mark 189 ft. 3 in.; American record; former mark 195 ft. 4½ in.)
 Leading team scores—New York A.C., 111; Los Angeles A.C., 87¾; New York Pioneer club, 54



Above: Laszlo Tabori, Hungary, breaking the tape at the finish of the International Invitation mile race of the British games at White City stadium, London, May 28. Tabori, Chris Chataway (centre) and Brian Hewson were all timed at less than 4 min.



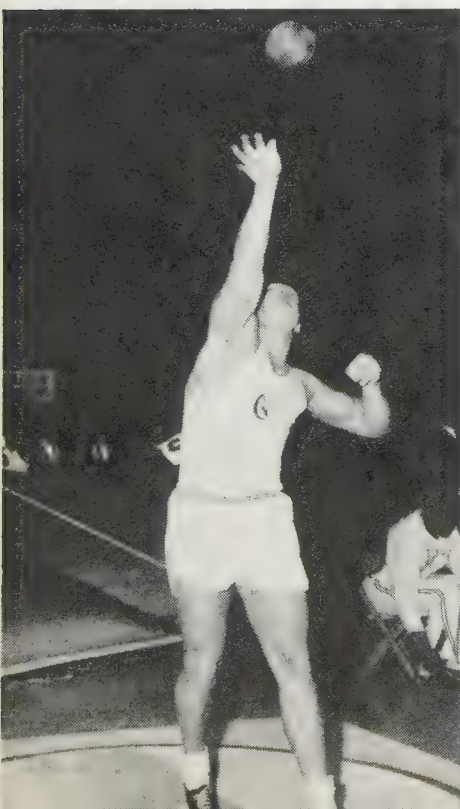
Above, right: Final heat of the 120 yd. high hurdles, Intercollegiate A.A.A.A. meet, New York city, May 28. The event was won by Joel Shankle, Duke university, shown farthest from the camera

Right: Lou Jones (right), U.S., setting a world record of 45.4 sec. in the 400-metre race of the Pan-American games at Mexico City, Mex., March 18. Following close behind were teammates Jim Lea (centre), second, and Jesse Mashburn, third



TRACK AND FIELD, 1955

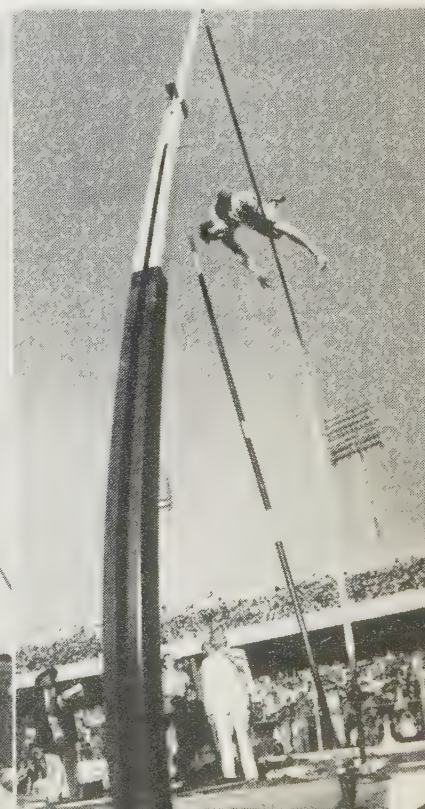
Below: Parry O'Brien warming up for a 59 ft. 5½ in. throw of the shot-put Feb. 19, breaking his own world indoor record



Below: Hans Visser, Netherlands, leaping 24 ft. in the broad jump during an international meet at Rotterdam, Aug. 11



Below: The Rev. Bob Richards, U.S., clearing the bar at 14 ft. 9¾ in. to win the pole vault event at the Pan-American games



National A.A.U. Women's Championships

Indoors, at Chicago, Feb. 5, 1955

60 m.—Isabel Daniels, Tennessee A. & I. university (7.9 sec.)
 100 m.—Barbara Jones, Chicago Comets (12.3)
 220 yd.—Alfrances Lyman, Chicago Comets (26.2)
 800-m. hurdles—Nancy Phillips, German-American A.C., Brooklyn, N.Y., (12.0)
 440-yd. relay—Chicago Comets (Watkins, Lyman, Landry, Jones), (50.5, new meet record)
 Basketball throw—Amelia Wershoven, Equitable Life Assurance society, N.Y. (98 ft. 2 in.)
 4 kilo shot-put—Lois Testa, Red Diamond A.C., Boston, Mass. (37 ft. 6½ in.)
 Standing broad jump—Shirley Hereford, Holland Recreation club, Cleveland, O. (8 ft. 1½ in., meet record)
 Running high jump—Mildred McDaniel, Tuskegee institute (5 ft. 2 in.)
 Discus throw—Marjorie Laney, Equitable Life Assurance Soc. (122 ft. 2 in.)
 Javelin throw—Amelia Wershoven (138 ft. 10 in.)
 Leading team scores—Chicago Comets 34; Tennessee State 22; German-American A.C., Brooklyn, N.Y., 10

(Outdoors, at Ponca City, Okla., June 17-18, 1955)

50 yd.—Isabel Daniels (6 sec., meet record; former mark 06.1),
 100 yd.—Mae Faggs, Tennessee State (10.8, Faggs set meet and American record of 10.7 in preliminary; former mark 10.8)
 220 yd.—Mae Faggs (25.1, meet record; former mark 25.4)
 80-m. hurdles—Bertha Diaz, Cuba (11.5, American record, former mark 11.7)
 440-yd. relay—Tennessee State (Martha Hudson, Lucinda Williams, Isabel Daniels and Mae Faggs), (49.1, meet record; former mark 49.4)
 Baseball throw—Amelia Wershoven (249 ft. 1½ in.)
 Shot-put—Wanda Weizgrowski, Polish Falcons (37 ft. 4½ in.)
 Discus—Alejandra Ibarra, Cuba (117 ft. 8 in.)
 Javelin—Karen Anderson, Mercury A.C., Landsdowne, Pa. (150 ft. 1¼ in.; meet record, former mark 139 ft. 3 in.)
 Broad jump—Nancy Phillips (17 ft. 5¼ in.)
 Running high jump—Mildred McDaniel (5 ft. 6½ in.; American record; former mark 5 ft. 6¼ in.)
 Leading team scores—Tennessee State 87½; Chicago Comets, 59½; Equitable Life Assurance Soc., 38)

National A.A.U. Outdoor Distance Events

15 kilo run—Browning Ross, Penn A.C. (54 min. 02 sec.)
 20 kilo run—Charles Robbins, N.Y. Pioneer club (1:10:47)
 25 kilo run—Browning Ross (1:24:35)
 30 kilo run—Browning Ross (1:21:25)
 Marathon—Nick Costes, unattached (2:31:12.4)
 10 kilo walk—Henry Laskau, 92d St. Y.M.H.A. (48:43.3)
 15 kilo walk—Henry Laskau (1:14:46)
 20 kilo walk—Henry Laskau (1:44:08)
 25 kilo walk—James Hewson, St. Francis Xavier A.C., Buffalo, N.Y. (2:14:32)
 30 kilo walk—Alex Oakley, Ontario, Can. (2:36:11)
 35 kilo walk—Leo Sjogren, Finnish American A.C. (3:17:57)
 40 kilo walk—Guillermo Weller, Argentina (3:40:58)
 50 kilo walk—Leo Sjogren (4:30:57)

Other A.A.U. Outdoor Champs

Men's decathlon—Bob Richards, Los Angeles A.C. (6,873 points)
 Men's pentathlon—Des Koch, unattached (3,216)
 Women's pentathlon—Barbara Mueller, Chicago Comets (3,539)
 Men's all-around—Lyman Frasier, Baltimore (Md.) Olympic club (6,733)

Intercollegiate A.A.A. Championships

Indoors, at New York, Feb. 26, 1955

60 yd.—John Haines, Pennsylvania (6.3 sec.)
 600 yd.—Charles Jenkins, Villanova (1 min. 11.2 sec.)
 1,000 yd.—Arnold Sowell, Pittsburgh (2:14.7)
 One mile—Alex Breckenridge, Villanova (4:19.9)
 Two mile—George Terry, Boston U. (9:16.8)
 60-yd. high hurdles—Charles Pratt, Manhattan (0:07.4)
 One-mile relay—Pittsburgh (Ed Saunders, Joe Dudas, William Green, Arnold Sowell), (3:19.8)
 Two-mile relay—Syracuse (Robert Milner, Les Vielbig, Steve Armstrong, Don Shupe), (7:49.1; Syracuse ran 7:40.9 in trial heat for meet record; former mark 7:41.6)
 35-lb. weight throw—Stewart Thomson, Yale (58 ft. 1¼ in.)
 Broad jump—Bernard Bruce, Boston U. (23 ft. 10¼ in.)
 High jump—Wilfred Lee, Pennsylvania (6 ft. 6 in.)
 16-lb. shot-put—Roosevelt Grier, Penn State (53 ft. 4½ in.)
 Pole vault—Don Bragg, Villanova, and Dave Seed, California, tied (14 ft.)
 Leading team scores—Manhattan 27; Villanova 22½; Penn State 18

(Outdoors, at New York, May 27-28, 1955)

100 yd.—John Haines, Pennsylvania (9.5 sec., meet record; former mark, 09.6)
 220 yd.—Art Pollard, Penn State (20.8)
 440 yd.—Charles Jenkins, Villanova (47.2)
 880 yd.—Arnold Sowell, Pittsburgh (1 min. 49.1 sec., meet record; former mark 1:50.3; new national collegiate record; former mark 1:49.8)
 One mile final—Burr Grim, Maryland (4:09.9, meet record; former mark 4:10.3)
 Two mile—George King, New York U. (9:15.7)
 120-yd. high hurdles—Joel Shankle, Duke (14.1, tied meet record)
 220-yd. low hurdles—Charles Pratt, Manhattan, (23.0)
 One-mile relay—Villanova (James Moran, Eugene Maliff, Al Peterson, Charles Jenkins), (3:15.2)
 Javelin throw—Al Cantello, La Salle, Philadelphia (228 ft. 8½ in., meet record; former mark 225 ft. 2¼ in.)
 Hammer throw—Don Seifert, Brown (186 ft. 10 in., meet record; former mark 183 ft.)
 Discus throw—Roosevelt Grier, Penn State (170 ft. 6 in.)
 Shot-put—Roosevelt Grier (57 ft. 11 in.)
 Broad jump—Joel Shankle, Duke (24 ft. 8 in.)
 Pole vault—Don Bragg, Villanova (14 ft. 6 in., meet record; former mark 14 ft. 5½ in.)
 High jump—Wilfred Lee, Pennsylvania (6 ft. 6½ in.)
 Leading team scores—Manhattan, N.Y., 38; Penn State, 35¼; Boston U., 17½

National Collegiate A.A. Championships

(Outdoors, at Los Angeles, Calif., June 17-18, 1955)

100 yd.—Jim Golliday, Northwestern (9.6 sec.)
 220 yd.—Jim Golliday (21.1)
 440 yd.—J. W. Mashburn, Oklahoma A. & M. (46.6)
 880-yd.—Tom Courtney, Fordham (1 min. 49.5 sec., meet record; former mark 1:50.3)
 One mile—Jim Bailey, Oregon (4:05.6)
 Two mile—Ken Reiser, Oregon (9:04.5)
 120-yd. high hurdles—Milt Campbell, Indiana (13.9, tied meet record)
 220-yd. low hurdles—Charley Pratt, Manhattan (23.1)
 Broad jump—Joel Shankle, Duke (24 ft. 3¼ in.)
 Javelin throw—Les Bitner, Kansas (246 ft. 1 in., meet record; former mark 228 ft. 8½ in.)
 Discus throw—Des Koch, Southern California (176 ft. ¾ in.)
 High jump—Ernie Shelton, Southern California (6 ft. 11½ in., meet record; former mark 6 ft. 10½ in.)
 Pole vault—Don Bragg, Villanova (15 ft. 1 in., meet record; former mark 14 ft. 9 in.)
 Leading team scores—Southern California, 42; University of California at Los Angeles (U.C.L.A.), 34; Kansas, 30

Table III.—Pan-American Games Track and Field Champions

(At Mexico City, March 12-26, 1955)

Men's Track and Field

100 m.—Rod Richard, U.S. (10.3 sec.)
 200 m.—Rod Richard, U.S. (20.7)
 400 m.—Louis Jones, U.S. (45.4)
 800 m.—Arnold Sowell, U.S. (1 min. 49.7 sec.)
 1,500 m.—Juan Miranda, Argentina (3:53.2)
 5,000 m.—Oswaldo Suarez, Argentina (15:30.6)
 10,000 m.—Oswaldo Suarez, Argentina (32:42.6)
 Marathon—D. Flores, Guatemala (2 hr. 59 min. 9.2 sec.)
 110-m. hurdles—Jack Davis, U.S. (14.3 sec.)
 400-m. hurdles—Josh Culbreath, U.S. (51.5)
 Broad jump—Roselyn Range, U.S. (26 ft. 4½ in.)
 High jump—Ernie Shelton, U.S. (6 ft. 7½ in.)
 Pole vault—Bob Richards, U.S. (14 ft. 9½ in.)
 Shot-put—Parry O'Brien, U.S. (57 ft. 8½ in.)
 Discus throw—Fortune Gordien, U.S. (174 ft. 2½ in.)
 Javelin throw—Franklin Held, U.S. (228 ft. 11 in.)
 Hop, step and jump—A. Ferreira da Silva, Brazil (54 ft. 4 in.)
 Decathlon—R. Johnson, U.S. (6,994 points)
 Hammer throw—Bob Backus, U.S. (180 ft. 13¼ in.)
 3,000-m. steeplechase—Guillermo Sola, Chile (9 min. 46.8 sec.)
 400-m. relay—U.S. (40.7)
 1,600-m. relay—U.S. (3:07.2)

Women's Track and Field

60 m.—Bertha Diaz, Cuba (7.5 sec.)
 100 m.—Barbara Jones, U.S. (11.5)
 80-m. hurdles—Eliana Gaete, Chile (11.7)
 400-m. relay—U.S. (47)
 High jump—Mildred McDaniel, U.S. (5 ft. 6¼ in.)
 Discus throw—Ingeborg Pfuller, Argentina (141 ft. 8¼ in.)
 Javelin throw—Karen Anderson, U.S. (161 ft. 3 in.)

(T. V. H.)

Trade Agreements: *see* INTERNATIONAL TRADE; TARIFFS.
Trade Commission, Federal: *see* FEDERAL TRADE COMMISSION.

Trade-Marks: *see* PATENTS.**Trade Unions:** *see* LABOUR UNIONS.**Traffic Accidents:** *see* ACCIDENTS; DISASTERS.**Traffic and Parking:** *see* MUNICIPAL GOVERNMENT.**Transportation:** *see* AVIATION, CIVIL; MOTOR TRANSPORTATION; RAILROADS; URBAN TRANSPORTATION, U.S.**Trap-shooting:** *see* SHOOTING.**Travel:** *see* TOURIST TRAVEL.**Treasury, U.S. Department of:** *see* GOVERNMENT DEPARTMENTS AND BUREAUS, U.S.**Trieste:** *see* ITALY.

Trinidad and Tobago. This British colony consists of two islands off South America north of the Orinoco delta. Area: 1,980 sq.mi. (Tobago, 116 sq.mi.). Pop.: (1946 census) 557,970 (Tobago 27,208), including 261,485 Africans, 195,747 East Indians and 78,775 coloured (mixed); (1954 est.) 710,000 (about 5% in Tobago). Language: English, Hindi, French, Spanish. Religion: Christian 70% (of which one-half Roman Catholic, one-third Anglican), Hindu 23%, Moslem 6%. Chief towns (pop. 1953): Port of Spain (cap.) 111,150; San Fernando (port) 35,000. Governors in 1955: Major General Sir Hubert Rance and (from June 23) Sir Edward Beetham.

History.—On Dec. 10, 1954, the legislature of Trinidad and Tobago accepted the plan for a British Caribbean federation (command paper no. 8895 of 1953), subject to a further conference on immigration and a capital. Yellow fever travel restrictions ceased on Jan. 7. A committee on constitutional reform was appointed in January. The San Fernando Technical Training institute was opened on Feb. 23. On May 6 income taxation was reduced. The report of a board of inquiry into a wage dispute in the oil industry was published on June 18. Reports on the treatment of leprosy in Trinidad by Ernest Muir of the British Empire Leprosy association and Lauro de Souza Lima of the UN World Health organization were published on Aug. 4. In August the city public transport system of the Port of Spain corporation electricity board was taken over by Ahamand Transport service. On Sept. 6 the life of the legislature was extended from Sept. 26 to May 26, 1956, as requested by the legislature on April 15. The government donated \$150,000 toward a central fund which it established to relieve devas-

tation caused by the hurricane on Sept. 22 in Grenada, Carriacou and Barbados. Supplies, personnel and equipment were rushed to these islands.

(H. E. CN.)

See H. Dow (ed.), *Trinidad and Tobago Year Book, 1955* (Port of Spain, 1955).

Education.—Schools (1953): primary and intermediate 502, pupils 137,031; secondary 29, pupils 11,581. Teachers' training colleges 3, students 218. Vocational: Eastern Caribbean Farm institute; San Fernando government technical college (opened 1954); Imperial College of Tropical Agriculture, students 84. Extra-mural classes in Trinidad, intermediate level, of the University College of the West Indies.

Finance and Trade.—Monetary unit: British West Indian dollar, valued in 1955 at about 58 cents U.S. Budget (1955 est.): revenue B.W.I. \$74,700,000; expenditure B.W.I. \$73,800,000. Foreign trade (1954): imports B.W.I. \$243,840,000; exports (including re-exports) B.W.I. \$261,600,000. Production (long tons, 1954) crude oil 3,328,000; sugar 174,000; cocoa (exports) 7,880,000; asphalt (1953) 43,000; asphalt cement 34,000.

Tropical Diseases. The older concept that many diseases are peculiar to warm climates is being gradually modified with the knowledge that most infections in the tropics are cosmopolitan. However, because of climatic conditions, inadequate nutrition, poor personal hygiene and environmental sanitation, unusually favourable opportunities are provided for many diseases to be hyperendemic or to develop epidemically in extensive tropical areas. Common examples are malaria, intestinal parasitism, deficiency diseases, trachoma, smallpox, tuberculosis, treponematoses, blood fluke infection and filariasis. Coupled with this knowledge is the realization that control cannot be accomplished solely by diagnosing and treating individual patients. Valuable as this is, it must be co-ordinated with the more comprehensive program of providing nutritious food, improving environmental conditions to reduce the hazards of disease transmission, immunizing communities where this is practical, and educating them in methods of safeguarding their health. For nearly a decade the World Health organization (WHO) of the United Nations, in close co-operation with local health agencies, has developed programs working toward these ends.

Malaria.—During 1955 efforts were continued to control this disease. Considerable reduction was effected in some tropical countries, yet in Africa and southeast Asia the situation was still formidable. It was authoritatively estimated that in 1955 about 10% of the world's population, or 250,000,000 persons, had clinical attacks of malaria, and about 1% of these died of the disease. Eradication of malaria from tropical America was the present goal but this would require an expenditure of \$100,000,000 whereas only a few hundred thousand were available. Moreover, during 1955 there were increased instances of malaria mosquitoes becoming resistant to residual spraying of homes with DDT; the most dangerous transmitter in tropical America, *Anopheles darlingi*, cannot be controlled by this technique since characteristically it does not rest on the walls of habitations but takes a blood meal, then flies into tall savanna grass.

Deficiency Diseases.—In 1955 this group of diseases continued to constitute a basic, essentially unsolved practical problem. In many tropical countries there is adequate carbohydrate in the diet from maize, polished rice, taro and other starchy foods, but vitamins, proteins and fats are inadequate and in some areas almost completely lacking. These deficiencies are responsible for high frequency of spruelike syndromes, scurvy, pellagra and beriberi, and reduce energy and resistance to infectious diseases, particularly in young children. In Africa milch cattle introduced from Europe were being mated with local stock to produce disease-resistant breeds to increase fresh milk supplies. Attempts were also being made to add vitamin A and D supplements to powdered skim milk for children in areas where cattle were not being raised or were unprofitable because of animal trypanosomiasis. In some regions of Africa fish were

being stocked in rivers and lakes to supply animal protein. One of the difficulties encountered in providing adequate diets was the reluctance of native populations to consume unaccustomed foods. Development of new varieties of vegetables commonly eaten by a population, with greatly enhanced vitamin content, was found to solve one of these difficulties.

Smallpox and Tuberculosis.—These diseases continued to be common throughout tropical countries. Pilot studies were initiated to immunize children simultaneously with vaccinia virus and BCG. Several years would be required to evaluate results.

Treponematoses.—Penicillin treatment was continued in several tropical countries in long-time programs to control yaws (framboesia, pian) and syphilis, diseases produced by closely related species of *Treponema*. Yaws is almost exclusively a tropical infection; syphilis is becoming increasingly common in the tropics with the development of industrial cities and migration of rural populations to urban centres. Although comprehensive statistics were not available, control of yaws appeared to be developing satisfactorily.

Filariasis.—Early in Dec. 1955 a study section of WHO was convened at Kuala Lumpur, in Malaya, to assess the status of Bancroftian and Malayan filariasis. Special consideration was given to the distribution of these diseases in extensive tropical areas, their epidemiology, methods of transmission by mosquitoes in different regions, characteristic pathology and symptoms, and evaluation of control measures presently being tried. Like the similar conference on onchocerciasis (another type of filariasis) held in Mexico City the previous fall, the value of this conference consisted in providing expert opinion based on research and practice in different parts of the tropics with respect to future methods to be employed in combating these infections.

Blood Fluke Disease.—During 1955 primary emphasis in the investigation of this disease (schistosomiasis, bilharziasis) was placed on the natural history of the snail intermediate hosts that harbour the fluke before it escapes into fresh water in the stage infective for man. In extensive endemic areas in Africa, the middle east and Brazil, practical control of the disease by destruction of the snail had become increasingly urgent as irrigation projects nearing completion were likely to carry the snails into territory contiguous to their present distribution. Sodium pentachlorophenate (Santobrite) continued to demonstrate its usefulness in killing the snails and thus in preventing the parasite from developing to the infective stage for man. In parts of Africa, however, the use of this chemical in streams had the serious disadvantage that it also killed fish which had been stocked to provide essential animal protein for the population.

Yellow Fever.—Urban yellow fever was reported in 1955 only in isolated villages near forested areas in central Africa. In northern South America and in Central America the centres of jungle yellow fever were under close surveillance. The northern limit of the recent extension of the disease in Central America had for the time being become established in Honduras, although there was the possibility that it might reach the dense forests of northern Guatemala and southern Mexico, then break out in the nearby Gulf coast cities. In the jungle, monkeys are primarily attacked by the disease, but in eastern Colombia and possibly elsewhere in the Americas marsupials are probably involved in regions where monkeys are relatively uncommon. The mosquito transmitters in the jungle are species of *Haemagogus*, the habits of which are still poorly understood. Since there is no specific treatment for yellow fever, control measures being pursued in tropical America consisted of (1) immunization of persons likely to be exposed to the disease in and adjacent to the enzootic jungle areas and (2) continued efforts to prevent the breeding of the urban mosquito transmitter, *Aedes aegypti*.

Immunization of persons visiting northern South America, Trinidad and the enzootic countries of Central America was required for re-entry into the United States.

Trichinosis.—Although this parasitic disease is uncommon in warm climates, its increasing prevalence in the United States had become a matter of serious concern to private physicians and health authorities. Almost every week during 1955 there were confirmed reports of epidemics of the disease, usually in small but occasionally larger groups, in all areas of the United States except the southeast. The typical history of these cases is that they consumed sausage or other pork products immediately preceding the first symptom of the disease, *e.g.*, “acute food poisoning.” In some instances the meat came from federally-inspected slaughterhouses. The infected meat contained the encysted viable stage of the etiologic agent, *Trichinella spiralis*. Consumption of inadequately cooked or otherwise insufficiently processed pork was therefore responsible for the infection.

Resettlement of Populations in the Tropics.—Vast regions in the tropics as yet essentially unpopulated are potentially valuable for settlement of persons from overpopulated areas, to relieve congestion and provide land to grow new crops of food. In some localities virgin land is fertile; in other areas, with the extension of irrigation it would become highly productive. In both instances it was apparent in 1955 that disease hazards were a definite handicap to these immigrants unless steps were taken immediately to safeguard the health of the immigrants. Measures which were being developed consisted in basic environmental sanitation of the new settlements to prevent outbreaks of enteric diseases; insecticidal control against malaria, trypanosomiasis in man and livestock; immunization against small-pox, tuberculosis, and yellow fever where this constitutes a liability; control of blood fluke disease in several areas by destruction of the snail intermediate hosts; and encouragement of the population to cultivate more nutritious crops and better domestic animals which would supply an adequate, balanced diet. (See also EPIDEMIOLOGY; WORLD HEALTH ORGANIZATION.)

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Trucial Sheikhdoms: see ARABIA.
Truck Crops: see VEGETABLES.
Trucks: see AUTOMOBILE INDUSTRY; MOTOR TRANSPORTATION.

Trust Territories. These include former German colonies and islands which became mandates after World War I and trust territories after World War II; South-West Africa, which remained mandated; and the former Italian Somaliland (now Somalia) which became a trust territory under Italian administration on April 1, 1950. Total area: 1,229,406 sq.mi.; total population about 21,707,000. Certain essential information is given in the table.

History.—Major steps towards eventual self-government in certain trust territories gave special significance to the two regular sessions held by the Trusteeship council of the United Nations during 1955. At the conclusion of the 16th session on July 22 the president, Mason Sears (U.S.), pointed out that four of the 11 territories had “clearly reached advanced stages in their evolution towards self-government.” They were Togoland and Cameroons under British administration in west Africa, Western Samoa under New Zealand administration in the Pacific, and Italian-administered Somalia. These developments

Trust and Mandated Territories			
Territory	Area (in sq.mi.)	Population	Administering Authority
South-West Africa*	317,725	437,000 (1953 est.)	South Africa
Togoland (Br.)	13,041	429,000 (1955 est.)	United Kingdom
Togo (Fr.)	21,235	1,070,000 (1955 est.)	France
Cameroons (Br.)	34,081	1,460,000 (1954 est.)	United Kingdom
Cameroon (Fr.)	166,793	3,121,000 (1952 est.)	France
Tanganyika	362,688	8,196,000 (1954 est.)	United Kingdom
Ruanda-Urundi	20,742	4,270,872 (1954 est.)	Belgium
New Guinea†	93,000	1,296,188 (1954 est.)	Australia
Western Samoa	1,131	93,000 (1954 est.)	New Zealand
Nauru	8	3,473 (1954 census)	Australia
Pacific Islands‡	687	61,102 (1954 est.)	United States
Somalia	198,275	1,269,000 (1954 est.)	Italy

*Mandate. †Northeast New Guinea, Bismarck archipelago, certain of the Solomon Islands. ‡Marshall, Caroline and Mariana Islands, former Japanese mandates.

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brought an increased burden of responsibility to the competent UN organs, particularly the Trusteeship council.

During the 15th session (Jan. 25 to March 28) the reports of the administering authorities on Tanganyika and Ruanda-Urundi were examined in conjunction with the findings of visiting missions. Conditions in Cameroons and Togoland (British) and in Cameroon and Togo (French) also came under review, and the council found time to deal with 198 of the 335 petitions on its agenda. With regard to Ruanda-Urundi the visiting mission had suggested a program leading to self-government within a period of between 20 and 25 years. Belgium, as administering authority, opposed fixing a time limit, both as a matter of principle and also on practical grounds.

Even more vigorous controversy was occasioned in the council by the visiting mission's proposals concerning Tanganyika. It first postulated that a self-governing or independent Tanganyika would inevitably be a state primarily African in character, with a government mainly in African hands. Secondly it urged that, in order to develop “a stronger sense of purpose,” a definite period should be fixed, within which the goal of self-government should be achieved. Impressed with the general progress in the territory, the mission took the view that the period should be shorter than in the case of Ruanda-Urundi. At the council, virtually every major recommendation was rejected by the United Kingdom. In particular, it opposed the idea of a “political timetable.” The debate on this question left the council so divided that seven of the 12 members abstained from voting on the final resolution.

When the council met for its 16th session (June 8 to July 22) Somalia under Italian administration received the chief share of attention. That territory had reached the half-way stage along the road to promised independence in 1960. Altogether the council adopted 35 conclusions and recommendations touching upon all aspects of development. In view of the continued failure of efforts to reach agreement on the frontier to be fixed between Somalia and Ethiopia, the council recommended that the UN secretary general appoint a mediator.

New Zealand, as administering authority for Western Samoa, reported on the representative convention called to consider a constitutional plan for a future self-governing state. The government had agreed to the convention's proposal that there should be a new single legislature and suggested that it should be convened toward the end of 1957.

Many of the 473 petitions considered by the council at its 16th session concerned either French Cameroun or Somalia. One of the two visiting missions appointed was instructed to inquire into the “serious civil disorders” which had recently occurred in the former territory. The second mission was given the responsibility of investigating the special political problems in British Togoland and in French Togo.

The UN general assembly's committee on South-West Africa reported in June that it had found “no significant improvement” during the previous year in the welfare of the native inhabitants of the territory. On June 7 the International Court of Justice, in an advisory opinion, unanimously upheld the vot-

ing procedure adopted by the general assembly in dealing with reports, petitions and other matters concerning South Africa's administration of the former mandated territory.

(L. R. A.)

Trust Territory of the Pacific Islands: see MARSHALL, CAROLINE AND MARIANA ISLANDS.

Tuberculosis. Tuberculin testing was practised more extensively in 1955 than in any previous year. Leona Baumgartner, commissioner of health, New York city, announced that all pupils entering public and 24 Catholic high schools would be given the tuberculin test.

The incidence of reactors varied throughout the world depending upon control programs previously employed. G. Drolet and A. Lowell (New York) assembled percentages of tuberculin reactors at age 15 years in various areas in recent years. In the large cities of India, it was 72 to 77, Poland 67, England (Wales and Scotland) servicemen on entry (18-20 years) 65.6, Korea 60, Formosa urban 60, rural 40, Yugoslavia 59, Tunisia 53, Egypt 52, Mexico 46 to 52, North Africa 51, Ecuador 49, Austria 33, New York (Manhattan, Bronx, Brooklyn) 12, Queensborough 9, United States navy recruits (17-20 years) 10.6, navy and marine corps recruits and midshipmen 11.3 in 1950 and 4.6 in 1954.

The best method of diagnosing pulmonary tuberculosis consisted of testing persons of all ages with tuberculin, making X-ray film inspections of reactors periodically and completing examinations when shadow-casting areas of disease appeared.

The United States public health service announced that in 1953, of 89,000 active or probably active cases newly reported, 78% were in an advanced stage.

Morbidity.—In nations with the largest populations the case rate continued high. C. Mani said that there were probably 2,500,000 open infective cases in India. G. Drolet and A. Lowell assembled case rates in several parts of the world. Between 1947 and 1953 reported cases in Denmark decreased 53%, and the percentage of decrease in other countries during the same period was as follows: Iceland 49, Sweden 47, Germany 45, North Ireland 43, Finland 38, Canada 34, U.S. 29, New Zealand 25, Norway 23, France 16, England and Wales 14, Scotland 12.

Mortality rates decreased precipitously because drugs were available which postponed death for numerous persons. The case rate declined more slowly because of a large reservoir of tubercle bacilli in many persons who previously were well. Among them the annual crop of gross disease evolved just as it had in previous years. If a drug had been available which could have reached and destroyed the tubercle bacilli in the old walled-off areas of disease from which new disease emanates, the case rate could have dropped as rapidly as the mortality rate. Without such a drug, as much gross disease developed among previously infected persons as at any time in history. The decrease in number of cases which did occur was the result of previous control measures which reduced the incidence of infection. The smaller the number of infected persons, the fewer gross areas of disease develop.

Mortality.—G. Drolet and A. Lowell produced graphs showing mortality rates from tuberculosis from 1930 to 1953 in 31 countries. Almost without exception, these graphs showed a precipitous decrease since 1947. The common factor to all which apparently was responsible was antimicrobial drugs.

In the United States from 1942 to 1946 an average of 2,348 children from birth to 15 years died annually of tuberculosis. In 1949 there were 1,581 such deaths, but in 1953 only 700. In the Netherlands J. D. DeHaas said that deaths from tuberculosis in persons up to 19 years decreased from 314 in 1949 to 64 in 1953.

Treatment.—Regular conferences were held on chemotherapy of tuberculosis for the Veterans administration army-navy study. This study, the largest ever undertaken in chemotherapy, included investigations on the effectiveness of new drugs and on methods of administering and efficacy of the older ones. The council on pharmacy and chemistry of the American Medical association authorized publication of an extensive report by D. S. King (New Hampshire) which was an excellent summary of the findings of this prolonged and elaborate study. The Tuberculosis Chemotherapy Trials committee of the British Medical Research council issued its seventh report. This continuing study was establishing important facts as to values of drugs. The Committee on Chemotherapy and Antibiotics of the American College of Chest Physicians reported that there was no generally accepted "optimum" for regimen in chemotherapy in the treatment of tuberculosis. Streptomycin, para-aminosalicylic acid (sodium) and isoniazid were the three most commonly used drugs, but there was no unanimity of opinion as to which combination was most effective. Best results were obtained when two or more drugs were combined and given continuously for a long time, at least a year, even in minimal cases, and in advanced cases a total of 18 months or longer. Several new drugs were studied, but none had passed the experimental stage.

With evidence indicating that antimicrobial drugs administered to recent tuberculin converters protects against tuberculous meningitis, the United States public health service established a large meningitis prophylaxis program among children under two years old in various parts of the United States. The United States Indian bureau planned a similar project among Indian children of the same age.

Indications for surgical removal of tuberculous areas in the lungs were revised with tempering of previous enthusiasm. C. Muschenheim (New York) recommended surgery for those with persistent cavities and positive sputum for six months or longer, but for residual closed lesions there was a trend not to resect. He pointed out that pneumothorax accompanied by drugs should not be completely discarded.

L. D. Eerlander *et al.* (Netherlands) reported on the post-operative course of treatment in segmental resection of 289 persons with tuberculous caseous focuses or cavitation. The follow-up at least six months after surgery revealed that 97.1% had negative sputum. More than 90% had resumed work or were ready to do so. The number of good results decreased with increasing time of observation.

In Denmark, Finland and Sweden segmental resection was not done for minimal tuberculosis save in exceptional cases.

Prevention.—The use of various "vaccines" to prevent tuberculosis continued in many places. The World Health organization published a report on 30,000,000 persons tested with tuberculin and 14,000,000 who received BCG over a three-year period in 23 countries, mostly in eastern Europe, southern Asia, southern Africa, Ecuador and Mexico. The campaign was continued with 90,000,000 people tested and 36,000,000 who received BCG (not yet officially reported) in 30 other countries. The work was done by an international staff of 200 doctors and 300 nurses in co-operation with hundreds of doctors and nurses and BCG technicians of the nations involved at a total cost of about \$10,000,000.

Special Groups and Problems.—J. D. Aronson *et al.* (Philadelphia) reported that on certain Indian reservations 52.8% of children of 5 to 19 years of age reacted to tuberculin in 1936 and 1937 whereas only 23.7% reacted in 1954. The Minnesota department of health reported that in 1937 the tuberculosis death rate among Indians was 16 times that of the general population, but in 1954 no death from tuberculosis occurred among Indians in that state. This phenomenal accomplishment was

attributed to mass X-ray surveys, tuberculin testing of all Indian school children and modern treatment facilities. M. Pollock *et al.* (Illinois) found among mentally ill war veterans a reactivation rate of 31.1 per 1,000 person-years, while the incidence rate was 5.7 per 1,000 person-years among those with no history of tuberculosis. Shock treatment for mental conditions had no deleterious effect on tuberculosis.

Leaving institutions against advice increased partially because of the belief that antimicrobial drugs administered at home were adequate. Dan Morse stated that the greatest defect in the tuberculosis program in Peoria and throughout the state of Illinois was inability to properly control activities of noncooperative cases of tuberculosis who insisted on roaming communities at will, spreading disease to others.

Papers presented before the Belgian Society for Scientific Study on Tuberculosis pointed out that in France bovine tubercle bacilli were found in 2% to 5% of tuberculous patients. This type of tuberculosis was relatively high in England, Scotland and Switzerland, but almost nonexistent in the United States.

J. T. Andres (Switzerland) stated that 18% to 20% of the cattle of Switzerland were infected with tubercle bacilli and that 300,000 reactor animals were still to be destroyed. Of the 9,210,810 cattle tested in the United States, 0.12% reacted to tuberculin. (See also EDUCATION.)

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Tungsten: see MINERAL AND METAL PRODUCTION AND PRICES.

Tunisia. A French protectorate in North Africa, Tunisia lies between Algeria (west) and Tripolitania (east). Area: 48,332 sq.mi. Pop.: (1946 census) 3,230,952; (1954 est.) 3,700,000; 87.6% Moslem and Arabic-speaking (Arabs and Berbers), but including (1946) 239,249 Europeans (143,977 French citizens [many Italian-born] and 84,935 Italians) and 71,543 Jews. Chief towns (1946 census): Tunis (cap.) 364,593, including 119,222 Europeans; Djerba 59,331; Sfax 54,637; Bizerte 39,327; Sousse 36,566. Ruler, Bey Mohammed el-Amin. Prime minister in 1955, Tahar ben Ammar. French representatives in 1955: Gen. Pierre Georges Boyer de Latour du Moulin as resident general and (from September) Roger Seydoux as high commissioner.

History.—Pierre Mendès-France had promised internal autonomy to Tunisia in July 1954, and the Franco-Tunisian conversations in Paris, initiated to implement this promise, came to an end on April 22, 1955. Edgar Faure and Tahar ben Ammar signed a protocol of agreement comprising nine conventions on the following points: Franco-Tunisian association; maintenance of the French public services; economic, financial, technical, administrative and cultural co-operation; control of the southern frontier; French tribunals and mixed tribunals; the establishment of a court of arbitration; French representation on the municipal councils.

The conventions were well received by public opinion in Tunisia, except in Old-Destour circles. Frenchmen of the *Présence Française* movement protested; and their president, Gen. Marcel Rime-Bruneau, was expelled from the country. After a demonstration by 12,000 French people in Tunis, on May 17, *Présence Française* became calmer and most of the French inhabitants seemed to accept the conventions.

On June 1 Habib Bourguiba, who had played an essential role in the conversations, returned from exile and was welcomed by



HABIB BOURGUIBA, Tunisian nationalist leader, receiving a farewell kiss from an enthusiastic follower as his train departed from Paris, Fr., in May 1955. Bourguiba was returning to Tunisia after three years of exile in France

a crowd of hundreds of thousands of Tunisians, come together from all over the country. On June 3 the conventions were signed definitively, and Bourguiba declared: "Tunisian sovereignty has been established in friendship with France."

On July 9 the national assembly in Paris ratified the conventions by an immense majority. On Sept. 6 the economic aid financial convention was signed: Tunisia was to remain in the franc zone, the Tunisian franc staying at par with the metropolitan franc; a Tunisian credit council was set up; and there was to be a customs union between Tunisia and France.

At the end of August General Boyer de Latour left Tunisia and early in September Roger Seydoux was appointed high commissioner for France there. The cabinet responsible for the negotiations resigned, but Tahar ben Ammar reappeared as president of the council in a cabinet of 12 ministers, including five Neo-Destour members and one Jew. On Sept. 21 the bey issued a decree reorganizing the system of government as follows: legislative decrees were to be examined by the council of ministers before receiving the bey's seal; ministers were to be answerable to the bey; the post of secretary-general, formerly reserved for a Frenchman, was to be abolished; most of the functions of administration were to be exercised by the caids; and the civil controllers were to be no more than the high commissioner's delegates.

Prince Sadok, heir to the throne, died on Oct. 1.

Salah Ben Youssef, secretary-general of the Neo-Destour party, returned from Cairo in September and began a campaign against the conventions, which he regarded as "a backward step." On Oct. 31 he was excluded by the directing committee of the party. (See also FRENCH UNION.) (HU. DE.)

Education.—(1953) Primary 211,927; secondary 16,679; vocational 13,411; higher institutes 1,473.

Foreign Trade.—Monetary unit: Tunisian franc=metropolitan franc. In 1955, 350 metropolitan francs=U.S. \$1. (1954) Imports 59,268,000,000 fr., including 44,000,000,000 fr. from France; exports 44,214,000,000 fr.,

including 25,000,000,000 fr. to France.

Production.—(Metric tons, 1954) wheat 606,000; citrus fruit 39,000; olive oil 52,000; grapes for wine 133,000; dates (1953) 28,000. Iron ore (60% metal content) 949,000; phosphate (1953) 1,719,000.

Tunnels. In 1955 new records for fast tunnelling progress were claimed by construction crews in Scotland, Australia and Sweden. All three record claims appeared to be justified as each represented a different size tunnel. In Scotland workers on the 10-ft.-diameter Glenalmond tunnel of the North of Scotland Hydro-Electric board's Breadalbane project claimed a new European record with 428 ft. of progress in seven working days. In Australia a record of 409 ft. of progress in a six-day week was established on the 24-ft.-diameter Eucumbene-Tumut tunnel of the Snowy mountain project. And in Sweden, where extra large tunnels are measured on a square-foot basis, a six-day work week record of 145 ft. was made on a 1,410-sq.ft. heading on the Harresele project.

Of interest is the fact that all three of the records were set on hydroelectric-project tunnels. Major tunnel emphasis in 1955 all over the world centred on hydroelectric projects with water supply, sewer and transportation tunnels not as prominent as previously.

Africa.—Two big hydroelectric projects involving tunnels were in the preliminary stages in Africa in 1955. In Northern Rhodesia the Kafue gorge dam involved a 13½-mi., 20-ft. diameter tunnel. In Egypt the High Aswan dam included six 55-ft.-diameter, 3,600-ft.-long tunnels.

Asia.—The newest hydroelectric project in Asia involving tunnels was the Litani river project in Lebanon. This included the 5½-mi.-long Bisri tunnel and a shorter tunnel to service the Juniye power plant.

In India work continued on the Bahihal tunnel, a 2-mi. bore that would provide an all-weather vehicular link between India and Kashmir.

Europe.—The greatest tunnelling activity in Europe was concentrated in Sweden, with most of the Swedish work on hydroelectric developments. The Harresele—a private power development on the Ume river—had a large discharge tunnel and an underground powerhouse. The powerhouse was 52½ ft. wide, 295 ft. long and 108 ft. high. The discharge tunnel was 49 ft. wide, 59 ft. high and 11,154 ft. long. The 2,691-sq.ft. section of the Harresele discharge tunnel was being driven in two stages. A full-face top heading of 1,410 sq.ft. was proceeding at a record-breaking rate for such large-size tunnels. The best month was May with a 515-ft. advance, and the record-setting week was in June with a 145-ft. advance. The remaining 1,281 sq.ft. of section forming a 26-ft.-high bench was to be removed by wagon drilling and blasting.

Farther down on the Ume river, the Swedish government was undertaking the Stornorrfor's project that included the biggest tunnel ever undertaken. The 2½-mi. discharge tunnel was about 53 ft. wide and 77 ft. high with a net section of 3,875 sq.ft. It was to be excavated in stages with a top heading of 1,720 sq.ft. started in mid-1955. This would be followed by two benches of about 1,100 sq.ft. each with the heading driven in its entirety before benching starts. The Stornorrfor's underground power plant was 60 ft. wide, 400 ft. long and 146 ft. high.

The other big Swedish project was a combination air raid shelter and parking garage in the Stockholm area. This underground structure included a 1,000-ft. tunnel 42 ft. wide and 32 ft. high with 85-ft.-diameter circular rooms at each end and with access tunnels to the surface. It was nearly completed during 1955 and would accommodate 600 cars or 6,000 people, and was capable of taking care of 20,000 people in an extreme emergency.

Big hydroelectric projects were completed in 1955 in Austria and Switzerland. In Austria the Glockner-Kaprun project had

15.6 mi. of tunnel. This work involved one of the world's largest pumped storage projects. In Switzerland the Oberhasle power system had 44 mi. of tunnels.

In England a 2,060-ft. tunnel went into service in 1955 providing vehicular access to the London airport. The tunnel had four 10-ft. vehicular lanes together with cyclist lanes and pedestrian ways.

North America.—Two tunnels in serious trouble in 1954 showed better progress in 1955 but were not completely "out of the woods." The 6.4-mi. Tecolote tunnel near Santa Barbara, Calif., was holed through in January after more than a year's delay caused by hot water up to 116° F. The U.S. bureau of reclamation water-supply bore was being concrete lined but the large quantity of hot water made lining progress slow.

Work on the Koolau mountain traffic tunnel in Honolulu, T.H., was virtually at a standstill for an entire year following the cave-in that killed five men Aug. 14, 1954. After many investigations, a concrete plug was cast across the face of the tunnel and work was restarted, using the pilot drift method rather than the full-face construction method. Responsibility for the cave-in and extra costs involved had not been adjudicated.

In contrast with other areas, hydroelectric tunnels, though substantial in number, do not predominate in North American construction. During 1955 considerable work was under way on sewer, water and vehicular tunnels.

On the west coast three hydroelectric tunnels were started. These were a 24-ft.-diameter, 6¾-mi. tunnel for the Poe project of Pacific Gas and Electric Co.; a 20-ft.-diameter, 5-mi.-long tunnel for the Cheakmus project of British Columbia Electric; and the 12½-ft. horseshoe section, 5½-mi.-long Donnell's tunnel for a group of irrigation districts in central California. The biggest hydroelectric tunnelling work on the east coast was on the Quebec Hydro-Electric commission's Bersimis project. Construction was well under way on a 7½-mi., 31-ft.-diameter tunnel and the project was to have an underground powerhouse 65 ft. wide by 80 ft. high by 565 ft. long.

Water-supply tunnels included the 1.3-mi., 10-ft.-diameter San Juan tunnel for the Metropolitan Water district of southern California, holed through in 1955. Started in 1955 was a system of 6-mi. of water tunnels to connect Chicago's central district filtration plant with the city's water system. Still under way was a 7-mi., 10-ft.-diameter tunnel in Boston, Mass. New York city completed the East Delaware tunnel and called bids for the West Delaware tunnel. The latter included 44 mi. of concrete-lined pressure tunnel 11¼ ft. in diameter. Due to start soon was the 23-mi. Montezuma tunnel under the continental divide, a key feature in a \$98,000,000 water-supply program for Denver, Colo.

Included in the sewer tunnels active in 1955 was a 5,000-ft., 48-in. line in Providence, R.I.; two 30-in.-diameter lines in Cincinnati, O.; a 9,000-ft. tunnel in Edmonton, Alta.; 12,800 ft. of 72-in.-diameter tunnel in Nashville, Tenn.; and 15,300 ft. of 7-ft.-diameter tunnel connecting the La Cienega and San Fernando valley regions of Los Angeles, Calif.

On vehicular tunnels, the 1.5-mi.-long third tube of the Lincoln tunnel in New York was more than half completed. Work started on a 1.7-mi. Baltimore harbour tunnel and work progressed on a 1.5-mi. tunnel under Hampton Roads at Norfolk, Va. In New Orleans, La., construction was under way on two traffic tunnels, the Harvey tunnel and the Belle Chasse tunnel. In California the 1,000-ft.-long, 46½-ft.-wide Waldo tunnel on the Golden Gate bridge approach was completed.

At the corps of engineers Oahe dam near Pierre, S.D., a contract was let for the downstream half of six 3,450-ft.-long, 22-ft.-diameter tunnels. Contracts were already under way for the upstream half of the flood-control bores. The work was being

done by a huge machine with a rotating head that literally chews out the soft ground without using dynamite. (L. L. WE.)

Turbojets and Turboprops: see AVIATION, CIVIL; JET PROPULSION.

Turkey. A republic in the southeastern Balkans and Asia Minor, Turkey is bounded west by the Aegean sea, northwest by Greece and Bulgaria, north by the Black sea, northeast by the U.S.S.R., east by Iran and south by Iraq, Syria and the Mediterranean. Area: 296,185 sq.mi., including 9,256 sq.mi. in Europe. Pop.: (1950 census) 20,947,188, including about 1,600,000 in European Turkey; (1955 census, provisional) 24,111,778. Languages (1950): Turkish 87.3%; Kurdish 8.8%; also Arabic, Greek, Armenian, Georgian and Jewish (Spaniol). Religions (1945): Moslem 98%; Christian 1%; Jewish 0.4%. Chief towns (pop., 1955 census): Ankara (cap.) 453,151; Istanbul 1,214,616; Izmir (Smyrna) 286,310; Adana 172,465; Bursa 131,336; Eskisehir 122,755. President of the republic in 1955, Celal Bayar; prime minister, Adnan Menderes.

History.—The sixth Turkish census carried out on Oct. 23, 1955, indicated that the population had increased by 3,175,254 since 1950 and by 10,463,508 since 1927. The yearly increase since 1950 was 30 per 1,000. Immigration (mainly Turks expelled from Bulgaria in 1951) accounted for about 150,000.

Home Politics.—The vast investments paving the way to prosperity had not created internal harmony and contentment in Turkey. One reason was the hardships created for those with limited incomes as a result of investments and inflation. A second was that civil servants could not adapt themselves quickly enough to the rhythm of the industrial age. Another was the merciless struggle between political parties. The premier's offer of co-operation with the opposition, made in a speech at Izmir (Feb. 15), for the purpose of "safeguarding the survival of democracy in Turkey," did not produce lasting effects.

The government's attitude toward the press had not been consistent; it made the former unpopular without restraining the latter. The government Democratic party also made the error of modifying the press law so that newspapers lost the right to prove their allegations about cabinet members arising out of the latter's official duties. This issue became a popular battle cry of the opposition, and 19 Democratic members signed motions against the official party view. The fourth Democratic convention had to concentrate on maintaining solidarity in its own ranks. The 19 members were expelled from the party and rejected not only the offer to return but also invitations to join one of the two opposition parties. They were busy forming a new Liberty party.

Meanwhile, the underground communist and other organizations took full advantage of the political unrest and economic discontent to prepare for the terrible riots in Istanbul and Izmir on the night of Sept. 6-7. Parliament was convoked and authorized the government to proclaim martial law for six months in Istanbul, Ankara and Izmir. The immediate pretext of the riots was to protest against the Greek attitude in the Cyprus question. The whole operation was a complete success. It was touched off by the planting of a bomb in a house in Salonika where Kemal Ataturk was born. This bomb did no damage, but a photograph showing the house destroyed appeared in the Istanbul press. The aims of the destruction and pillage achieved were to create a split between Turkey and the Christian world. Attacks—unprecedented for 500 years—against churches and cemeteries clearly indicated who had planned the riots. While order was re-established and those responsible were arrested in thousands, a committee of Turkish citizens started to collect donations and distribute them to the victims of the

riots. The Greek flag was rehoisted at Izmir by a member of the cabinet in order to offer a moral satisfaction to Greece.

Foreign Affairs.—Having failed to reach understanding with Egypt and other Arab countries and establish a prowestern security system in the middle east, Turkey turned its initiative in another direction. On Feb. 24, at Baghdad, a Turco-Iraqi defense treaty was signed. From Feb. 13 to March 13 Bayar, the president of Turkey, visited Pakistan. On April 14 Great Britain joined the Baghdad treaty. Pakistan signed it on Sept. 23 and Iran on Oct. 11 (following the visit of Bayar in September). A Middle Eastern Defense council with members of ministerial rank was formed at Baghdad on Nov. 22.

The president and premier of the Lebanese republic visited Turkey in April. Bayar returned the visit in June. In November Bayar returned a visit of the king of Jordan in 1954.

The Balkan alliance passed in 1955 through a serious crisis. The visit paid by Menderes to Rome (Jan. 30 to Feb. 3) to prepare for Italy's joining the Bled treaty (Aug. 9, 1954) failed because of Greek and Yugoslav objections. Menderes went to Yugoslavia (May 3-9) to ascertain its position toward the Balkan alliance on the eve of N. A. Bulganin's and N. S. Khrushchev's visit to Belgrade. The new relationship established between Moscow and Belgrade weakened the military importance of the Bled treaty, but the main blow to both the Balkan alliance and to the stability of the southern flank of the North Atlantic Treaty organization arose from the deterioration of Turkish-Greek relations as a result of the Greek claim of self-determination for Cyprus.

On the eve of the London conference Menderes stated that Cyprus, a Turkish possession for 350 years, given in trust to Great Britain to enable it to guarantee the security of Turkey, should revert to the original owners if the British should ever decide to retire from the island. He added that the Turks living there would never be allowed to fall under Greek domination after the sad experiences of the Turkish community in western Thrace. The London conference, which started on Aug. 29, fortified the British-Turkish position. On the last days of the conference, however, the riots in Istanbul and Izmir darkened the entire issue. (See CYPRUS; GREECE.)

Economic Affairs.—Foreign and Turkish critics claimed that it was impossible to continue the policy of industrialization at

TURKISH FARMER AND SON leading their sheep past the new Hilton hotel opened in Istanbul, Turk., in 1955



its present speed and that the country was facing bankruptcy. An attempt to obtain a loan of \$300,000,000 from the United States failed in June 1955. Meanwhile, long-term prospects for the future continued good: 17 foreign oil companies applied for 108 permits for drilling in certain areas at their own risk; a state refinery was completed to handle crude petroleum found at Raman. It would cover the fuel requirements of 19 out of 66 Turkish provinces and provide all material necessary for road surfacing. Rich wolfram deposits were found near Bursa and iron ore in various parts of the country. It was hoped that the new thermic and hydraulic power stations and the use at home of good quality soft coal would enable Turkey to become a hard coal exporter. (See also NORTH ATLANTIC TREATY ORGANIZATION.)

(A. E. Y.)

Education.—State schools (1954; private schools in parentheses): primary 17,928, including 2,220 three-year village schools (130), pupils 1,730,506 (19,011), teachers 33,250; junior high 465 (42), pupils 87,299 (8,700); secondary 79 (34), pupils 28,707 (4,071), teachers (including junior high) 6,291; vocational 190, pupils (1952–53) 38,500, excluding schools of agriculture, fine arts, hygiene and other professional schools which in 1951–52 numbered 28, with 4,400 pupils. Teachers' training schools 34, pupils 16,346, teachers 745. Institutions of higher education 16, students 24,700 (of which, 2 universities with 5,700 students.)

Finance and Banking.—Monetary unit: Turkish pound or lira, with an official rate of £T2.80 to the U.S. dollar. Budget (1955–56 est.): revenue £T3,091,266,397, expenditure £T3,091,262,815; total public debt (1953) £T2,304,000,000 of which at March 31, 1954, external debt was £T734,000,000. Currency circulation: (Dec. 1954) £T1,527,000,000. (June 1955) £T1,680,000,000. Bank deposits: total (Aug. 1954) £T2,486,000,000; (central bank only, Aug. 1954) £T419,000,000. (May 1955) £T557,000,000. Gold and foreign exchange: (Dec. 1954) U.S. \$205,000,000, (July 1955) U.S. \$216,000,000.

Foreign Trade.—(1954) Imports £T1,339,000,000, exports £T938,000,000. Main sources of imports: Germany 17%; France 7%; other continental European Payments union countries 15%; U.S. and Canada 15%; U.K. 9%. Main destinations of exports: Germany 18%; France 3%; other continental E.P.U. 16%; U.S. and Canada 18%; U.K. 7%. Main exports (1953): tobacco 22%; cotton 20%; wheat 15%.

Transport and Communications.—Roads (1953) 44,900 km. Motor vehicles in use (1953) cars 27,600, commercial vehicles 33,500. Railways (1954): 7,700 km.; passenger-km. 3,892,836,000; freight, ton-km. 3,647,000,000. Shipping (July 1954): merchant vessels of 100 gross tons and over 274; total tonnage 488,000. Air transport (state air lines, 1954): km. flown 3,372,000; passenger-km. 50,700,000; freight, ton-km. 1,308,000. Telephones (Jan. 1954): 113,609. Radio receiving sets (1954): 828,042.

Agriculture.—Main crops (metric tons, 1954, 1955 in parentheses): wheat 5,010,000 (6,530,000); barley 2,400,000; oats 325,000; maize 914,000; rye 470,000; potatoes 1,000,000; millet 88,000; tobacco 93,600 (107,500); cotton, lint 142,000; cottonseed 260,000; linseed 15,000; sunflower seed 120,000; sesame 48,000; soybeans 4,000; broad beans 37,000; chick-peas 75,000; lentils 64,000; hemp fibre 12,100; oranges and tangerines, etc., 111,000; lemons and limes, etc., 21,000; grapes 1,871,000; raisins (1952) 121,400; dry beans (1953) 112,000. Production (metric tons, 1954): beet sugar, raw 199,000; olive oil 50,000; wool 21,000; meat (1952): beef and veal 43,614 (including buffalo meat, 3,901), mutton and lamb 49,763, pork (1951) 110,000. Wine 7,488,000 l. Livestock: (Sept. 1954) cattle 10,759,000; (Sept. 1953) sheep 26,534,000, chickens 22,395,000, turkeys 1,301,000, horses 1,216,000, mules 117,000, asses 1,726,000, buffaloes 1,013,000.

Industry.—Fuel and power (metric tons, 1954): coal 5,610,956; lignite 2,086,572; crude oil 59,000; electricity 1,292,400,000 kw.hr. Raw materials (metric tons, 1954): iron ore (65% metal content) 476,628; pig iron 195,684; crude steel 168,888; copper, smelter 25,188; chrome ore 523,632; manganese (48%–50% metal content) 47,064; sulphur 10,020; salt (1953–54) 349,000. Manufactured goods (metric tons, 1954): cement 707,200; superphosphates 20,580; tobacco 26,268; cotton yarn (state factories only) 22,836, (private, 1952) 16,728; woven cotton fabric (state only) 131,988, (private, 1952) 65,724.

Turkeys: see LIVESTOCK.

TVA: see TENNESSEE VALLEY AUTHORITY.

Twentieth Century Fund: see SOCIETIES AND ASSOCIATIONS, U.S.

Twining, Nathan Farragut

(1897–), U.S. air force officer, was born at Monroe, Wis., on Oct. 11 and was graduated from the U.S. Military academy at West Point, N.Y., in 1919. Trained for the infantry, he later transferred to the U.S. air corps and studied at the corps's tactical school in 1935–36 and at the Command and General Staff school, Ft. Leavenworth, Kan., in 1936–37.

During World War II Twining served in the Pacific as com-

mander of the 18th air force in the Solomon Islands in 1943, in the Mediterranean area as commander of the 15th air force in Italy in 1944–45, and again in the Pacific in 1945 as commander of the 20th air force based in the Marianas.

In 1950, after serving as commander in chief of the Alaskan military defenses, Twining was appointed vice-chief of staff, U.S. air force, and was promoted to the rank of four-star general. In 1952 he became head of the strategic air command. In 1953 Pres. Dwight D. Eisenhower named him chief of staff, U.S. air force.

During 1954 and 1955 he repeatedly warned of the threat to the U.S. of the massive air power of the Soviet Union and Communist China. He asserted that nuclear weapons would be decisive instruments in any future conflict, and that the United States should use all weapons, including atomic ones, to retaliate against aggressors.

On May 25, 1955, Pres. Dwight D. Eisenhower named Twining to his second term as chief of staff of the air force.

Uganda: see BRITISH EAST AFRICA.

Ulcer: see STOMACH AND INTESTINES, DISEASES OF THE.

Unemployment: see CENSUS DATA, U.S.; EMPLOYMENT.

Unemployment Insurance: see SOCIAL SECURITY.

UNESCO (United Nations Educational, Scientific and Cultural Organization): see EDUCATION; LIBRARIES.

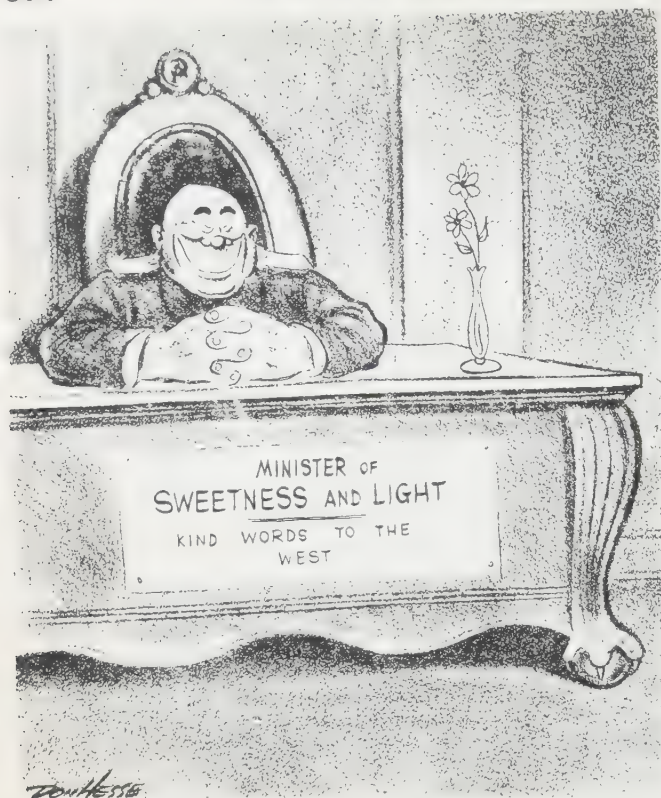
Union of American Republics: see ORGANIZATION OF AMERICAN STATES.

Union of South Africa: see SOUTH AFRICA, THE UNION OF.

Union of Soviet Socialist Republics.

This federation of soviet socialist republics is a state covering parts of eastern Europe and of northern and central Asia. Area: (1939) 8,173,557 sq.mi.; (1946) 8,598,678 sq.mi., including 1,969,110 sq.mi. (23%) in Europe. Pop.: (1939 census) 170,467,186; (1954 est.) 209,700,000, including 144,700,000 (69%) in Europe. Nationalities (1946): Russians about 51.3% of pop., Ukrainians 17.4%, Byelorussians 3.5%; no other nationalities (all non-Slavonic and most of them non-European) reached 3% of the total, the most important being the Turkic-speaking Uzbeks (2.85%). Religion: Russians, Ukrainians, Byelorussians and Moldavians (Rumanians) are Greek Orthodox; Lithuanians are Roman Catholic; Latvians, Estonians and Karelo-Finns are mainly Lutheran; Georgians have their own autocephalous Orthodox Church; Armenians are Christian; the indigenous inhabitants of Azerbaijan, the five central Asian soviet socialist republics and many autonomous republics (Tatar, Bashkir, Daghestan, etc.) are Moslem (number, 1939 est., 24,000,000); Buryats and Kalmyks are lamaist Buddhist. Chief towns (pop., 1948 est.): Moscow (cap.) 4,500,000; Leningrad 3,300,000; Kiev 900,000; Kharkov 900,000; Gorki 900,000; Baku 800,000; Novosibirsk 750,000; Kuybyshev 600,000; Sverdlovsk 600,000; Odessa 600,000; Tashkent 600,000; Tbilisi (Tiflis) 540,000; Rostov-on-Don 500,000; Dnepropetrovsk 500,000. First secretary of the Communist Party of the Soviet Union, N. S. Khrushchev (*q.v.*); chairman of the presidium of the supreme soviet of the U.S.S.R., Marshal K. E. Voroshilov; chairmen of the council of ministers in 1955: G. M. Malenkov and (from Feb. 8) N. A. Bulganin (*q.v.*).

History.—Both the domestic and the foreign policies of the Soviet regime reached during 1955 a turning point in their development since the death of J. V. Stalin in 1953. At home the change was symbolized by the replacement in February of G. M. Malenkov as premier by Marshal N. A. Bulganin. This was accompanied by the abandonment of the relatively moderate policy pursued by the government since Stalin's death and a reassertion of orthodox communist doctrines and objectives. In



"NEW KREMLIN OFFICIAL," a 1955 cartoon by Hesse of the St. Louis Globe-Democrat (Mo.)

foreign affairs the central event was the Geneva conference of the heads of the Big Four Powers, which was thought to mark the end of the "cold war" between east and west and the introduction of a new period of "peaceful coexistence." Before the end of the year, however, it was apparent that changes in the manner of Soviet diplomacy did not mean that it would be any less active in the pursuit of long-term communist ends.

Domestic Affairs.—Malenkov, who had succeeded Stalin in March 1953, submitted his resignation to the supreme soviet meeting on Feb. 8. The reasons he gave for his action (lack of administrative experience and his responsibility for the unsatisfactory state of agriculture) did not correspond with the known facts of his career. It seemed more probable that his removal was connected with the restatement of economic policy that took place at the same time. The production of consumer goods, upon which Malenkov had laid great stress, was declared to be secondary to the continued rapid expansion of heavy industry. This was the policy proclaimed by Bulganin, who became premier. Malenkov remained a deputy premier and a member of the party presidium and was made minister for electric power stations.

The principle of collective responsibility for the leadership of the country was maintained and stressed throughout the year. The supreme policy-making body, the presidium of the party central committee, was increased in size from 9 to 11 members by the addition in July of A. I. Kirichenko, the first secretary of the Ukrainian Communist party, and M. A. Suslov, a member of the secretariat of the Communist Party of the Soviet Union (C.P.S.U.). The number of secretaries of the central committee was increased to five by the addition of A. B. Aristov, N. I. Belyayev and D. T. Shepilov. N. M. Shvernik, for some time chairman of the presidium of the supreme soviet and latterly chairman of the Profsoyuz or All-Union Central Council of Trade Unions, was not seen in public for the greater part of the year. P. K. Ponomarenko was appointed ambassador in Poland. Both these men appeared to have lost their places on

the presidium. N. N. Shatalin, formerly a secretary of the central committee, disappeared altogether.

Changes also took place in the composition of the council of ministers and its presidium, or cabinet. The number of first deputy premiers, who, with the premier, comprise the presidium, was increased from two (V. M. Molotov and L. M. Kaganovich) to five by the promotion of A. I. Mikoyan, M. G. Perukhin and M. Z. Saburov. The number of plain deputy premiers was increased from four to eight.

Despite the emphasis on collectivity, Bulganin, as head of the government, and N. S. Khrushchev, as first secretary of the C.P.S.U., received noticeably greater publicity than their colleagues. They went, as the highest representatives of the Soviet state, on several missions together. Molotov was obliged to indulge in some ideological "self-criticism" in October, but continued to act as the regime's chief diplomatist and spokesman on foreign affairs.

The most important policy statements were those made at the session of the supreme soviet held in February and at the January and July plenary meetings of the central committee. The supreme soviet session was preceded by a serious dispute inside the party about the relative importance to be attached to heavy industry on the one hand and consumer goods industries on the other. Bulganin declared that previous excessive emphasis on light industry had been mistaken and that the government would continue to expand the capital goods industry at a greater speed than the rest of the economy. This remained the central theme of internal propaganda throughout the year.

The failure of agricultural production to keep pace with the demands of an increasing population continued to preoccupy the authorities. The January party plenary meeting was called to deal with the slow progress in grain and livestock production and called for a substantial increase in the efficiency of the older grain-producing farms, the reclamation by 1956 of a total of 75,000,000 ac. of virgin and neglected land, the increase of the total grain harvest to 160,000,000 tons in five or six years (as compared with the original aim of 186,700,000 tons planned for 1955) and the extension of the area under maize (corn) to 70,000,000 ac. by 1960. Khrushchev emerged as the leading advocate of the cultivation of maize as a means of solving the country's food problems. The July plenary meeting recorded some progress along the lines laid down in January. But unfavourable weather conditions militated against a good harvest, and there was evidence in the autumn that the government was far from satisfied with the results of the year's efforts.

Union of Soviet Socialist Republics

Republic	Capital	Area (sq.mi.)	Population (1954 est.)
Russian S.F.S.R.	Moscow	6,523,524*	119,700,000
Ukraine	Kiev	232,618	44,100,000
Byelorussia	Minsk	80,154	9,300,000
Uzbekistan	Tashkent	157,336	6,300,000
Kazakhstan	Alma-Ata	1,063,242	7,200,000
Georgia	Tbilisi (Tiflis)	29,488	3,600,000
Azerbaijan	Baku	33,089	3,300,000
Lithuania (a.v.)	Vilnius (Wilno)	25,174	3,000,000
Moldavia	Chisinau (Kishinev)	13,050	2,700,000
Latvia (a.v.)	Riga	24,903†	2,100,000
Tadzhikistan	Stalinabad	55,058	1,800,000
Kirghizia	Frunze	76,023	1,800,000
Armenia	Erivan	11,506	1,500,000
Turkmenistan	Ashkhabad	187,181	1,500,000
Estonia (a.v.)	Tallinn (Reval)	17,413‡	1,200,000
Karelo-Finnish S.S.R.	Petrozavodsk	68,919	600,000
		8,598,678	209,700,000

*Excluding the Crimea, from Feb. 19, 1954, part of the Ukraine.

†Before 1940 the area of Latvia was 25,395 sq.mi.

‡Before 1940 the area of Estonia was 18,359 sq.mi.

Source: Areas are taken from the *Bolshaya Sovetskaya Entsiklopedia: Soyuz Sovetskikh Sotsialisticheskikh Respublik* (Moscow, 1948). The order, as in the original, is according to the number of population.

In July Bulganin directed the party's attention to the urgent necessity for increasing the general efficiency of Soviet industry. In a report to the central committee he criticized the workings of individual plants, whole industries and the planning of the

industrial economy as a whole. He compared it unfavourably with the working of "capitalist" industry, and declared that, unless steps were taken to increase the productivity of labour, the country would be confronted with a serious manpower shortage. Among the measures taken to remedy the situation was the appointment of L. M. Kaganovich, the country's leading industrial administrator, to head a new government committee on labour and wages. V. A. Malyshev, a deputy premier, was put in charge of a similar committee dealing with the introduction of "new technology." In May the central economic planning body, Gosplan, was divided into two sections, one for long- and the other for short-term planning. Several delegations of industrial experts visited western Europe and the United States to study production methods. During the year it was announced that the fifth five-year plan had been completed in four years and three months and that the directives for the sixth plan would be announced at the party congress in Feb. 1956.

In September the presidium of the supreme soviet announced an amnesty for Soviet citizens who "either through lack of courage or through ignorance collaborated with the occupying forces" during World War II. The amnesty also applied to Soviet citizens still living abroad who had served in the German armed forces during the war. They were invited to return to the U.S.S.R. The repatriation campaign was intensified during the year and assisted by a new radio station which was concerned only with making appeals in this direction.

The general political atmosphere in the Soviet Union remained comparatively relaxed and there was no resumption of active police terror. Appeals to respect "socialist legality" were frequent and indicated that the disciplinary agencies in the state were being restrained. Propaganda against drunkenness and various forms of immorality was intensified. The congress of Soviet writers, which took place at the end of 1954, was notable for the reassertion of the party's ideological control over the arts, and there was no evidence during 1955 that this control had been reduced.

Armed Forces.—With Bulganin's appointment as premier his place as minister of defense was taken by Marshal G. K. Zhukov, the country's leading professional soldier. This was followed in March by the appointment of six new marshals of the Soviet Union (the highest military rank), thus raising the total number to 17. Two new air marshals and two marshals of artillery were also appointed. A number of changes made in the commands of military districts indicated that a thoroughgoing reorganization of the general staff took place during the year. Marshal Zhukov was a member of the Soviet delegation to the Geneva conference in July. Marshal I. S. Koniev was appointed in May to command the military forces of the new eastern European treaty organization.

The 1955 budget revealed an increase in the admitted military allotments from 17.8% to 19.8% of total expenditure. Government and military leaders frequently claimed that the Soviet armed forces were equipped with the most up-to-date weapons. The annual air display in July provided evidence that advanced types of intercontinental bombers and supersonic fighters were already in production.

In August the government announced its decision to reduce the total size of the armed forces by 640,000 men before the end of the year. This gesture was widely advertised as evidence of the Soviet government's peaceful intentions and was copied by the satellite governments. It appeared, however, to reflect primarily an increasingly urgent demand for manpower in farming and industry.

In January the Soviet government announced that it was ready to assist the governments of eastern Europe in the construction of plants for the generation of electric power by atomic

means. It depicted itself as the principal champion of the peaceful uses of atomic energy and took part in the conference devoted to that subject which was held in Geneva in August. In March the government allowed it to be known that Bruno Pontecorvo, the atomic physicist of British nationality who disappeared in 1950, was in Moscow and allowed him to meet foreign correspondents.

Foreign Affairs.—During the first half of the year the Soviet government concentrated on making and advertising a number of inexpensive concessions in foreign affairs which were calculated to convince the western powers of the sincerity of the Soviet desire to live at peace with the rest of the world. Among such "concessions" were the agreement to sign the Austrian peace treaty and the restoration of normal relations with Yugoslavia. These moves made possible the holding in July of the conference of the heads of the Big Four Powers in Geneva, at which the Soviet leaders—Bulganin, Khrushchev, Molotov and Zhukov—entered into direct negotiations with the leaders of the western world for the first time since World War II. Though the meeting produced no agreement on major international problems, it was noted that the Soviet Union had abandoned the more abusive forms of antiwestern propaganda. Such reassurance as had been afforded by Geneva was largely destroyed, however, by continued Soviet intransigence on the question of German unity and later by the government's direct intervention in middle eastern affairs.

The reunification of Germany remained the central problem. In the early months of 1955 the Soviet government campaigned vigorously for the nonratification of the London and Paris agreements to bring the German Federal Republic into the North Atlantic Treaty organization. When this failed Moscow summoned a conference in Warsaw of the seven communist countries of Europe (which had already had a preliminary meeting in Moscow in Nov. 1954), concluded with them a mutual aid defense treaty and set up a joint military command with headquarters in Moscow. Following the failure of the Geneva conference to make progress on the German question, the Soviet government entertained delegations from western and eastern Germany in Moscow. It reasserted its support for the eastern German communist regime and persuaded the western German government to enter into diplomatic relations with itself in exchange for the release of German prisoners of war still in Russian hands. It remained Soviet policy to emphasize the existence of two separate German states which alone could bring about German unity.

The conclusion of the Warsaw treaty on May 14 was an indication of the firmer grip exerted by the Soviet government over the satellite countries. Economic integration proceeded apace. The acceptance at Geneva of Bulganin's refusal to permit any discussion of the status of the political regimes in eastern Europe appeared also as acceptance of Soviet domination of that area.

Outside the area of its direct influence it appeared to be the Soviet government's desire to create a group of neutral states not unfriendly toward the U.S.S.R. and not directly involved in western organizations. Thus the conclusion of the Austrian treaty was made conditional on a declaration of permanent neutrality on the Swiss pattern. Great pressure was exerted on Finland, whose president visited Moscow in September, to strengthen its ties with the U.S.S.R., though remaining non-communist. The restoration of normal relations with Marshal Tito's regime in Yugoslavia, which was brought about during a visit to Belgrade by Bulganin and Khrushchev in May, was not accompanied by efforts to return Yugoslavia to satellite status. During the official visits to Moscow of the Indian prime minister, Jawaharlal Nehru, in June and the Burmese prime minister, U Nu, in October, the Soviet leaders stressed their willing-

ness to maintain friendly relations with political systems different from their own.

Great efforts were made to extend contacts with noncommunist countries through their parliaments. Among the parliamentary delegations which visited were those from India, Sweden, France, Syria, Yugoslavia, Belgium, Japan and Luxembourg. In June members of the supreme soviets of the U.S.S.R., the Ukraine and Byelorussia decided to form parliamentary groups and join the Inter-Parliamentary union, whose annual conference they attended. The Soviet Union began to play a larger part in various international organizations, such as the International Labour organization and the various UN specialized agencies, which it had boycotted in the past.

The restoration of friendly relations with the United States was followed by an exchange of official agricultural delegations in July. The U.S. visitors were allowed to inspect Soviet farming methods more closely than ever before, and their outspoken comments and criticisms were well received. Delegations were also exchanged with Great Britain, and there was an appreciable increase in the number of sporting and cultural exchanges.

Soviet relations with Communist China remained unchanged and outwardly very friendly. Talks were started for the resumption of normal relations with Japan, but made little progress. On April 16 the Soviet ministry of foreign affairs issued a special and unexpected statement on the situation in the middle east. It protested against steps being taken to involve countries of this area in western defense arrangements and said that the Soviet government could not remain indifferent to the situation arising, which, it said, had "a direct bearing on the security of the U.S.S.R." It called upon the middle eastern countries not to enter military blocs and promised that it would be favourably disposed toward any government which took steps to preserve its independence. This statement, which was not evoked by any particular event, was taken as a formal announcement of Soviet intentions to intervene directly in the affairs of the middle east.

With Iran the government reached agreement on outstanding financial problems and extended an invitation to the shah to visit the U.S.S.R. In July D. T. Shepilov, chief editor of *Pravda* and secretary of the C.P.S.U., visited Cairo. In August an invitation was extended to the Egyptian premier, Lieut. Col. Gamal Abdel Nasser, to visit Moscow. At the beginning of October Nasser announced that he had reached agreement with the Soviet and Czechoslovak governments for the supply of arms to Egypt. Along with this increased political interest in the middle east and Asia went offers to extend commercial relations. During 1955 the Soviet government took part in 17 international trade fairs.

Molotov, the foreign minister, led the Soviet delegation to the second Geneva conference (*q.v.*) and maintained his government's obdurate stand on the German question. (See also ANT-ARCTICA; ATOMIC ENERGY; COMMUNISM; EASTERN EUROPEAN ECONOMIC PLANNING; RUSSIAN LITERATURE; UNITED NATIONS.)

(D. FD.)

Education.—Schools (1954–55 official estimates): nursery, pupils 7,000,000; primary 200,000, pupils 29,000,000; secondary 23,000, pupils 10,000,000; vocational, pupils 8,700,000; adult education, pupils 2,000,000; universities 31, institutions of higher education 856, students 1,800,000, including 600,000 taking correspondence courses.

Finance.—Budget: (1954 estimates) revenue 572,542,327,000 roubles, expenditure 562,801,956,000 roubles; (1955 estimates) revenue 590,192,622,000 roubles, expenditure 563,482,491,000 roubles. Investments from the state budget in the national economy in 1954 amounted to 216,359,950,000 roubles and, in addition, from the enterprises' and economic organizations' own funds, 110,349,000,000 roubles. In 1955 the respective figures were 222,349,364,000 roubles and 112,886,280,000 roubles. External value of the rouble, high and fictitious: U.S. \$1 = 4 roubles.

Foreign Trade.—(In U.S. dollars; percentage of world trade in parentheses.) Imports (1950) \$1,049,000,000 (1.8%); exports (1950) \$1,141,000,000 (1.9%). In 1953 the total Soviet foreign trade, imports and exports together, was estimated at \$5,750,000,000. Main sources of imports

(1950): European people's democracies (Bulgaria, Czechoslovakia, Hungary, Poland and Rumania) 60.6%; eastern and western Germany 14.5%; United Kingdom 3%; United States 0.09%. Main destinations of exports (1950): European people's democracies 71.3%; Germany 8.3%; United Kingdom 7.5%; United States 3.5%. Soviet trade with 17 western European countries (1953, in U.S. dollars): exports \$331,100,000; imports \$311,300,000.

Transport and Communications.—Railways (1954): 117,000 km.; rail transport accounted for 83% of all goods traffic. Shipping (July 1954): vessels of 100 gross tons and over 1,113; gross tonnage 2,381,000. Motor vehicles in use (1953 estimate): cars 300,000; commercial 2,200,000. Telephones (1936, last figure published): 861,200.

Agriculture.—Main crops (metric tons, 1950; latest estimates or plan in parentheses): grain 124,700,000 (1954: 135,000,000); sugar beets 24,300,000 (1955 plan: 40,000,000); potatoes (1940) 84,200,000 (1955 plan: 147,800,000); cotton, unginned 3,800,000 (1955 plan: 6,300,000). The figures given for Soviet crops did not represent the actual amount harvested but a "biological" estimate determined in the field prior to harvest. Livestock (1953; 1956 plan in parentheses): cattle 56,600,000 (68,600,000); pigs 28,500,000 (36,200,000); sheep and goats 109,600,000 (160,400,000); horses 15,300,000.

Industry.—Heavy industry production (metric tons except as noted; 1955 estimates based on speeches by N. A. Bulganin of July 4, 1955, and of L. M. Kaganovich of Nov. 6, 1955): coal (including lignite) 390,000,000; crude petroleum 70,000,000; electricity 166,200,000,000 kw.hr.; pig iron 33,000,000; steel 45,000,000; cement 22,900,000. Textile and footwear production (1954 estimates): cotton fabrics 5,480,000,000 m.; woollen fabrics 242,000,000 m.; silk fabrics 520,000,000 m.; leather shoes (1950) 205,000,000 pairs. Foodstuffs production (metric tons except as noted, 1950; 1955 plan in parentheses): meat 1,275,000 (2,550,000); fish, catch, 1,778,000 (3,190,000); butter, dairy produced, 325,000 (560,000); cheese, dairy produced, 48,000 (135,000); vegetable oil 775,000 (1,500,000); margarine 195,000 (450,000); sugar 2,515,000 (4,800,000); beer 12,800,000 (23,200,000) hl.; wine 1,430,000 (3,448,000) hl.

Unitarian Church.

During 1955 churches and fellowships reported to the American Unitarian association a total of 96,700 members, a 4.3% increase over the previous year. The first biennial conference of the Council of Liberal Churches (Universalist-Unitarian) was held in Detroit, Mich., Aug. 24–29. The delegates voted, pending ratification by the annual meeting of the American Unitarian association in May 1956, to set up a commission to present plans for merger or alternative relationships to be submitted to a plebiscite of the denominations.

The 130th annual meeting of the American Unitarian association, held in Boston, Mass., in May 1955, passed resolutions urging the churches to work for racial integration and to oppose evasion of the supreme court decision against segregation in the schools; condemning censorship and protesting injustices in the federal security program and in the Selective Service act which had been interpreted to demand religious professions for registration as a conscientious objector; calling for protection of lands held in the public domain; asking for fair treatment by the government of American Indians; requesting adequate support for work in mental health; and calling for continued and increased backing for the United Nations. A Committee to Study the Whole Matter of Resolutions reported (and its recommendations were adopted) that "The present climate of public opinion adverse to free speech, heretical views and diversity of opinion" makes it important "to permit controversial resolutions to be presented to the Annual Meeting. To abandon the practice now, could be interpreted as a move of caution and expediency." The committee asked that resolutions be limited to "those with a clearly substantial ethical, moral or religious content" but pointed out that Unitarians as a whole believe that "religion affects our daily life," and that work for the kingdom of God requires action in "the field of public affairs."

(J. H. L.)

United Church of Canada.

The United Church of Canada, which in 1925 united the Presbyterian Church in Canada, the Methodist Church (Canada) and the Congregational Churches in Canada, reported for 1954 a membership of 894,556, which represented an increase over 1953 of 24,655 and an increase of 294,034 since 1925. There were, in 1955, 6,222 preaching places and 2,200,543 persons under pastoral oversight. The Sunday school enrolment

was 636,664 in 5,257 schools. There were three universities, eight theological colleges and eight secondary schools, and a total of 592 candidates preparing for the ministry. During the year, 93 graduates were ordained.

The church owned \$227,195,352 worth of property. Givings to the missionary and maintenance fund were \$4,248,641 during 1954, an increase of \$415,699. Total givings for all purposes were \$36,735,641, an increase of \$3,267,999.

The church appointed 17 missionaries to the overseas work in 1954, to implement the workers in Angola, West Africa, Northern Rhodesia, India, Japan, Korea and Trinidad.

Projects completed during the year included a new training school for women workers, the financial campaign for which was carried through by the church women; two new homes for senior citizens, making a total of 12 such institutions; a complete revision of the Sunday school curriculum from nursery school to adult classes; and a new missionary boat for the west coast fleet. In the period 1948-54, 200 new churches and halls had been built, as well as 90 manses. New work was started in city suburbs and mining areas such as Manitowaning, Ont., and Chibougamau, Que., following the trend in population, and also in the Yukon, when work abandoned years before was reactivated because of the influx of people to the area.

The general council reorganized the administration of the church with a new department, information and stewardship, made up largely of representatives selected from various church boards. It also launched a four-year National Evangelistic campaign, two years to be given to preparation and rededication and two years to winning nonchurch members to the religion of Jesus Christ. (See also CHRISTIAN UNITY.) (A. J. WN.)

United Fund: see COMMUNITY CHEST.

United Kingdom: see GREAT BRITAIN & NORTHERN IRELAND, UNITED KINGDOM OF.

United Nations. When the members of the United Nations assembled in San Francisco, Calif., on June 20, 1955, to celebrate the tenth anniversary of the signing of the charter, they could do so with the knowledge that the organization had not only survived ten years of trial but also had made substantial contributions to the peace, security and welfare of the world and was currently recognized as having an important role to play in international relations.

Membership and Representation.—The deadlock over the admission of new members into the United Nations which had existed since 1950 was broken in 1955 when 16 countries were voted in by the general assembly. Up to this time the membership had consisted as follows: Afghanistan, Argentina, Australia, Belgium, Bolivia, Brazil, Burma, the Byelorussian Soviet Socialist Republic, Canada, Chile, China, Colombia, Costa Rica, Cuba, Czechoslovakia, Denmark, the Dominican Republic, Ecuador, Egypt, El Salvador, Ethiopia, France, Greece, Guatemala, Haiti, Honduras, Iceland, India, Indonesia, Iran, Iraq, Israel, Lebanon, Liberia, Luxembourg, Mexico, the Netherlands, New Zealand, Nicaragua, Norway, Pakistan, Panamá, Paraguay, Peru, the Republic of the Philippines, Poland, Saudi Arabia, Sweden, Syria, Thailand, Turkey, the Ukrainian Soviet Socialist Republic, the Union of South Africa, the Union of Soviet Socialist Republics, the United Kingdom, the United States of America, Uruguay, Venezuela, Yemen and Yugoslavia.

On Dec. 13 a resolution was presented to the Security council that called for the admission of 18 countries: Albania, Austria, Bulgaria, Cambodia, Ceylon, Finland, Hungary, Republic of Ireland, Italy, Japan, Jordan, Laos, Libya, Nepal, People's Republic of Mongolia, Portugal, Rumania and Spain. The delegate from Nationalist China proposed the addition to these of



TENTH ANNIVERSARY ASSEMBLY of the United Nations listening to an address by U.S. Secretary of State John Foster Dulles at San Francisco, Calif., in June 1955

the South Korean and South Vietnam republics. The delegate from the U.S.S.R. vetoed the latter two, whereupon the delegate from Nationalist China vetoed the People's Republic of Mongolia, and the Soviet delegate then vetoed Austria, Cambodia, Ceylon, Finland, Ireland, Italy, Japan, Jordan, Laos, Libya, Nepal, Portugal and Spain. The remaining four, Albania, Bulgaria, Hungary and Rumania, were then defeated by a vote of the Security council. Thus it seemed that the stalemate would be maintained.

However, the next day the Soviet delegate announced that his government would agree to a revised list which would omit the People's Republic of Mongolia and Japan, and on Dec. 14 the general assembly voted to approve the admission of the 16 new countries. Thus, Albania, Austria, Bulgaria, Cambodia, Ceylon, Finland, Hungary, Republic of Ireland, Italy, Jordan, Laos, Libya, Nepal, Portugal, Rumania and Spain became the newest members.

No change occurred during 1955 in the representation of China in the organs of the UN. Though a number of members, including the U.S.S.R. and India, argued in the tenth general assembly that the Chinese Nationalist government on Formosa was not representative of the Chinese people and that the exclusion of representatives of the People's Republic of China seriously handicapped the UN in its work, the assembly voted to postpone any consideration of the Soviet proposal to accept representatives of the People's republic as representing China.

Organization and Meetings.—The ninth session of the general assembly which had convened on Sept. 21, 1954, adjourned on Dec. 17. The tenth session opened on Sept. 20, 1955. José Maza of Chile was elected president. The assembly had on its agenda a number of items of major importance, including the peaceful use of atomic energy, the regulation of armaments, the holding of a charter review conference, a variety of colonial

problems, proposals for promoting economic development, the technical assistance program and questions of human rights and race conflict.

Beginning Jan. 1, 1955, the Security council was composed of five permanent members (China, France, the U.S.S.R., the United Kingdom and the United States) and six nonpermanent members (Belgium, Brazil, Iran, New Zealand, Peru and Turkey). The tenth general assembly elected Cuba and Australia to take the places of Brazil and New Zealand respectively for two-year terms beginning Jan. 1, 1956, but became deadlocked in its efforts to select a replacement for Turkey. The U.S.S.R. and other members argued that on the basis of an understanding going back to 1946, eastern Europe was entitled to a representative on the council and gave their support to Poland. Subsequently Yugoslavia was put forward as a possible compromise candidate. The United States, with the backing of the Latin-American republics and a number of the Asian-African members, and denying the binding force of any such understanding, supported the Philippines.

The Economic and Social council, which had met for the first part of the 18th session in Geneva, Switz., from June 29 to Aug. 6, 1954, resumed its session in New York city in November and December. The 19th session was held in New York from March 29 to April 7, 1955, and from May 16 to 27. The main part of the 20th session was held in Geneva from July 5 to Aug. 5; a few concluding meetings were to be held during or after the tenth session of the general assembly. The membership of the council during the calendar year 1955 was as follows: with terms ending Dec. 31, 1955—Australia, India, Turkey, the United States, Venezuela and Yugoslavia; with terms ending Dec. 31, 1956—Czechoslovakia, Ecuador, Norway, Pakistan, the U.S.S.R. and the United Kingdom; with terms ending Dec. 31, 1957—Argentina, China, Dominican Republic, Egypt, France and the Netherlands. The tenth general assembly elected the United States, Canada, Indonesia, Yugoslavia, Brazil and Greece for two-year terms ending Dec. 31, 1958.

The Trusteeship council held its 15th session from Jan. 25 to March 28, 1955, and its 16th session from June 8 to July 22. During the calendar year 1955 the Trusteeship council had the following composition: members administering trust territories—Australia, Belgium, France, New Zealand, the United Kingdom and the United States; members by virtue of permanent membership in the Security council—China and the U.S.S.R.; members elected by the general assembly—El Salvador and Syria until Dec. 31, 1955, and India and Haiti until Dec. 31, 1956. Italy continued to participate in a nonvoting capacity in council discussion of Italian administration of Somaliland. The tenth general assembly in October elected Guatemala to take the place of El Salvador and re-elected Syria for three-year terms ending Dec. 31, 1958.

The composition of the International Court of Justice had been changed as the result of elections held on Oct. 7, 1954. Sir Mohammed Zafrulla Khan (Pakistan) was elected to fill the unexpired term of Sir Benegal N. Rau (India) and took office immediately. Judges J. G. Guerrero (El Salvador) and J. Basdevant (France) were re-elected for nine-year terms beginning Feb. 6, 1955. H. Lauterpacht (United Kingdom), L. M. Moreno Quintana (Argentina) and R. Córdova (Mexico) were elected for nine-year terms to succeed Judges Sir Arnold McNair, A. Alvarez and Levi Carneiro. Other judges of the court were Green H. Hackworth (U.S.), Abdel Hamid Badawi (Egypt), B. Winarski (Poland), M. Zoricic (Yugoslavia), H. Klaestad (Norway), J. E. Read (Canada), Hsu Mo (China), E. C. Armand-Ugon (Uruguay) and F. I. Kojevnikov (Soviet Union). The court sat at The Hague from Feb. 3 to April 6, and from May 9 to June 7. It elected Judge Hackworth as president and Judge

Badawi as vice-president, disposed of various administrative and procedural matters and gave one judgment (Nottebohm case) and one advisory opinion (territory of South-West Africa).

Administration and Finance.—The total appropriation for the activities of the UN for the fiscal year 1954 was \$48,528,980, and total expenditure was \$48,510,009. For the year 1955, the general assembly approved an expenditure of \$46,963,800. The secretary-general's estimate of expenditures for 1956 was \$46,278,000. Taking into account estimated miscellaneous income of \$6,873,600, the estimated net expenditures for 1956 of \$39,404,400 represented the lowest budget request submitted by the secretary-general since 1950. A saving of about \$2,000,000 in 1955 came largely from reduced headquarters expenses resulting from the carrying out of the secretary-general's administrative reorganization plan, which it was expected to complete in 1956. Assessments for 1955 were made on the basis of the scale of assessments approved by the general assembly by its resolution of Dec. 4, 1954. This resolution also authorized the secretary-general to accept a portion of the contributions in currencies other than U.S. dollars. Members were informed that 20.40% of their contributions could be paid in Swiss francs and 13.95% in other non-U.S. dollar currencies. The Committee on Contributions in its 1955 report to the general assembly recommended some revision of the scale of assessments for 1956, 1957 and 1958. The most notable change recommended was an increase of 0.20% in the contribution of the U.S.S.R.

The general assembly by resolution of Dec. 17, 1954, took note of the advisory opinion given by the International Court of Justice on July 13 on the legal effect of awards of compensation made by the administrative tribunal, and established as of Jan. 1, 1955, a special indemnity fund for the payment to staff members of awards of compensation made by the tribunal in accordance with its statute. In accordance with the resolution, the fund was duly established and awards of \$179,420 which the tribunal had made in the cases of the 11 UN employees of United States nationality who were dismissed following invocation of the fifth amendment were paid. By the same resolution the general assembly accepted in principle judicial review of judgments of the tribunal. A special committee of 18 was created to study the question and report. In its report to the tenth general assembly, adopted by a vote of 9 to 4 with 4 abstentions, the committee recommended the creation of a committee composed of states members of the General committee of the assembly to consider applications for the review of awards, and if it should decide that a substantial basis existed, to request the International Court of Justice to give an advisory opinion which would be conclusive. The assembly approved the recommendation substantially as presented.

Political Problems.—Disarmament.—The ninth general assembly by its resolution of Nov. 4, 1954, had unanimously agreed in principle to the conclusion of a convention providing for the regulation, limitation and major reduction of all armed forces and conventional armaments, the total prohibition of the use and manufacture of nuclear weapons and weapons of mass destruction, together with the conversion of existing stocks for peaceful purposes and the establishment of control organs adequate to guarantee effective observance. The Disarmament commission was asked to seek an acceptable detailed solution of the problem. The commission's subcommittee (Canada, France, the U.S.S.R., the U.K. and the U.S.) was to be reconvened.

The subcommittee met in London from Feb. 25 to May 18, 1955. Detailed proposals were submitted in the course of these discussions by the four western powers and the U.S.S.R. The U.S.S.R. on May 10 submitted a detailed proposal calling for the implementation of the agreed principles by stages. Within one month, China, France, the United Kingdom, the U.S.S.R.

and the U.S. were to furnish the Disarmament commission with full official figures regarding armed forces, conventional armaments and military expenditures. The armed forces of the five were to be reduced to specified levels, 50% of this reduction to take place within the first year. With the initiation of measures of reduction, states were to pledge themselves not to use nuclear weapons for aggressive purposes. They were also to pledge themselves to liquidate military, naval and air bases in foreign countries. International control organs were to be established with power to establish control posts on national territories, to require states to give necessary information on performance and to have unimpeded access to records relating to appropriations. Immediately after the lapse of a year, the production of atomic and hydrogen weapons was to be discontinued, and during the second year the remaining 50% reduction of armed forces and conventional weapons was to be carried out. After completion of one-half of this reduction, complete prohibition of use of atomic, hydrogen and other weapons of mass destruction was to become effective. During the second year, the liquidation of foreign military, naval and air bases would be completed.

The principal point of disagreement between the western powers and the U.S.S.R., which proved to be insuperable, was the question of control. The position of the western powers was that measures of reduction, and more particularly the prohibition of the manufacture and use of atomic and hydrogen weapons, should be taken after an effective control organ had been constituted. The western powers insisted that the control organ should have detailed and explicit powers for supervising and guaranteeing observance of all provisions of the proposed convention, including the right to station officials in national territories who would have the right of unrestricted access to, egress from and travel within these territories, and access to all installations and facilities. The control organ would be authorized to report to the Security council, the general assembly and signatories on violations, and to make recommendations.

At the Geneva conference of the heads of the Big Four Powers in July, Pres. Dwight D. Eisenhower proposed that the United States and the U.S.S.R. as a first step agree to give each other complete blueprints of their military establishments and to provide facilities for complete aerial reconnaissance. Premier N. Bulganin proposed that pending the conclusion of a disarmament convention, the major powers undertake not to use atomic and hydrogen weapons against any state. It was agreed at Geneva that the subcommittee of the Disarmament commission be reconvened to take into account the proposals of the heads of governments and that the foreign ministers of the four states meet in October to consider disarmament as one item of their agenda.

The subcommittee reconvened on Aug. 29 in private meetings but no substantial progress in resolving differences was reported. When the general assembly met on Sept. 20 the disarmament question was included on its agenda and received much attention in the general debate. Considering that the foreign ministers of the major powers would be discussing the disarmament problem at their Geneva meeting beginning Oct. 27, the Political committee of the general assembly voted to postpone debate on the question.

Peaceful Use of Atomic Energy.—President Eisenhower proposed to the general assembly on Dec. 8, 1953, that an international atomic energy agency be established under the aegis of the United Nations to further the use of fissionable material "to serve the peaceful pursuits of mankind." The ninth general assembly unanimously voted endorsement of the president's program on Dec. 4, 1954, expressing the hope that the proposed International Atomic Energy agency would be established without delay. Participation of the U.S.S.R. in the proposed agency

was in doubt in view of differences between the U.S. and the U.S.S.R. over the composition and powers of the agency and its relation to the UN. Following the adoption of the general assembly resolution, the eight states—Australia, Belgium, Canada, France, Portugal, the Union of South Africa, the U.K. and the U.S.—which had been conferring on the establishment of the agency renewed their discussions. A draft statute was prepared which was generally acceptable to them. This was given to the U.S.S.R. in late July, and somewhat later was circulated to other members of the UN and the specialized agencies. It provided for an autonomous agency with suitable powers to direct and supervise the use of fissionable materials placed at its disposal for peaceful purposes, which would be open to members of the UN and the specialized agencies and to other states able and willing to carry out the obligations of membership. The relationship of the agency to the UN would be defined by a special agreement. The U.S.S.R. objected to certain features of the draft, arguing in particular for a wider membership, for the prohibition of the use of atomic energy for war purposes and for a closer relationship of the proposed agency to the UN. On Oct. 27 the Political committee of the assembly unanimously approved a proposal which noted with satisfaction the progress toward the negotiation of a draft statute, welcomed the extension of invitations to Brazil, Czechoslovakia, India and the U.S.S.R. to participate with the eight sponsoring states in negotiations on the above statute and requested the secretary-general to make a study of the question of the relationship of the proposed agency to the United Nations for transmittal to the negotiating governments.

The general assembly resolution of Dec. 4, 1954, also called for the holding of an international technical conference under the auspices of the United Nations to explore means of developing the peaceful uses of atomic energy. The conference met in Geneva Aug. 8 to 20, under the presidency of Homi J. Bhabha of India. Scientists from 60 members of the UN and 24 other states members of specialized agencies submitted 1,100 papers of which 442 were orally delivered and translated into the four conference languages. A special report on the conference together with proposals for further action was submitted by the secretary-general to the general assembly. The draft resolution approved by the assembly's Political committee on Oct. 27 recommended that a second conference be held.

Korea.—The question of Korean unification was considered at the Geneva conference in the spring of 1954 but without agreement being reached. On Nov. 11, 1954, the 15 members which had participated in collective military action in Korea and in the Geneva conference reported to the United Nations assembly on the proceedings of that conference. They stated that they had been guided at the conference by two main principles: (1) that the UN was fully justified in taking collective measures in Korea and in extending its good offices to seek a peaceful settlement; and (2) that in order to establish a unified, independent and democratic Korea, free elections under UN supervision for representation proportional to population were essential. The general assembly on Dec. 11 adopted a resolution approving the report and reaffirming the objectives of UN action. The Korean question was again on the agenda of the general assembly at its tenth session with little prospect of any progress being made.

The Republic of Korea demanded the abolition of the Neutral Nations Supervisory commission set up under the terms of the armistice agreement to check observance of the terms of the agreement. The Swedish and Swiss governments proposed in Jan. 1955 the abolition or reduction in size of the commission because of its ineffectiveness. The United States government favoured abolition but the Central People's government of the

People's Republic of China insisted on its continuance though agreeing to a reduced staff.

China.—On Dec. 4, 1954, the U.S. requested the general assembly to consider a complaint of detention and imprisonment of UN military personnel by Communist China in violation of the Korean armistice agreement. The assembly, by resolution of Dec. 10, condemned the detention and instructed the secretary-general to seek their release. Following an exchange of telegrams and conversations with the Communist Chinese minister in Stockholm, the secretary-general went to Peking where he had conversations with Foreign Minister Chou En-lai from Jan. 5 to 10. After extended discussions and negotiations involving, among others, the secretary-general, the U.S., the People's Republic of China and India, 11 U.S. airmen were released on Aug. 4.

Questions Involving National Independence and Self-Determination.—A resolution adopted by the general assembly on Dec. 17, 1954, expressed confidence that a satisfactory solution would be achieved regarding the Moroccan question. When, however, there was an outbreak of violence in Morocco instigated by nationalist forces in the summer of 1955, 15 Asian-African members requested the secretary-general on July 20 to use his good offices to end the violence and 14 of them asked that the question be placed on the agenda of the tenth general assembly.

The Algerian question was submitted to the general assembly for the first time in 1955. The Asian-Arab states making the submission contended that violence in Algiers was a potential threat to peace and a source of international friction. When the general assembly met for its tenth session, the General committee recommended against inclusion of the Algerian question on the assembly's agenda. The general assembly, however, by a vote of 28 to 27, with 5 abstentions, decided to include the item. The French delegation withdrew in protest after arguing that since Algiers was a part of metropolitan France the question was clearly outside the assembly's competence. The Political committee, however, decided to postpone debate.

Following a request from the Greek government, the ninth general assembly decided to place on its agenda the dispute between Greece and the U.K. over self-determination for Cyprus. The assembly decided, however, that it was not appropriate for the time being to adopt a resolution dealing with the question. On July 23 Greece again requested that the question be placed on the agenda of the assembly. The general assembly this time upheld the recommendation of its General committee that the item not be inscribed on its agenda.

Palestine.—The Palestine question continued to be a major concern of the United Nations during 1955. The Security council was called upon to deal with disputes and outbreaks of violence between Egypt and Israel giving rise to charges of violation of the armistice agreement. The general assembly and its subsidiary organs continued to deal with the Arab refugee problem, with little progress toward a solution.

On Sept. 28, 1954, the Egyptian authorities seized an Israeli ship, the "Bat Galim," in the approaches to the Suez canal. The Israeli government claimed that this was in violation of Security council resolutions, and brought the matter to the attention of that organ. The Security council considered the dispute at seven meetings, from Oct. 14, 1954, to Jan. 13, 1955. Council consideration ended on a rather inconclusive note with the president welcoming the Egyptian announcement that the crew had been, and that the ship and cargo would be, released, and expressing the hope that with the assistance of the chief of staff (Gen. E. L. M. Burns) of the Mixed Armistice commission a satisfactory arrangement would be worked out.

On March 1 and 2 the Egyptian government informed the president of the Security council of incidents in the Gaza area



EMPTY SEATS in the United Nations general assembly after the French delegation walked out, Sept. 30, 1955, in protest to the assembly decision to discuss the Algerian problem

and requested a meeting of the organ. After the chief of staff had reported on the situation, the council adopted two resolutions, one on March 29 placing responsibility on Israel and calling upon it to take the necessary steps to prevent such acts, and the other on March 30 calling upon the chief of staff and the two governments to continue consultations with a view to the preservation of security in the area. On April 4 Israel made charges of Egyptian attacks, but the council decided that no further action was necessary. Negotiations were carried on between the chief of staff and the Egyptian and Israeli governments from June 28 to Aug. 24 without success. The frequent repetition of incidents led the chief of staff on Aug. 30 to request a specific cease-fire and to recommend to the Security council that the withdrawal of armed forces along the demarcation line was necessary to the avoidance of further incidents. On Sept. 8 the council adopted a resolution approving the recommendation and calling on the two governments to co-operate with the chief of staff in taking the necessary steps. The announcement late in September of a Soviet-Egyptian deal for the exchange of cotton for arms was widely viewed as accentuating the difficulty of maintaining peace and security in Palestine, particularly by increasing the fears of Israel. On Oct. 26, fighting began in the El Auja area and assumed serious proportions. On Nov. 2 the secretary-general made an appeal to the parties, reportedly asking the clearer delimitation of the boundary line and the withdrawal of military forces. The Security council was not asked at this time to consider the situation.

The ninth general assembly extended the mandate of the UN Relief and Works Agency for Palestine Refugees for another five years and approved budgets of \$25,100,000 for relief and \$36,200,000 for rehabilitation of the fiscal year ending June 30, 1955. The tenth assembly was asked to approve an increased budget for 1955-56 of \$120,100,000, of which \$28,300,000 would be for relief and \$91,800,000 for rehabilitation. Up to June 15, \$23,044,028 of the total amount authorized for relief

for 1954-55 had been pledged. The Conciliation commission was successful in having some money held in block accounts in Israel returned to refugees (nearly \$6,000,000 to refugees in Lebanon), but was unsuccessful in its efforts to get compensation for property taken. Projects for the economic development of the area to provide means of support for refugees made little headway. At the end of June 1955 there were 887,000 refugees on the rolls of the agency, as compared with 872,000 the previous year.

Racial Policies of the Union of South Africa.—During 1955 the UN continued to be concerned with the racial segregation policies of the Union of South Africa, both in general and in their specific applications. The question of the treatment of persons of Indian origin had been before the general assembly since 1946. On Nov. 4, 1954, the assembly adopted a resolution suggesting that the governments of India, Pakistan and the Union of South Africa seek a solution of the question of the treatment of persons of Indian origin by direct negotiations, and that they designate a government, agency or person to assist them in reaching agreement. The secretary-general was asked to make the designation if the parties were unable to agree, and to report to the tenth general assembly on progress made. In June the secretary-general named Luis de Faro, Jr., of Brazil. His report to the general assembly recorded lack of progress.

When the Political committee of the general assembly on Nov. 9 voted to recommend the continuation of the Commission on the Racial Situation in the Union of South Africa, the South African delegation announced its intention to withdraw from participation in the work of the assembly.

Holding of a Review Conference.—In accordance with article 109 of the charter the question of holding a conference to review the charter was placed on the agenda of the tenth session of the general assembly. As directed by a resolution of the assembly's eighth session, the secretary-general, in preparation for the holding of such a conference, published the documents of the Coordination committee of the San Francisco conference of 1945, and prepared for publication an index of the complete documentation of the conference and a *Repertory of Practice of United Nations Organs*. In the general debate opening the tenth session of the general assembly there appeared to be little support for the convening of a review conference in the near future. The secretary-general in his annual report had suggested that in the event the assembly should decide to hold a conference, any decision regarding the time of its convening would be postponed until later.

Economic and Social Co-operation.—*Economic Development.*—In accordance with a recommendation of the eighth assembly, and following United States and United Kingdom statements in the ninth assembly that they would give their support, the United Nations and the International Bank for Reconstruction and Development elaborated machinery for channelling private capital into production investments in underdeveloped countries. In April 1955 the bank submitted to its members the charter of the International Finance corporation to come into operation as soon as it had been ratified by 30 states and 75% of \$100,000,000 capital had been subscribed. The IFC would make direct loans to private enterprise without government guarantees and would be allowed to make loans for other than fixed returns. The operations of the IFC were to be closely coordinated with those of the International bank. As of June 1, 43 states, accounting for more than 85% of the capital, had indicated that they were favourable to membership.

The United Nations was also concerned with the financing of basic nonself-liquidating development projects such as roads, schools and hospitals. These projects had been referred to as the "social-economic infrastructure" on which economic develop-

ment is based. In 1953 a group of experts submitted a proposal for a special United Nations fund for economic development. The matter was considered by the ninth general assembly which expressed the hope that such a fund might be established and asked for a more detailed proposal. In June 1955 a detailed plan was submitted to the Economic and Social council. Most of the funds would be devoted to grants-in-aid repayable in the currency of the borrowing rather than the lending country. The fund would co-operate closely with other international agencies engaged in development projects. The report was on the agenda of the tenth session of the general assembly where it had support from Latin-American, Asian and African members and the smaller industrialized states. The United States continued to make its support conditional on effective disarmament. The U.S.S.R. considered freer international trade the proper approach to the problem.

Technical Assistance.—The year 1954 saw more governments pledge support for the expanded program of technical assistance and in larger sums than ever before.

Total pledges for the year 1954 amounted to approximately \$25,300,000, or about \$2,900,000 more than in the previous year. Total contributions, including arrears from the previous year, amounted to approximately \$28,600,000. Earmarkings for the carrying out of the program totalled \$20,300,000. Total pledges for 1955 to the end of June amounted to \$19,500,000. The large proportion collected by the end of May—\$11,500,000—together with the substantial balance from the previous year enabled the board to authorize earmarkings totalling approximately \$26,000,000 for the 1955 program.

During 1955 continued progress was made in the introduction of a new procedure for programming and allocation of funds approved by the general assembly in its ninth session. This procedure provided for the development of programs on a country basis instead of on the basis of a fixed percentage allotted to each organization. In the interest of greater continuity, the board was authorized to draw up advance target figures for each country on the basis of funds assumed to be available for the following year.

Human Rights.—The Human Rights commission completed in 1954 draft covenants on civil and political rights and economic, social and cultural rights. The general assembly, in its ninth session, undertook a first reading of the covenants, and adopted a resolution inviting governments and specialized agencies to communicate observations to the secretary-general within six months, and providing for detailed consideration of the covenants at the tenth session. The right of self-determination had from the beginning been a highly controversial issue, with the majority of members insisting on the inclusion of a strong affirmation. The Economic and Social council in July 1955 approved a proposal for the appointment of a commission to study and seek further clarification of the question to be submitted to the tenth assembly.

Refugees.—Apart from responsibilities in Korea and Palestine, the UN continued to have responsibilities for about 350,000 unassimilated refugees under the mandate of the UN high commissioner for refugees. The ninth general assembly approved a program designed to bring about a permanent solution of the problem by the end of 1958. The new program sought the integration of refugees into permanent occupations and their resettlement. The high commissioner estimated that the program would cost about \$16,000,000 over a four-year period. Acting under the terms of the assembly's resolution, the Economic and Social council in March reconstituted the advisory committee of the UN Refugee Emergency fund into an executive committee to provide tighter control of operations. The plan of operations for 1955 called for an expenditure of \$4,200,000 of which

\$2,000,000 had been pledged by Aug. 1.

Trusteeship and Nonself-Governing Territories.—*Trusteeship System.*—The scope of the trusteeship system remained limited to 11 territories—three in East Africa (Ruandi-Urundi, Tanganyika and Somaliland), four in West Africa (British Cameroons and French Cameroun and British and French Togoland) and four in the Pacific (Pacific Islands, Western Samoa, New Guinea and Nauru). These territories contain more than 20,000,000 people.

The ninth session of the general assembly reviewed the work of the Trusteeship council and took action dealing with a number of specific problems.

Special attention was given to questions relating to the termination of trustee arrangements for certain territories. In the case of Togoland under British administration, which had been administered as a part of the Gold Coast, the UN was informed by the U.K. in June 1954 that when the Gold Coast became independent in the near future, it would no longer be practicable or desirable to continue the present trusteeship arrangement. The memorandum asked that the general assembly authorize the Trusteeship council to formulate procedures and recommendations by which the wishes of the native inhabitants might be ascertained so that the tenth assembly would be able to take definite decisions regarding the future of the territory. The ninth assembly decided that steps should be taken to ascertain the wishes of the inhabitants, requested the Trusteeship council to make the necessary arrangements and, recognizing the intimate connection between the problems of Togoland under British administration and of Togoland under French administration, requested the council to send a special mission to the two territories to study their problems and report to the tenth assembly. Because of the different political development of Togoland under French administration and French opposition to a special mission, the Trusteeship council in its 15th session in early 1955 voted to send a periodic visiting mission with a special directive to carry out the tasks set by the assembly. The mission consisted of Australia, India, Syria and the U.S.

With respect to the Cameroons, a similar problem had arisen because of the existence of two administrations, British and French, and the greater progress toward self-government in the British-administered territory. British Cameroons is administered as part of the protectorate of Nigeria, and following the putting into operation of a new constitution for Nigeria in Oct. 1954, the U.K. informed the Trusteeship council early in 1955 that it foresaw no other solution for the Cameroons than close association with Nigeria in self-government. This development resulted in a flood of petitions from French Cameroun seemingly motivated by discontent over the absence of comparable political development. The Trusteeship council in its 16th session instructed the visiting mission to give special consideration to and to report on these developments.

Alone of the trust territories, Somaliland under Italian administration was promised independence by a fixed date—1960. The problem faced by the UN in this territory was to achieve sufficient economic, social and political development to give reasonable assurance that the new state would be viable. Both the 1954 visiting mission and the advisory council reported that little progress had been made in meeting the economic problems of the area. A territorial dispute of long standing with Ethiopia remained unsettled.

South-West Africa.—This question had been before the United Nations since 1946. It had its origin in the refusal of the Union of South Africa to place the territory under trusteeship. In the ninth session of the general assembly, consideration was given to the manner in which the general assembly might exercise the function of supervision, and especially the vote by

which general assembly decisions might be taken. The Union of South Africa argued that, consistent with League of Nations practice, no decision could be taken without its approval. The International Court of Justice was asked to give an advisory opinion on the question. In its opinion of June 7, the court held that the general assembly could take its decisions by the same voting procedure as prescribed by the charter for important questions.

Nonself-Governing Territories.—Under article 73(e) of the charter, information was transmitted to the secretary-general in 1954 by eight administering members on 59 nonself-governing territories, as compared with 60 in 1953. Summaries prepared by the secretary-general were considered by the Committee on Information from Nonself-Governing Territories, meeting shortly before the ninth session of the general assembly. In its 1955 session the committee recommended that the general assembly (1) continue the committee for three years; (2) invite members to attach to their delegations competent experts; and (3) encourage like use of representatives of the indigenous peoples. The committee devoted the main part of its discussions to social conditions and problems of social development in the territories. In 1954 the emphasis had been on economic conditions and development. In 1956 the emphasis was to be on education.

Specialized Agencies.—In addition to the work of the UN itself in the social and economic fields, a great deal of important work is done by the specialized agencies, *i.e.*, international organizations operating under their own constitutions for special purposes and brought into relationship with the UN by agreements concluded with the UN. During 1955 the following specialized agencies were in actual operation:

Food and Agriculture Organization (FAO).—Headquarters in Rome, It.; Philip Cardon, director-general; 71 members.

International Labour Organization (ILO).—Headquarters in Geneva, Switz.; David A. Morse, director-general; 70 members. (See separate article.)

International Bank for Reconstruction and Development.—Headquarters in Washington, D.C.; Eugene R. Black, president; 58 members. (See separate article.)

International Monetary Fund.—Headquarters in Washington, D.C.; Ivar Rooth, managing director; 58 members. (See separate article.)

International Civil Aviation Organization (ICAO).—Headquarters in Montreal, Que.; Carl Ljungberg, secretary-general; 66 members.

International Telecommunication Union (ITU).—Headquarters in Geneva, Switz.; Marco Andradá, secretary-general; 90 members plus 5 associate members (including colonial areas).

United Nations Educational, Scientific and Cultural Organization (UNESCO).—Headquarters in Paris, Fr.; Luther H. Evans, director-general; 74 members plus 4 associate members.

Universal Postal Union (UPU).—Headquarters in Berne, Switz.; Fritz Hess, director of the international bureau; 94 members.

World Health Organization (WHO).—Headquarters in Geneva, Switz.; Marcelino C. Candau, director-general; 81 members plus 4 associate members. (See separate article.)

World Meteorological Organization (WMO).—Headquarters in Geneva, Switz.; D. A. Danes, secretary-general; 91 members.

Two further specialized agencies had been envisaged but had not yet entered into force. The convention of the Inter-Governmental Maritime Consultative organization had been ratified by 18 states as of Nov. 1, 1954; ratification by 21 states, including the principal maritime powers, was required. The charter of the International Trade organization had been accepted by Liberia and, conditional on acceptance by the U.S. and the United Kingdom, by Australia; however, no new acceptances had been deposited with the UN. The interim commission of the International Trade organization continued to function, acting chiefly as the secretariat of the contracting parties to the General Agreement on Tariffs and Trade (G.A.T.T.). In the spring of 1955 representatives of 34 countries meeting at Geneva completed the text of an agreement to create an Organization for Trade Cooperation which would administer and facilitate the operation of G.A.T.T. (See also CHINA; EDUCATION; INTERNATIONAL LAW; TRUST TERRITORIES; WORLD HEALTH ORGANIZATION.) (L. M. GH.)

United States. This federal republic in North America, bounded north by Canada, south by Mexico, east by the Atlantic ocean and west by the Pacific ocean, has an area of 3,022,387 sq.mi., including 47,662 sq.mi. of inland water. Its population was 150,697,361 by the 1950 census and 162,284,000 by the July 1, 1955, estimate. Territories and outlying possessions are shown in Table I and the chief cities in Table II.

(See also BIRTH STATISTICS; CENSUS DATA, U.S.; CHURCH MEMBERSHIP; DEATH STATISTICS; INDIANS, AMERICAN; NE-

Table I.—Territories and Possessions of the United States

Territory or Possession	Area (sq.mi.)	Population, 1954 est.	Territory or Possession	Area (sq.mi.)	Population, 1954 est.
Alaska	586,400	172,000*	Hawaii	6,423	500,976*
Bonin Islands	40	210	Panama Canal Zone	553	58,000
Marshall, Caroline and Mariana Islands	687	61,102	Puerto Rico	3,435	2,264,000*
Samoa	76	21,600	Ryukyu Is.	848	789,000
Guam	206	75,000†	Virgin Islands	133	22,000

*1955 est. †1952 est.
In addition to these possessions there are ten islands in the Pacific ocean which have a total land area of approximately 20 sq.mi.: Baker, Howland, Jarvis, Johnston and Sand (pop., 1950 census, 46), Kingman Reef, Midway (pop. 416), Palmyra, and Wake (pop. 349). There are also two condominiums administered by the U.S. and the U.K.: Canton Island (pop. 272) and Enderbury Island.

Table II.—Chief Cities of the United States

City	(Population, 1950 census)	City	Population
Washington, D.C., cap.	802,178	Houston, Tex.	596,163
New York, N.Y.	7,891,957	Buffalo, N.Y.	580,132
Chicago, Ill.	3,620,962	New Orleans, La.	570,445
Philadelphia, Pa.	2,071,605	Minneapolis, Minn.	521,718
Los Angeles, Calif.	1,970,358	Cincinnati, O.	503,998
Detroit, Mich.	1,849,568	Seattle, Wash.	467,591
Baltimore, Md.	949,708	Kansas City, Mo.	456,622
Cleveland, O.	914,808	Newark, N.J.	438,776
St. Louis, Mo.	856,796	Dallas, Tex.	434,462
Boston, Mass.	801,444	Indianapolis, Ind.	427,173
San Francisco, Calif.	775,357	Denver, Colo.	415,786
Pittsburgh, Pa.	676,806	San Antonio, Tex.	408,442
Milwaukee, Wis.	637,392	Memphis, Tenn.	396,000

GROES [AMERICAN]; also articles on the separate states, territories and possessions.)

President in 1955: Dwight D. Eisenhower (*q.v.*), whose cabinet was composed as follows:

Post	Name	State
Secretary of state	John Foster Dulles	New York
Secretary of the treasury	George M. Humphrey	Ohio
Attorney general	Herbert Brownell, Jr.	New York
Postmaster general	Arthur E. Summerfield	Michigan
Secretary of the interior	Douglas McKay	Oregon
Secretary of agriculture	Ezra Taft Benson	Utah
Secretary of commerce	Sinclair Weeks	Massachusetts
Secretary of labour	James P. Mitchell	New Jersey
Secretary of defense	Charles Erwin Wilson	Michigan
Secretary of health, education and welfare	Marion B. Folsom	New York

History.—During 1955 the people of the United States found themselves in the midst of a new outburst of prosperity, and seemed content to concentrate on building and buying new cars, homes, television sets and all the amenities and necessities of life. The story of 1955 was primarily one of the new boom, and its impact on U.S. society.

Economic Conditions.—The principal element of the new prosperity was the sustained high level of personal income. In Jan. 1955 it stood at an annual rate of \$291,000,000,000, as against \$285,000,000,000 in Jan. 1954. By September the rate had reached \$307,500,000,000, a gain of \$2,200,000,000 over the preceding month. This high level of income was reflected in a steady increase in spending. After a slow start the annual spending rate had jumped to \$30,000,000,000 by November, compared with the peak of \$28,800,000,000 in 1953. Generous credit made buying possible even in excess of personal income; total instalment loans jumped \$2,400,000,000 the first six months, then another \$1,800,000,000 in the third quarter. Total of consumer credit increased from \$29,760,000,000 to \$32,896,000,000 in the first half of the year. Home mortgages in particular rose nearly \$7,000,000,000, compared with a correspond-

ing increase in 1954 of \$4,300,000,000. All this was reflected in sales figures, which by the end of the first half were running to \$70,000,000,000, or \$2,000,000,000 above the 1953 record.

Buying in this quantity provided a tremendous stimulus to all industrial production. Gross national production by October was at the record annual rate of \$392,000,000,000 per year, or \$7,200,000,000 more than in the preceding quarter, most of the increase stemming from a \$6,000,000,000 increase in consumer spending. The federal reserve board's production index rose in October to 142% of the 1947-49 average, 16% higher than the preceding year, and a new record. Steel, bellwether of industry, turned out 115,000,000 tons, 3,500,000 tons over its 1953 peak, and by November was operating at 98.8% of capacity (against 71% in 1954). The auto industry promised 7,000,000 cars by the end of 1955. In spite of this tremendous surge of output, inventories remained reasonable at \$78,900,000,000 in October, only \$2,300,000,000 over Oct. 1954.

Business profits kept pace; the nine-month returns of 562 leading businesses showed net incomes up 33%, with earnings after taxes approaching the \$22,100,000,000 peak set in 1950. Dividend payments reached \$7,100,000,000 by Oct. 1 (10% above 1954), and promised to approach \$11,000,000,000 for the year. But a substantial portion of earnings, plus extensive borrowings, went back into a tremendous program of plant expansion. Commercial bank loans were up to \$78,500,000,000 by mid-November, \$8,000,000,000 more than at the opening of the year. The auto industry led with announcements of expansion plans for 1956 to a total of \$1,800,000,000, with Ford Motor Co. planning for \$500,000,000 a year for three years, and Chrysler \$1,000,000,000 over five years. Standard Oil of New Jersey topped the list of any single firm with \$1,200,000,000 for 1956 alone.

Investment of such huge sums when industrial capacity was already great was based, business leaders reported, on confidence that even more capacity would be required to meet still greater sales in 1956 and thereafter. They predicted total capital expenditures of \$33,400,000,000 in 1956, or \$4,000,000,000 more than the record high of 1955.

It was perhaps inevitable that the construction industry in particular should profit from such progress in plant expansion. Its strength had been in housing, even during the slacker periods of 1954. However, the rate of formation of new households was dropping steadily; the average annual rate of 1,500,000 per year during 1947-50 had fallen to 800,000 annually in the years which followed, and although 1955 seemed likely to register 1,300,000 starts, builders looked forward to less in 1956, if only because of a tightening in the home loan market.

The boom brought with it threats of inflation. After a period of relative price stability, the great demand on industries already near capacity and often facing shortages of labour and supplies, produced a "price bulge." Wholesale prices by Nov. 1 had reached 119.1% of the 1947-49 average, and in selected key industries had gone even higher. As always, this was eventually reflected in an increase in the cost of living, the index of which rose to 114.9%, about equal to the previous postwar peak, with further increases in prospect. This brought on a general tightening of credit. The federal reserve board on April 13 increased its rediscount rate from 1½% to 1¾%, and then repeated the step three times until a record 2½% had been reached by November. Commercial banks jumped their rates on prime loans to big business steadily to a peak of 3½%, the highest in 25 years, as loanable funds became shorter and demand increased.

Congress itself began to take interest, especially in the stock market. In March Sen. J. William Fulbright began what he termed a "friendly study" of the market. In general, witnesses

from finance and business saw little danger in the existing high levels, because they were based, as they pointed out, on a tremendously expanding economy, unprecedented business earnings, and a confident appraisal of the country's industrial future. But Harvard economist J. K. Galbraith, who had just completed an analysis of the 1929 crash, feared a new speculative hysteria, and felt that stock market prices had increased at an unhealthful rate.

However, steps had already been taken to protect the market against speculative excesses. Margin requirements were jumped from 50% to 60% on Jan. 4, and again to 70% on April 22. When bank credit to finance security purchases reached new highs, the federal reserve board acted to limit the amount commercial banks could lend to individuals. (See also BANKING; CONSUMER CREDIT; FEDERAL RESERVE SYSTEM; HOUSING; INCOME AND PRODUCTS, U.S.; PRICES; SAVINGS AND LOAN ASSOCIATIONS; STOCKS AND BONDS.)

Labour.—Full employment accompanied peak production. The total working force rose from 60,688,000 in Dec. 1954 to 65,200,000 in Oct. 1955. Unemployment dropped from 2,838,000 to 2,100,000 over the same period. It seemed a likely time for labour to consolidate its gains and strike out for new objectives. Walter Reuther, president of the C.I.O., set as the goal for 1955 a guaranteed annual wage, and in June signed with the Ford Motor Co. a three-year contract under which Ford agreed to supplement standard state unemployment benefits for all employees paid by the hour. The settlement also included higher pension and disability payments and increased hospitalization benefits. General Motors and Chrysler promptly conceded similar plans.

Also during the year the major labour unions minimized their quarrels with one another, and the two giants, the American Federation of Labor and the Congress of Industrial Organizations, moved toward a permanent union, which was finally effected in December. The question of a name was resolved by combining both names. Membership in the A.F. of L. exceeded 9,000,000; that of the C.I.O. 6,000,000.

In general, the high production records were made possible by the relative absence of major, extended strikes (and by a steadily increased productivity rate). In days lost per thousand persons employed, the United States led the international list in 1952 and 1954, yet this loss represented only 0.2% of total working time—much less than the toll taken by absenteeism and sickness. A one-day steel strike on June 30 brought wage increases for steel workers from \$2.27 per hour to \$2.44 per hour—the highest in industry except in coal mining and oil refining—and more than three times the legal minimum wage of 75 cents per hour. But labour also sought an increase in the minimum wage to \$1.25 per hour, and the secretary of labour, James P. Mitchell agreed that it ought to be raised at least to 90 cents per hour, with an extension of its coverage to 2,200,000 more workers. On July 30 congress granted the extended coverage and also increased the minimum rate to \$1.00 per hour.

Labour also began to worry about increased productivity rates in so far as this represented replacement of men by machines. Industry was becoming increasingly intrigued by "automation," and Walter Reuther foresaw it sparking a "second industrial revolution"—with, however, catastrophic effects unless introduced in a "responsible" manner. Industry, foreseeing a labour shortage, saw no dangers of unemployment. In fact, to maintain high wage levels and multitudinous special benefits, national purchasing power must be kept high by means of lower prices—which in turn could be achieved only by greater production efficiency from the use of machines. Reuther called for higher wages rather than lower prices, to which industry rejoined that higher wages discount the savings of automation in

advance. Both agreed, however, that a four-day, 32-hr. week might be possible within 10 years. For the moment, the spectacular increase in productivity resulting from automation seemed confined to a few plants; the total output per man hour climbed only 3.6% per year, 1947–1953 (just about the same as after World War I). (See also EMPLOYMENT; LABOUR UNIONS; STRIKES; WAGES AND HOURS.)

Agriculture.—The state of agriculture seemed less promising. The steady decline in farm income continued in 1955; farm income dropped 5½% to \$10,200,000,000 by the third quarter, although the department of agriculture announced on Sept. 30 that a four-month decline had been arrested, and that income had even gone up 1% between Aug. 15 and Sept. 15. It was not that the government had done nothing to arrest the decline. Even under the relaxed "flexible" parity plan of 1954, colossal sums were disbursed in support of farm prices; total losses of the government in fiscal 1955 came to \$799,061,464, as against the previous high record of \$419,477,074 in fiscal 1954. At the close of the fiscal year more than \$2,000,000,000 were tied up in crop loans and nearly \$5,000,000,000 in produce owned by the government, the total of the two representing an increase of \$1,000,000,000 since 1954. It was costing more than \$1,000,000 a day just to store this surplus. Here was a new dilemma of the times: might plenty bring poverty rather than prosperity for the farmer? In spite of acreage restrictions the production of staple crops grew and grew, far in excess of internal demand. Unless the government took this surplus, prices might well fall below the costs of production (kept high by industrial prosperity), thus bankrupting the farmer. But could the nation continue to buy up billions of dollars worth of food, and store it, at additional cost and frequent loss?

Determined efforts were made to dispose of the surplus food. President Eisenhower reported on Jan. 10 that the first six months of the Agricultural Surplus Disposal act had resulted in \$453,000,000 in sales and \$125,000,000 in relief grants. The act was further amended on Aug. 15 to increase from \$700,000,000 to \$1,500,000,000 the amount of food surplus which could be sold abroad for foreign currencies. Some food was dispersed free for famine relief. The president in March offered food to Albania, which however felt compelled to refuse it as "foreign interference."

A rising pressure to restore 90% parity stemmed largely from the midwest. A new National Farm Organization gained membership rapidly for its campaign for 100% parity, although Charles B. Shuman, American Farm Bureau Federation president, warned that a return to even 90% parity might wreck the economy. Adlai Stevenson, candidate for the Democratic nomination for president in 1956, came out for 90% parity, in accordance with the general Democratic line. But the secretary of agriculture, Ezra T. Benson, supported by the president, remained convinced of the need for flexible supports, despite a rising chorus of demands for his resignation from Democrats and midwestern Republicans. (See also AGRICULTURE.)

Atomic Energy.—Substantial progress was made in 1955 in the peaceful applications of atomic energy. The Ford Foundation established a Fund for Peaceful Atomic Development and the Joint Atomic Energy committee established an 8-member citizens' panel to study the effect of atomic energy on U.S. life and economy, and to report by the end of the year. Private industry, it was estimated by the Atomic Energy Forum Inc., would expend \$300,000,000 over the next five years in atomic research. To stimulate private industrial and power development, the Atomic Energy commission promised free use of nuclear fuel, free research in AEC laboratories, and payment for technical and economic data. In July the first atomic energy power station in the United States was opened at West Milton, N.Y.

Scientists were still dissatisfied with the rigid security blackout surrounding atomic research, and in February the Federation of Atomic Scientists called for the release of more atomic information for peaceful purposes. In April the United States agreed to share military atomic information with 13 member nations of the North Atlantic Treaty Organization (NATO), and in August joined with 71 other countries in an International Conference on the Peaceful Uses of Atomic Energy. Its principal agenda was Eisenhower's 1953 Atoms for Peace plan, and the president immediately offered, subject to congressional approval, research reactors at half cost, with free fuel, and access to technical knowledge for construction. He also authorized doubling the amount of enriched uranium available to friendly countries. The AEC in February already had released ten tons of heavy water to India, and by the end of July had concluded atoms for peace agreements with 27 nations. (See also ATOMIC ENERGY.)

Foreign Affairs.—The atom still dominated international discussions, with the U.S.S.R. and the United States deadlocked on the subject of international control of atomic armaments. Disarmament discussions proceeded, but made little headway as the Soviets rejected various plans to provide international inspection. Most startling of these was President Eisenhower's proposal for an exchange of blueprints of military installations and for facilities for aerial inspection of them. His suggestion, viewed warily by the Soviet leaders, was made at the conference of the heads of government of the Big Four powers in Geneva, Switz., in July. The United States had viewed sceptically any conference of heads of states, but in deference to world opinion, and hopes, had agreed to it. The results seemed encouraging, though indefinite. The foreign ministers of the four powers were instructed to assemble again in Geneva in October to "propose effective means" for the solution of European security and German reunification, disarmament and increased east-west economic interchange. But the second conference swiftly dissolved the "Geneva spirit" stemming from the

first. The four foreign ministers could come to no agreement on any of the items on the agenda. (See also GENEVA BIG-FOUR CONFERENCES OF 1955.)

The near possibility of war in the far east caused much concern to the United States and its allies in the first months of 1955, as the Red Chinese threatened the offshore islands of Quemoy and Matsu still held by the Nationalist Chinese. Committed to defend Formosa, the U.S. state department refused to say whether these tiny islands constituted part of that defense. The Reds did not invade, and the crisis passed for the moment.

Relationships with Red China were further strained by the imprisonment of 11 U.S. airmen forced down in Chinese territory. In response to a United Nations general assembly resolution, Secretary General Dag Hammarskjöld flew to Peking to seek their release. On May 31, four other airmen were allowed to leave China, but it was not until July 31 that the 11 were released, immediately prior to the opening of U.S.-Chinese talks at Geneva on repatriation of nationals. The talks, however, dragged on inconclusively through the fall.

During the year the emphasis on U.S. foreign aid shifted largely toward Asia: President Eisenhower in his April 20 message asked for \$3,530,000,000 for this purpose, the bulk for Asia. The largest single allocations were to Korea (\$460,000,000) and South Vietnam (\$425,000,000). The final bill authorized \$3,285,800,000, with a foreign aid appropriation, signed Aug. 2, of \$2,703,341,705—raising the total of U.S. foreign aid since World War II to more than \$50,000,000,000. (See also FOREIGN AID PROGRAMS, U.S.)

Defense.—The government's defense policy shifted to reflect the partial relaxation of international tension. Democrats, led by Sen. Stuart Symington, former air force secretary, accused Defense Secretary Charles E. Wilson of undermining the country's armed strength to promote the balanced budget desired by the secretary of the treasury, George M. Humphrey. But Wilson denied the charge, pointing out that he had added \$285,000,000 to his original estimates for fiscal 1956, restoring the total to \$34,500,000,000. Humphrey declared himself in full accord. Wilson did, however, impound \$46,000,000 appropriated for the marine corps over his estimates, when congress on July 13 finally resolved a long argument over its defense appropriation at \$31,882,815,726. Under the new program total armed force strength was to be reduced from 3,218,000 to 2,940,000 by June 30, 1955, and again to 2,815,000 by June 30, 1956. The air force, however, was allowed an increase, the reduction being borne chiefly by the army.

President Eisenhower moved to strengthen the reserve forces, and in the final compromise Reserve Forces act of 1955, signed Aug. 9, an alternative to the draft was provided for youths between the ages of 17 and 18½. (See SELECTIVE SERVICE, U.S.) The draft itself was extended four years (two years for doctors). On March 31 a substantial military pay increase of 6% to 25% was granted to stem the losses of capable men and to stimulate recruiting.

The navy successfully tested its first atomic submarine and began another, and launched the world's largest aircraft carrier the "Forrestal," built at a cost of nearly \$200,000,000. In October contracts were let for a group of space satellites to be built and launched by 1957-58 for scientific research, the resulting information to be available to all scientists.

President Eisenhower also signed a bill establishing a 12-member nonpartisan commission to review and report, by Dec. 31, 1956, on the fairness and effectiveness of the federal loyalty and security program.

Legislation.—On Jan. 17 President Eisenhower presented his budget for the 1955-56 fiscal year, including \$62,408,000,000 of expenditures (65% for national security). Offsetting this he



GRADUATING BUT NOT COMMISSIONED, Cadet Midshipman Eugene W. Landy (centre) keeps his right hand at his side as his classmates at the Merchant Marine academy, Kings Point, N.Y., are sworn in during commencement exercises Aug. 5, 1955. Landy's commission was withheld until Oct. because of his mother's former activities as a member of the Communist party

Table III.—Major Legislation Passed by U.S. Congress in 1955

Act	House vote	Senate vote	Date of enactment
Southeast Asia Treaty (Treaty for the mutual collective defense of southeast Asia signed at Manila, Sept. 8, 1954)		82-1 Yeas: D. 41, R. 40 Ind. 1 Nays: D. 0, R. 1 (Feb. 1)	Instrument of ratification Signed Feb. 4
Judicial and Congressional Salaries (Increased salaries of federal judges, U.S. attorneys, members of congress, certain justice dept. officials and the vice-president and the speaker of the house of representatives)	223-113 Yeas: D. 119, R. 104 Nays: D. 53, R. 60 (March 1)	Passed by voice vote (Feb. 28)	Signed March 2
Tax Rate Extension Act of 1955 (Extended to April 1, 1956, corporate income tax and excise tax rates due to expire March 31, 1955)	386-8 Yeas: D. 200, R. 186 Nays: D. 8, R. 0 (March 30)	Passed by voice vote (March 25)	Signed March 30
Western German Protocols (Protocols with the Federal Republic of Germany signed at Paris Oct. 23, 1954, providing for the termination of the occupation of that country and its admission to NATO)		76-2 Yeas: D. 43, R. 33 Nays: D. 0, R. 2 (April 1)	Instruments of ratification signed April 7
Postal Field Service Compensation Act of 1955 (Increased by an average of 8%, retroactive to March 1, 1955, the rates of compensation of postal field workers)	409-1 Yeas: D. 223, R. 186 Nays: D. 0, R. 1 (June 7)	Passed by voice vote (June 7)	Signed June 10
Trade Agreements Extension Act of 1955 (Extended to June 30, 1958, the power of the president to enter into reciprocal trade agreements without senate ratification)	347-54 Yeas: D. 198, R. 149 Nays: D. 18, R. 36 (June 14)	Passed by voice vote (June 15)	Signed June 21
Austrian State Treaty (Treaty for the re-establishment of an independent and democratic Austria signed at Vienna May 15, 1955)		63-3 Yeas: D. 35, R. 28 Nays: D. 0, R. 3 (June 17)	Instrument of ratification signed June 25
Federal Employees Salary Increase Act of 1955 (Increased by an average of 7.5%, retroactive to March 1, 1955, the rates of compensation of over 1,000,000 federal employees)	Passed by voice vote (June 23)	Passed by voice vote (June 23)	Signed June 28
1955 Amendments to the Universal Military Training and Service Act and the Dependents Assistance Act (Extended to July 1, 1959, power to induct men 18½ to 26 years of age into the armed forces and benefits under the Dependents Assistance Act)	389-5 Yeas: D. 214, R. 175 Nays: D. 1, R. 4 (June 28)	Passed by voice vote (June 28)	Signed June 30
U.S. Debt Limit Extension (Extended for one year through June 30, 1956, authorization for a temporary increase of \$6,000,-,000,000 in the public debt)	267-56 Yeas: D. 134, R. 133 Nays: D. 43, R. 13 (June 27)	Passed by voice vote (June 30)	Signed June 30
Clayton Act Amendments (Granted to the U.S. a right of action to recover damages under the antitrust laws and established a uniform statute of limitations)	Passed by voice vote (April 26)	Passed by voice vote (June 24)	Signed July 7
Mutual Security Act of 1955 (Authorized appropriation of \$3,285,800,000 for U.S. economic, military and technical aid to foreign nations in period July 1, 1955-June 30, 1956)	262-120 Yeas: D. 153, R. 109 Nays: D. 48, R. 72 (July 7)	Passed by voice vote (July 7)	Signed July 8
Department of Defense Appropriation Act, 1956 (Appropriated \$31,800,000,000 for U.S. armed forces in period July 1, 1955-June 30, 1956)	Passed by voice vote (June 30)	Passed by voice vote (June 30)	Signed July 13
Defense Production Act Amendments of 1955 (Extended until June 30, 1956, the authority of the president to allocate and fix priorities of critical and strategic materials and grant defense loans and subsidies under the Defense Production Act of 1950)	Passed by voice vote (Aug. 2)	Passed by voice vote (Aug. 2)	Signed Aug. 9
Reserve Forces Act of 1955 (Provided for a national military reserve program)	315-78 Yeas: D. 169, R. 146 Nays: D. 38, R. 40 (July 25)	Passed by voice vote (July 26)	Signed Aug. 9
Housing Amendments of 1955 (Extended and expanded housing, slum clearance and community redevelopment programs and authorized loans to public agencies for community facilities)	187-168 Yeas: D. 153, R. 34 Nays: D. 37, R. 131 (Aug. 2)	Passed by voice vote (Aug. 1)	Signed Aug. 11
Fair Labor Standards Act Amendments of 1955 (Increased minimum wage under the Fair Labor Standards Act from 75 cents to \$1 an hour)	Passed by voice vote (July 30)	Passed by voice vote (July 29)	Signed Aug. 12

could foresee only \$60,000,000,000 in revenue. However, after 10 months of growing prosperity, government revenues from taxes had risen to the point where Treasury Secretary Humphrey predicted the possibility of a balanced budget. Hopes for 1955-56 stemmed not only from boom times, but also from an extension of expiring excise taxes until March 31, 1956, achieved by congress only after a bitter debate and defeat of a Democratic attempt to reduce the income tax by a flat \$20 per person. The final figures for 1954-55, however, presented a gloomier picture: expenditures of \$64,497,000,000 set against receipts of \$60,303,000,000 left a deficit of \$4,194,000,000, or \$1,300,000,000 more than the president's original budget estimate and \$1,000,000,000 more than the year before. This necessitated a temporary increase in the maximum limit of the national debt to \$281,000,000,000. (See also BUDGET, NATIONAL; DEBT, NATIONAL.)

In general the president seemed dissatisfied with the accomplishments of the Democratic congress when set alongside his 1955 program. Of 13 items of legislation requested, he obtained action on only the military reserve, mutual security appropriation, minimum wage and housing. In each case the results were not what he had hoped for; in housing, for example, congress

finally authorized the construction of 45,000 public housing units; the president had asked 35,000 per year for two years. Of the remaining nine items, four seemed to him especially urgent: schools, highways, health programs and water resources. Statehood for Hawaii and Alaska was shelved again in May.

Eisenhower's own role in government was drastically altered when, on Sept. 24 in Denver, he suffered a heart attack. He returned to his new home in Gettysburg, Pa., in November and began to gradually resume the general responsibilities of the presidency. But his temporary disability had brought to the forefront the almost intolerable burden of the nation's highest office, and resulted in special efforts to divest it of many routine and unnecessary responsibilities. Many proposals for increasing the vice president's role were made, but in general the business of government continued under the direction of the presidential staff. Additional speculation immediately arose as to whether Eisenhower would wish, or be able, to run again, the general feeling being that he would and should not. The president himself refused to state his intentions one way or the other. Among the Democrats, Adlai Stevenson was the first to declare himself a candidate for the nomination.

Social Problems.—Economic growth brought the nation diffi-

cult social problems as well. Chief among these was the rising educational crisis, especially the shortage of educational facilities. In all, the nation faced a shortage of 250,000 classrooms for the new school year beginning in September. The trouble, however, was more deep seated than the shortage of physical facilities. Teachers, among the poorest paid of trained professional people, were deserting the profession in droves.

The Fund for the Advancement of Education analyzed the economic state of teachers as being worse in most cases than in 1929, although other professions, as well as unionized labour, had experienced rapid advances in income.

The commissioner of education, Samuel M. Brownell, estimated a shortage of 141,300 teachers. The worst was yet to come. The National Citizens Committee for the Public Schools foresaw a school population of 48,000,000 within 10 years, requiring 950,000 new classrooms costing an estimated \$32,000,000,000. Where was the money to come from? Traditional reliance on local funds fell short of the needs; educators began to see the only solution in federal aid, though many feared the possible federal control which might go with it. The Eisenhower administration recognized the educational crisis, but drew back from federal aid. The secretary of health and education, Oveta Culp Hobby, promised a White House conference on education in November to study the problem. When it gathered the president urged it to seek a "sensible solution" with a minimum of federal aid, recognizing that educational responsibilities are traditionally and primarily local. But most educators saw no financial solution at the local level.

Higher education had its own crisis. Caught between fixed endowments and shrinking sources of gifts on the one hand, and sky rocketing costs on the other, colleges and universities sank deeper and deeper into the red. Educational costs had risen more than 50% per capita since 1948, tuition only 21%. Half the colleges, reported the council for financial aid to education, were operating at a deficit. Many banded together to raise funds, and directed their efforts particularly at industry, which began to make substantial donations to higher education. (See also EDUCATION.)

Education in the south had its own special problems consequent upon the U.S. supreme court's 1954 decision against the segregation of the races in the public schools. On May 31 the court returned to the subject, directing the states to make a "prompt and reasonable start" toward implementing the ruling, but leaving enforcement to the local courts. Four border states, Delaware, Maryland, Missouri and West Virginia, had already begun compliance; four in the deep south, Georgia, South Carolina, Mississippi and Louisiana, declared unalterable opposition; and nine awaited further instruction. Mississippi, South Carolina and Georgia amended their constitutions to give the state authority to abolish the public school system and subsidize private schools, and Georgia forbade the use of state funds in any mixed school. Louisiana amended its constitution to permit the use of the police power to continue segregation. These four states plus Florida and Alabama made no motions toward compliance; the other 11 took steps in varying degree. The National Association for the Advancement of Colored People claimed that the new school year found 250,000 Negro and white children attending mixed schools which before had been segregated. This, however, compared with 9,281,000 white and 2,397,000 Negro children attending separate schools in segregated areas. (See also LAW.)

Best medical news of the year was the approval by the Polio Vaccine Education centre of Jonas Salk's revolutionary discovery, characterized by the chairman of the board of trustees of the American Medical association as "one of the greatest events in the history of medicine." The federal government immedi-



GEORGE MEANY AND WALTER REUTHER (third and fourth from left) at first convention of the merged A.F. of L.-C.I.O. labour unions, New York city, Dec. 5, 1955. Meany was elected president by a unanimous vote

ately licensed six pharmaceutical firms to manufacture and distribute the vaccine. Controversy arose nearly immediately on discovery of imperfect vaccine from one manufacturer, but the laboratory was later cleared of responsibility, the fault lying in government testing methods. Despite epidemics in Boston and Milwaukee, total cases dropped in 1955 from 19,205 to 16,182 by the time the season passed its peak at Labor Day. (See POLIOMYELITIS; SALK, JONAS EDWARD.)

(See also FOREIGN INVESTMENTS; IMMIGRATION, EMIGRATION AND NATURALIZATION; REFUGEES; TARIFFS.) (E. W. NN.)

Foreign Credits of the U.S. Government.—Outstanding indebtedness to the U.S. government on credits extended to foreign governments and other foreign entities continued to recede from the postwar high of Dec. 1953 and decreased \$19,000,000 in the fiscal year ended June 30, 1955. On that date, the amount outstanding totalled \$11,795,000,000, including all unpaid principal balances on loans extended since the creation of the Export-Import Bank of Washington (in 1934), but excluding amounts due on World War I debts to the U.S. government. Also excluded was the value of military material temporarily transferred to foreign powers.

Although principal collections of \$460,000,000 in fiscal year 1955 exceeded new loan disbursements, they were off 8% from the previous year. Annual disbursements, amounting to \$443,000,000, were down one-third from the slightly drifting rate of the preceding three years. Less than \$2,600,000 of the outstanding indebtedness was charged off as uncollectible during the year; the charge offs were all incurred on loans extended in recent years to nongovernmental foreign entities in efforts to increase production of strategic materials. At the year end, \$58,000,000 of the outstanding principal indebtedness had been due and unpaid for 90 days or more.

Service of the remaining indebtedness was scheduled through-

Table IV.—Foreign Credits of the U.S. Government—
by Collecting Agency and by Country, June 30, 1955

	Total	Outstanding	Unutilized commitments
Total	\$12,788,407,000*	\$11,795,305,000	\$993,102,000*
By collecting agency:			
Commerce department (Merchant ships)	92,877,000	92,877,000	
Defense department (Surplus property)	20,000,000	20,000,000	
Export-Import bank:			
For own account (in- cluding agent-bank loans)	3,490,014,000	2,737,215,000	752,799,000
For mutual security pro- gram	1,842,895,000	1,701,575,000	141,320,000
Prior grants converted into credits	1,000,000,000	1,000,000,000	
For Office of Defense Mobilization	43,911,000	22,320,000	21,591,000
Under Agricultural Trade Development and Assistance act	66,130,000		66,130,000
Loans of the Reconstruc- tion Finance Corpo- ration	36,338,000	36,338,000	
General Services Admin- istration:			
Strategic materials	95,909,000	86,636,000	9,273,000
Surplus property	9,529,000	9,529,000	
International Cooperation administration (strate- gic materials)	29,493,000	27,505,000	1,988,000
State department (United Nations headquarters loan)	60,000,000	60,000,000	
Treasury department:			
British loan	3,567,263,000	3,567,263,000	
Prior grants converted into credits	1,155,878,000	1,155,878,000	
Surplus property	944,109,000	944,109,000	
Lend-lease current credits and silver	310,554,000	310,554,000	
Philippine funding	23,498,000	23,498,000	
Institute of Inter-Amer- ican Affairs	7,000	7,000	
By country:			
American republics	1,348,860,000	951,104,000	397,756,000
Argentina	146,508,000	86,436,000	60,072,000
Bolivia	38,018,000	33,318,000	4,700,000
Brazil	607,797,000	493,848,000	113,949,000
Chile	77,795,000	73,045,000	4,750,000
Colombia	30,161,000	29,226,000	935,000
Costa Rica	10,295,000	6,507,000	3,788,000
Cuba	24,000,000	16,000,000	8,000,000
Ecuador	29,643,000	21,263,000	8,380,000
El Salvador	149,000	149,000	
Guatemala	500,000	132,000	368,000
Haiti	24,782,000	18,302,000	6,480,000
Mexico	169,505,000	127,236,000	42,269,000
Nicaragua	420,000	420,000	
Panamá	1,145,000	1,145,000	
Paraguay	8,506,000	806,000	7,700,000
Peru	142,873,000	17,032,000	125,841,000
Uruguay	12,881,000	10,406,000	2,475,000
Venezuela	6,283,000	5,224,000	1,059,000
Unspecified	17,600,000	10,610,000	6,990,000
Afghanistan	40,934,000	23,734,000	17,200,000
Austria	13,716,000	7,716,000	6,000,000
Belgium-Luxembourg and possessions	150,913,000	150,913,000	
Belgium	147,891,000	147,891,000	
Luxembourg	3,000,000	3,000,000	
Belgian Congo	22,000	22,000	
British Commonwealth of Nations	5,306,551,000	5,163,385,000	143,166,000
United Kingdom	4,592,376,000	4,592,376,000	
Australia	19,582,000	19,582,000	
British East Africa	2,312,000	2,312,000	
British Guiana	128,000	128,000	
Canada	15,112,000	12,487,000	2,625,000
Federation of Rhodesia and Nyasaland	57,803,000	39,833,000	17,970,000
India	404,257,000	359,257,000	45,000,000
Jamaica	15,300,000	15,300,000	
New Zealand	19,069,000	3,069,000	16,000,000
Nigeria	501,000	501,000	
Pakistan	35,000,000	15,000,000	20,000,000
Union of South Africa	145,110,000	103,539,000	41,571,000
Burma	2,460,000	2,460,000	
China	154,979,000	154,979,000	
Czechoslovakia	4,870,000	4,870,000	
Denmark	48,184,000	48,184,000	
Egypt	11,935,000	4,350,000	7,585,000
Ethiopia-Eritrea	4,024,000	4,024,000	
Finland	100,873,000	100,873,000	

Table IV.—Foreign Credits of the U.S. Government—
by Collecting Agency and by Country, June 30, 1955—Cont'd

	Total	Outstanding	Unutilized commitments
France and possessions	1,841,353,000	1,839,872,000	1,481,000
France	1,829,612,000	1,828,182,000	1,430,000
Algeria	610,000	610,000	
French Equatorial Africa	3,873,000	3,873,000	
French Morocco	7,258,000	7,207,000	51,000
Germany	1,191,595,000	1,191,595,000	
Greece	86,509,000	74,079,000	12,430,000
Hungary	12,429,000	12,429,000	
Iceland	5,627,000	5,627,000	
Indonesia	172,579,000	136,829,000	35,750,000
Iran	109,237,000	54,237,000	55,000,000
Ireland	128,200,000	128,200,000	
Israel	141,867,000	127,309,000	14,558,000
Italy	297,640,000	277,640,000	20,000,000
Japan	123,086,000	60,530,000	62,556,000
Korea	23,450,000	20,950,000	2,500,000
Liberia	40,836,000	21,986,000	18,850,000
Netherlands	304,320,000	304,320,000	
Norway	101,566,000	101,566,000	
Philippines	86,980,000	77,457,000	9,523,000
Poland	66,127,000	66,127,000	
Portugal and possession	57,438,000	50,343,000	7,095,000
Portugal	57,407,000	50,312,000	7,095,000
Angola	32,000	32,000	
Saudi Arabia	22,698,000	22,698,000	
Spain	64,831,000	56,273,000	8,558,000
Sweden	20,400,000	20,400,000	
Thailand	3,273,000	819,000	2,454,000
Turkey	119,456,000	92,174,000	27,282,000
U.S.S.R.	222,493,000	222,493,000	
Yugoslavia	52,761,000	52,761,000	
International organiza- tions:			
European Coal and Steel Community	100,000,000	100,000,000	
United Nations	60,000,000	60,000,000	
Unspecified areas: Ex- porter credit lines	143,359,000		143,359,000

*Does not include \$1,508,985,000 authorized by legislation but not committed by the Export-Import bank as of June 30, 1955, nor indeterminate amounts authorized by legislation but not committed for mutual security program loans and loans under the Agricultural Trade Development and Assistance act.

Source: Office of Business Economics, U.S. Department of Commerce.

out the next 45 years.

Interest collections in fiscal year 1955 were \$282,000,000, slightly more than in the preceding 12-month period, and represented an average return of 2.4% on the outstanding indebtedness.

The outstanding balance owed by the western European countries constituted three-fourths of the world total. In the year the High Authority of the European Coal and Steel Community drew on the \$100,000,000 credit established under the mutual security program. The loan was to be repaid over 22 years beginning in 1958; the first of the 3½% interest collections had been made. During fiscal year 1955 Portugal was the only European nation to increase its indebtedness to the U.S. government. Major repayments were made by France (\$81,000,000) and the United Kingdom (\$56,000,000). Among other repayments the Netherlands returned silver which it had lend-leased at a value of \$10,000,000.

Brazil continued to be the country with the most credit activity, drawing \$106,000,000 and repaying \$50,000,000. Disbursement of new relatively short-term loans to Japan by commercial agent banks of the Export-Import bank were off to \$59,000,000. No U.S. government funds were actually expended, but the government assumed the risk of defaults on these credits for the purchase of U.S. cotton. These disbursements were more than offset by the \$88,000,000 repaid by Japan on earlier loans drawn directly from the Export-Import bank and from commercial agent banks.

During fiscal year 1955, new loan commitments by U.S. government agencies totalled \$866,000,000. These included \$170,000,000 under the mutual security program legislation for the year and \$66,000,000 to be disbursed in foreign currencies accruing from the sale of farm products abroad under the Agricultural Trade Development and Assistance act of 1954. The

Export-Import bank was to administer these credits as agents of the International Cooperation administration. From its own available lending power of \$5,000,000,000, the bank committed \$630,000,000. About one-fourth of this was offered to foreigners through United States manufacturers or exporters, under export credit lines. (See also EXPORT-IMPORT BANK OF WASHINGTON; FOREIGN AID PROGRAMS, U.S.) (E. S. K.)

Education.—See the articles EDUCATION; UNIVERSITIES AND COLLEGES.

Defense.—For information about the armed forces of the United States in 1955, see ARMIES OF THE WORLD; AVIATION, MILITARY; COAST GUARD, U.S.; MARINE CORPS, U.S.; NATIONAL GUARD; NAVIES OF THE WORLD; SELECTIVE SERVICE, U.S.

Finance and Banking.—Statistics pertaining to the United States will be found in such articles as BANKING; BUDGET, NATIONAL; BUSINESS REVIEW; CONSUMER CREDIT; DEBT, NATIONAL; EXPORT-IMPORT BANK OF WASHINGTON; FEDERAL DEPOSIT INSURANCE CORPORATION; FEDERAL RESERVE SYSTEM; FOREIGN INVESTMENTS; INCOME AND PRODUCT, U.S.; SAVINGS AND LOAN ASSOCIATIONS; STOCKS AND BONDS; TAXATION; WEALTH AND INCOME, DISTRIBUTION OF; WAGES AND HOURS.

Foreign Trade.—See the articles BUSINESS REVIEW; EXCHANGE CONTROL AND EXCHANGE RATES; EXPORT-IMPORT BANK OF WASHINGTON; FOREIGN INVESTMENTS; INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT; INTERNATIONAL MONETARY FUND; INTERNATIONAL TRADE; TARIFFS.

Communications.—For statistics, see the articles AVIATION, CIVIL; CANALS AND INLAND WATERWAYS; MOTOR TRANSPORTATION; POST OFFICE; RADIO AND TELEVISION; RAILROADS; ROADS AND HIGHWAYS; SHIPBUILDING; MERCHANT MARINE; TELEGRAPHY; TELEPHONE; URBAN TRANSPORTATION, U.S.

Agriculture.—Statistical material pertaining to this subject may be found under AGRICULTURE; also in separate articles on the principal crops and agricultural products.

Mineral Production.—See separate articles on the principal minerals; also MINERAL AND METAL PRODUCTION AND PRICES. (X.)

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United States Air Force Academy. The United States Air Force academy was established to provide a source of air-minded and air-experienced officers specifically trained for a life-time of service in the air force. It was dedicated on July 11, 1955, at the academy's temporary location at Lowry Air Force base, Denver, Colo.

On that date the first class of 306 cadets, selected from more than 6,000 applicants, was sworn in by the commandant of cadets, Harold E. Talbott, secretary of the air force, delivered the dedication address. The ceremony was attended by military leaders, government officials and thousands of guests from throughout the United States.

The academy's first superintendent, Lieut. Gen. Hubert R. Harmon, a veteran air commander and educator, headed a staff which included Brig. Gen. Don Zimmerman, dean of faculty, and Brig. Gen. Robert M. Stillman, commandant of cadets. It was believed that the faculty might eventually include civilian as well as military instructors, but instructors for the first class were all officers.

The academy's permanent site was selected from among several hundred proposed sites in 27 states. It consists of approximately 17,500 ac. and is located on a plateau east of the Rocky mountains, 7 mi. N. of Colorado Springs, Colo. The elevation averages 6,500 ft., and the climate provides cool summers and moderate winters. Congress authorized the expenditure of \$125,000,000 for construction at the permanent site.

The four-year educational program, leading to a baccalaureate degree and a second lieutenant's commission in the air force, covers education in the traditional sense, as well as airmanship, designed to prepare the cadet for responsibility and leadership as an air force officer.

The academic curriculum is divided between the humanities and the sciences. Such studies as government, geography, history and philosophy are intended to provide an understanding of the political, social and economic factors which influence the great problems of our time. A clear, forceful command of the English language, both in writing and in speaking, is emphasized. The science courses range from the fundamentals of mathematics, physics and chemistry through the technical areas related to aeronautical engineering.

The airmanship program, an ever-present part of cadet life, includes military training, intramural athletics, leadership and flight training. The flight training qualifies graduates in aerial navigation, entitling them to the wings of an aircraft observer. During the sophomore year, the cadets receive indoctrination in pilot training and, if still physically qualified, most graduates go to air force pilot training schools.

Any male citizen of good moral character who will be 17 years old but less than 22 on July 1 of the year he plans to enter the academy, who has never been married and who can meet the prescribed physical standards, may compete for appointment to the Air Force academy. Roughly 85% of the vacancies, allocated to the states on the basis of congressional representation, are filled by competitive examinations among candidates nominated by United States senators and representatives. The



MODEL of the site of the Air Force academy, Colorado Springs, Colo. The first cadet class assembled in July 1955

remainder are filled by competitive examinations among candidates nominated by the president and vice-president, among members of the regular and reserve components of the air force and army, and sons of deceased veterans of the armed forces. The air force makes final selections following the competitive examinations.

The second class, entering in July 1956 was to consist of approximately 400 cadets. The eventual authorized strength of the Cadet Wing was 2,496.

(Rt. C. W.)

United States Congress. The 84th congress, which convened for its second session on Jan. 3, 1956, was comprised of the following members as of that date:

United States Senate
Presiding Officer: Richard M. Nixon (vice-president of the United States)
Majority Leader: Lyndon B. Johnson of Texas.
Minority Leader: William F. Knowland of California.
Democrats: 49; Republicans: 47.

State	Name	Party	Term Expires	Residence
Ala.	Hill, Lister	Dem.	1957	Montgomery
	Sparkman, John	Dem.	1961	Huntsville
Ariz.	Hayden, Carl	Dem.	1957	Phoenix
	Goldwater, Barry	Rep.	1959	Phoenix
Ark.	Fulbright, J. W.	Dem.	1957	Fayetteville
	McClellan, John L.	Dem.	1961	Camden
Calif.	Kuchel, Thomas H.	Rep.	1957	Anaheim
	Knowland, William F.	Rep.	1959	Oakland
Colo.	Millikin, Eugene D.	Rep.	1957	Denver
	Allott, Gordon	Rep.	1961	Lamar
Conn.	Bush, Prescott	Rep.	1957	Greenwich
	Portell, William A.	Rep.	1959	Hartford

State	Name	Party	Term Expires	Residence
Del.	Williams, John J.	Rep.	1959	Millsboro
	Frear, J. Allen, Jr.	Dem.	1961	Dover
	Smathers, George A.	Dem.	1957	Miami
	Holland, Spessard L.	Dem.	1959	Bartow
Ga.	George, Walter F.	Dem.	1957	Vienna
	Russell, Richard B.	Dem.	1961	Winder
Ida.	Welker, Herman	Rep.	1957	Payette
	Dworshak, Henry C.	Rep.	1961	Burley
Ill.	Dirksen, Everett McKinley	Rep.	1957	Pekin
	Douglas, Paul H.	Dem.	1961	Chicago
Ind.	Capehart, Homer E.	Rep.	1957	Washington
	Jenner, William E.	Rep.	1959	Bedford
Iowa	Hickenlooper, Bourke B.	Rep.	1957	Cedar Rapids
	Martin Thomas E.	Rep.	1961	Iowa City
Kan.	Carlson, Frank	Rep.	1957	Topeka
	Schoeppel, Andrew F.	Rep.	1961	Wichita
Ky.	Clements, Earle C.	Dem.	1957	Morganfield
	Barkley, Alben W.	Dem.	1961	Paducah
La.	Long, Russell B.	Dem.	1957	Baton Rouge
	Ellender, Allen J.	Dem.	1961	Houma
Me.	Payne, Frederick G.	Rep.	1959	Waldoboro
	Smith, Margaret Chase	Rep.	1961	Skowhegan
Md.	Butler, John Marshall	Rep.	1957	Baltimore
	Beall, J. Glenn	Rep.	1959	Frostburg
Mass.	Kennedy, John F.	Dem.	1959	Boston
	Saltonstall, Leverett	Rep.	1961	Dover
Mich.	Potter, Charles E.	Rep.	1959	Cheboygan
	McNamara, Patrick V.	Dem.	1961	Detroit
Minn.	Thye, Edward J.	Rep.	1959	Northfield
	Humphrey, Hubert H.	Dem.	1961	Minneapolis
Miss.	Stennis, John C.	Dem.	1959	De Kalb
	Eastland, James O.	Dem.	1961	Doddsville
Mo.	Hennings, Thomas C., Jr.	Dem.	1957	St. Louis
	Symington, Stuart	Dem.	1959	Creve Coeur
Mont.	Mansfield, Mike	Dem.	1959	Missoula
	Murray, James E.	Dem.	1961	Butte
Neb.	Hruska, Roman L.	Rep.	1959	Omaha
	Curtis, Carl T.	Rep.	1961	Minden
Nev.	Bible, Alan	Dem.	1957	Reno
	Malone, George W.	Rep.	1959	Reno
N.H.	Cotton, Norris	Rep.	1957	Lebanon
	Bridges, Styles	Rep.	1961	Concord
N.J.	Smith, H. Alexander	Rep.	1959	Princeton
	Case, Clifford P.	Rep.	1961	Rahway
N.M.	Chavez, Dennis	Dem.	1959	Albuquerque
	Anderson, Clinton P.	Dem.	1961	Albuquerque
N.Y.	Lehman, Herbert H.	Dem.	1957	New York city
	Ives, Irving M.	Rep.	1959	Norwich
N.C.	Ervin, S. J., Jr.	Dem.	1957	Morganton
	Scott, W. Kerr	Dem.	1961	Haw River
N.D.	Young, Milton R.	Rep.	1957	La Moure
	Langer, William	Rep.	1959	Bismarck
Ohio	Bender, George H.	Rep.	1957	Chagrin Falls
	Bricker, John W.	Rep.	1959	Columbus
Okla.	Monroney, A. S. Mike	Dem.	1957	Oklahoma City
	Kerr, Robert S.	Dem.	1961	Oklahoma City
Ore.	Morse, Wayne	Dem.	1957	Eugene
	Neuberger, Richard L.	Dem.	1961	Portland
Pa.	Duff, James H.	Rep.	1957	Carnegie
	Martin, Edward	Rep.	1959	Washington
R.I.	Pastore, John O.	Dem.	1959	Providence
	Green, Theodore Francis	Dem.	1961	Providence
S.C.	Johnston, Olin D.	Dem.	1957	Spartanburg
	Thurmond, J. Strom	Dem.	1961	Aiken
S.D.	Case, Francis	Rep.	1957	Custer
	Mundt, Karl E.	Rep.	1961	Madison
Tenn.	Gore, Albert	Dem.	1959	Carthage
	Kefauver, Estes	Dem.	1961	Chattanooga
Tex.	Daniel, Price	Dem.	1959	Liberty
	Johnson, Lyndon B.	Dem.	1961	Johnson City
Utah	Bennett, Wallace F.	Rep.	1957	Salt Lake City
	Watkins, Arthur V.	Rep.	1959	Orem
Vt.	Aiken, George D.	Rep.	1957	Putney
	Flanders, Ralph E.	Rep.	1959	Springfield
Va.	Byrd, Harry F.	Dem.	1959	Berryville
	Robertson, A. Willis	Dem.	1961	Lexington
Wash.	Magnuson, Warren G.	Dem.	1957	Seattle
	Jackson, Henry M.	Dem.	1959	Everett
W.Va.	Kilgore, Harley M.	Dem.	1959	Beckley
	Neely, Matthew M.	Dem.	1961	Fairmont
Wis.	Wiley, Alexander	Rep.	1957	Chippewa Falls
	McCarthy, Joseph R.	Rep.	1959	Appleton
Wyo.	Barrett, Frank A.	Rep.	1959	Lusk
	O'Mahoney, Joseph C.	Dem.	1961	Cheyenne

United States House of Representatives (* served in 83rd congress).

Speaker: Sam Rayburn of Texas.

Majority Leader: John W. McCormack of Massachusetts.

Minority Leader: Joseph W. Martin, Jr., of Massachusetts.

Democrats: 230; Republicans: 203; vacancies: 2.

Minority Leader: Joseph W. Martin, Jr., of Massachusetts.					State	Dist.	Name	Party	Residence
Democrats: 230; Republicans: 203; vacancies: 2.									
State	Dist.	Name	Party	Residence					
Ala.	1	*Boykin, Frank W.	Dem.	Mobile		14	*Reed, Chauncey W.	Rep.	West Chicago
	2	*Grant, George M.	Dem.	Troy		15	*Mason, Noah M.	Rep.	Oglesby
	3	*Andrews, George W.	Dem.	Union Springs		16	*Allen, Leo E.	Rep.	Galena
	4	*Roberts, Kenneth A.	Dem.	Anniston		17	*Arends, Leslie C.	Rep.	Melvin
	5	*Rains, Albert	Dem.	Gadsden		18	*Velde, Harold H.	Rep.	Pekin
	6	*Selden, Armistead I., Jr.	Dem.	Greensboro		19	*Chiperfield, Robert B.	Rep.	Canton
	7	*Elliott, Carl	Dem.	Jasper		20	*Simpson, Sid	Rep.	Carrollton
	8	*Jones, Robert E., Jr.	Dem.	Scottsboro		21	*Mack, Peter F., Jr.	Dem.	Carlinville
	9	Huddleston, George, Jr.	Dem.	Birmingham		22	*Springer, William L.	Rep.	Champaign
Ariz.	1	*Rhodes, John J.	Rep.	Mesa	Ind.	1	*Madden, Ray J.	Dem.	Gary
	2	Udall, Stewart	Dem.	Tucson		2	*Halleck, Charles A.	Rep.	Rensselaer
Ark.	1	*Gathings, E. C.	Dem.	West Memphis	3	*Crumpacker, Shepard J., Jr.	Rep.	South Bend	
	2	*Mills, Wilbur D.	Dem.	Kensett	4	*Adair, E. Ross	Rep.	Fort Wayne	
	3	*Trimble, James W.	Dem.	Berryville	5	*Beamer, John V.	Rep.	Wabash	
	4	*Harris, Oren	Dem.	El Dorado	6	*Harden, Cecil M.	Rep.	Covington	
	5	*Hays, Brooks	Dem.	Little Rock	7	*Bray, William G.	Rep.	Martinsville	
	6	*Norrell, W. F.	Dem.	Monticello	8	Denton, Winfield K.	Dem.	Evansville	
Calif.	1	*Scudder, Hubert B.	Rep.	Sebastopol	Iowa	9	*Wilson, Earl	Rep.	Bedford
	2	*Engle, Clair	Dem.	Red Bluff		10	*Harvey, Ralph	Rep.	New Castle
	3	*Moss, John E., Jr.	Dem.	Sacramento		11	*Brownson, Charles B.	Rep.	Indianapolis
	4	*Mailliard, William S.	Rep.	San Francisco	1	Schwengel, Fred	Rep.	Davenport	
	5	*Shelley, John F.	Dem.	San Francisco	2	*Talle, Henry O.	Rep.	Decorah	
	6	Baldwin, John F., Jr.	Rep.	Martinez	3	*Gross, H. R.	Rep.	Waterloo	
	7	*Allen, John J., Jr.	Rep.	Oakland	4	*LeCompte, Karl M.	Rep.	Corydon	
	8	*Miller, George P.	Dem.	Alameda	5	*Cunningham, Paul	Rep.	Des Moines	
	9	*Younger, J. Arthur	Rep.	San Mateo	6	*Dolliver, James I.	Rep.	Fort Dodge	
	10	*Gubser, Charles S.	Rep.	Gilroy	7	*Jensen, Ben F.	Rep.	Exira	
	11	*Johnson, Leroy	Rep.	Stockton	8	*Hoeven, Charles B.	Rep.	Alton	
	12	Sisk, B. F.	Dem.	Fresno	Kan.	1	Avery, William H.	Rep.	Wakefield
	13	Teague, Charles M.	Rep.	Ojai		2	*Scrivner, Errett P.	Rep.	Kansas City
	14	*Hagen, Harlan	Dem.	Hanford		3	*George, Myron V.	Rep.	Altamont
	15	*McDonough, Gordon L.	Rep.	Los Angeles		4	*Rees, Edward H.	Rep.	Emporia
	16	*Jackson, Donald L.	Rep.	Santa Monica	5	*Hope, Clifford R.	Rep.	Garden City	
17	*King, Cecil R.	Dem.	Los Angeles	6	*Smith, Wint	Rep.	Mankato		
18	*Hosmer, Craig	Rep.	Long Beach	Ky.	1	*Gregory, Noble J.	Dem.	Mayfield	
19	*Holifield, Chet	Dem.	Montebello		2	*Natcher, William H.	Dem.	Bowling Green	
20	*Hinshaw, Carl	Rep.	Pasadena		3	*Robison, John M., Jr.	Rep.	Louisville	
21	*Hiestand, Edgar W.	Rep.	Altadena		4	*Chelf, Frank L.	Dem.	Lebanon	
22	*Holt, Joseph F.	Rep.	Van Nuys		5	*Spence, Brent	Dem.	Fort Thomas	
23	*Doyle, Clyde	Dem.	South Gate		6	*Watts, John C.	Dem.	Nicholasville	
24	*Lipscomb, Glenard P.	Rep.	Los Angeles		7	*Perkins, Carl D.	Dem.	Hindman	
25	*Hillings, Patrick J.	Rep.	Arcadia		8	Siler, Eugene	Rep.	Williamsburg	
26	Roosevelt, James	Dem.	Los Angeles	La.	1	*Hébert, F. Edward	Dem.	New Orleans	
27	*Sheppard, Harry R.	Dem.	Yucaipa		2	*Boggs, Hale	Dem.	New Orleans	
28	*Utt, James B.	Rep.	Santa Ana		3	*Willis, Edwin E.	Dem.	St. Martinville	
29	*Phillips, John	Rep.	Banning		4	*Brooks, Overton	Dem.	Shreveport	
30	*Wilson, Robert C.	Rep.	Chula Vista		5	*Passman, Otto E.	Dem.	Monroe	
					6	*Morrison, James H.	Dem.	Hammond	
Colo.	1	*Rogers, Byron G.	Dem.	Denver	7	*Thompson, T. A.	Dem.	Ville Platte	
	2	*Hill, William S.	Rep.	Fort Collins	8	*Long, George S.	Dem.	Pineville	
	3	*Chenoweth, J. Edgar	Rep.	Trinidad					
	4	*Aspinall, Wayne N.	Dem.	Palisade					
Conn.	1	*Dodd, Thomas J.	Dem.	West Hartford	Me.	1	*Hale, Robert	Rep.	Portland
	2	*Seely-Brown, Horace, Jr.	Rep.	Pomfret Center		2	*Nelson, Charles P.	Rep.	Augusta
	3	*Cretella, Albert W.	Rep.	North Haven		3	*McIntire, Clifford G.	Rep.	Perham
	4	*Morano, Albert P.	Rep.	Greenwich	Md.	1	*Miller, Edward T.	Rep.	Easton
	5	*Patterson, James T.	Rep.	Naugatuck		2	*Devereux, James P. S.	Rep.	Stevenson
	*Sadlak, Antoni N.	Rep.	Rockville	3		*Garmatz, Edward A.	Dem.	Baltimore	
Del.		McDowell, Harris B.	Dem.	Middletown		4	*Fallon, George H.	Dem.	Baltimore
Fla.	1	Cramer, William C.	Rep.	St. Petersburg	5	Lankford, Richard E.	Dem.	Annapolis	
	2	*Bennett, Charles E.	Dem.	Jacksonville	6	*Hyde, DeWitt S.	Rep.	Bethesda	
	3	*Sikes, Robert L. F.	Dem.	Crestview	7	*Friedel, Samuel N.	Dem.	Baltimore	
	4	Fascell, Dante B.	Dem.	Miami	Mass.	1	*Heseltun, John W.	Rep.	Deerfield
	5	*Herlong, A. S., Jr.	Dem.	Leesburg		2	*Boland, Edward P.	Dem.	Springfield
	6	Rogers, Paul G.	Dem.	West Palm Beach		3	*Philbin, Philip J.	Dem.	Cinton
	7	*Haley, James A.	Dem.	Sarasota		4	*Donohue, Harold D.	Dem.	Worcester
	8	*Matthews, D. R.	Dem.	Gainesville	5	*Rogers, Edith Nourse	Rep.	Lowell	
Ga.	1	*Preston, Prince H., Jr.	Dem.	Statesboro	6	*Bates, William H.	Rep.	Salem	
	2	*Pilcher, J. L.	Dem.	Meigs	7	*Lane, Thomas J.	Dem.	Lawrence	
	3	*Forrester, E. L.	Dem.	Leesburg	8	Macdonald, Torbert H.	Dem.	Malden	
	4	*Flynt, John J., Jr.	Dem.	Griffin	9	*Nicholson, Donald W.	Rep.	Wareham	
	5	*Davis, James C.	Dem.	Stone Mountain	10	*Curtis, Laurence	Rep.	Boston	
	6	*Vinson, Carl	Dem.	Milledgeville	11	*O'Neill, Thomas P., Jr.	Dem.	Cambridge	
	7	*Lanham, Henderson	Dem.	Rome	12	*McCormack, John W.	Dem.	Dorchester	
	8	Blitch, Iris F.	Dem.	Homerville	13	*Wigglesworth, Richard B.	Rep.	Milton	
	9	*Landrum, Phil M.	Dem.	Jasper	14	*Martin, Joseph W., Jr.	Rep.	North Attleboro	
	10	*Brown, Paul	Dem.	Elberton	Mich.	1	*Machrowicz, Thaddeus M.	Dem.	Hamtramck
Ida.	1	*Pfof, Gracie	Dem.	Nampa		2	*Meader, George	Rep.	Ann Arbor
	2	*Budge, Hamer H.	Rep.	Boise		3	Johansen, August E.	Rep.	Battle Creek
Ill.						4	*Hoffman, Clare E.	Rep.	Allegan
	1	*Dawson, William L.	Dem.	Chicago		5	*Ford, Gerald R., Jr.	Rep.	Grand Rapids
	2	*O'Hara, Barratt	Dem.	Chicago		6	Hayworth, Don	Dem.	East Lansing
	3	Murray, James C.	Dem.	Chicago		7	*Wolcott, Jesse P.	Rep.	Port Huron
	4	*McVey, William E.	Rep.	Harvey		8	*Bentley, Alvin M.	Rep.	Owosso
	5	*Kluczynski, John C.	Dem.	Chicago		9	*Thompson, Ruth	Rep.	Whitehall
	6	*O'Brien, Thomas J.	Dem.	Chicago		10	*Cederberg, Elford A.	Rep.	Bay City
	7	*Bowler, James B.	Dem.	Chicago		11	*Knox, Victor A.	Rep.	Sault Ste. Marie
	8	*Gordon, Thomas S.	Dem.	Chicago		12	*Bennett, John B.	Rep.	Ontonagon
	9	*Yates, Sidney R.	Dem.	Chicago		13	Diggs, Charles C., Jr.	Dem.	Detroit
	10	*Hoffman, Richard W.	Rep.	Berwyn		14	*Rabaut, Louis C.	Dem.	Grosse Pointe Park
	11	*Sheehan, Timothy P.	Rep.	Chicago		15	Dingell, John D., Jr.	Dem.	Detroit
	12	Boyle, Charles A.	Dem.	Chicago		16	*Lesinski, John, Jr.	Dem.	Dearborn
	13	*Church, Marguerite Stitt	Rep.	Evanston		17	Griffiths, Martha W.	Dem.	Detroit
						18	*Dondero, George A.	Rep.	Royal Oak

UNITED STATES CONGRESS

		Name	Party	Residence	State	Dist.	Name	Party	Residence
Minn.	1	*Andresen, August H.	Rep.	Red Wing	N.C.	1	*Bonner, Herbert C.	Dem.	Washington
	2	*O'Hara, Joseph P.	Rep.	Glencoe		2	*Fountain, L. H.	Dem.	Tarboro
	3	*Weir, Roy W.	Dem.	Minneapolis		3	*Barden, Graham A.	Dem.	New Bern
	4	*McCarthy, Eugene J.	Dem.	St. Paul		4	*Cooley, Harold D.	Dem.	Nashville
	5	*Judd, Walter H.	Rep.	Minneapolis		5	*Chatham, Thurmond	Dem.	Winston-Salem
	6	*Marshall, Fred	Dem.	Grove City (R.F.D.)		6	*Durham, Carl T.	Dem.	Chapel Hill
	7	*Andersen, H. Carl	Rep.	Tyler		7	*Carlyle, F. Eitel	Dem.	Lumberton
	8	*Blatnik, John A.	Dem.	Chisholm		8	*Deane, Charles B.	Dem.	Rockingham
	9	*Knutson, Coya	Dem.	Oklee		9	*Alexander, Hugh Q.	Dem.	Kannapolis
Miss.	1	*Abernethy, Thomas G.	Dem.	Okolona	N.D.	10	*Jonas, Charles Raper	Rep.	Lincolnton
	2	*Whitten, Frank L.	Dem.	Charleston		11	*Jones, Woodrow W.	Dem.	Rutherfordton
	3	*Smith, Frank E.	Dem.	Greenwood		12	*Shuford, George A.	Dem.	Asheville
	4	*Williams, John Bell	Dem.	Raymond					
	5	*Winstead, Arthur	Dem.	Philadelphia			*Burdick, Usher L.	Rep.	Williston
	6	*Colmer, William M.	Dem.	Pascagoula			*Krueger, Otto	Rep.	Fessenden
Mo.	1	*Karsten, Frank M.	Dem.	St. Louis	Ohio	1	*Scherer, Gordon H.	Rep.	Cincinnati
	2	*Curtis, Thomas B.	Rep.	Webster Groves		2	*Hess, William E.	Rep.	Cincinnati
	3	*Sullivan, Mrs. John B. (Leonor)	Dem.	St. Louis		3	*Schenck, Paul F.	Rep.	Dayton
	4	*Christopher, George H.	Dem.	Butler		4	*McCulloch, William M.	Rep.	Piqua
	5	*Bolling, Richard	Dem.	Kansas City		5	*Clevenger, Cliff	Rep.	Bryan
	6	*Hull, W. R., Jr.	Dem.	Weston		6	*Polk, James G.	Dem.	Highland
	7	*Short, Dewey	Rep.	Galena		7	*Brown, Clarence J.	Rep.	Blanchester
	8	*Carnahan, A. S. J.	Dem.	Ellsinore		8	*Betts, Jackson E.	Rep.	Findlay
	9	*Cannon, Clarence	Dem.	Elsberry		9	*Ashley, Thomas L.	Dem.	Waterville
	10	*Jones, Paul C.	Dem.	Kennett		10	*Jenkins, Thomas A.	Rep.	Ironton
	11	*Moulder, Morgan M.	Dem.	Camdenton		11	*Bolton, Oliver P.	Rep.	Mentor
Mont.	1	*Metcalf, Lee	Dem.	Helena		12	*Vorys, John M.	Rep.	Columbus
	2	*Fiare, Orvin B.	Rep.	Big Timber		13	*Baumhart, A. D., Jr.	Rep.	Vermilion
Neb.	1	*Weaver, Phil.	Rep.	Fall City		14	*Ayres, William H.	Rep.	Akron
	2	*Chase, Jackson B.	Rep.	Omaha		15	*Henderson, John E.	Rep.	Cambridge
	3	*Harrison, Robert D.	Rep.	Norfolk		16	*Bow, Frank T.	Rep.	Canton (R.F.D.)
	4	*Miller, A. L.	Rep.	Kimball		17	*McGregor, J. Harry	Rep.	West Lafayette
Nev.		*Young, Clifton	Rep.	Reno		18	*Hays, Wayne L.	Dem.	Flushing
						19	*Kirwan, Michael J.	Dem.	Youngstown
N.H.	1	*Morrow, Chester E.	Rep.	Center Ossipee		20	*Feighan, Michael A.	Dem.	Cleveland
	2	*Bass, Perkins	Rep.	Peterborough		21	*Vanik, Charles A.	Dem.	Cleveland
N.J.	1	*Wolverton, Charles A.	Rep.	Merchantville	Okla.	22	*Bolton, Frances P.	Rep.	Lyndhurst
	2	*Hand, T. Millet	Rep.	Cape May City		23	*Minshall, William E., Jr.	Rep.	Cleveland
	3	*Auchincloss, James C.	Rep.	Rumson		1	*Belcher, Page	Rep.	Enid
	4	*Thompson, Frank S.	Dem.	Trenton		2	*Edmondson, Ed	Dem.	Muskogee
	5	*Frelinghuysen, Peter, Jr.	Rep.	Morristown		3	*Albert, Carl	Dem.	McAlester
	6	*Williams, Harrison A., Jr.	Dem.	Plainfield		4	*Steed, Tom	Dem.	Shawnee
	7	*Widnall, William B.	Rep.	Saddle River	Ore.	5	*Jarman, John	Dem.	Oklahoma City
	8	*Canfield, Gordon	Rep.	Paterson		6	*Wickersham, Victor	Dem.	Mangum
	9	*Osmers, Frank C., Jr.	Rep.	Haworth		1	*Norblad, Walter	Rep.	Stayton
	10	*Rodino, Peter W., Jr.	Dem.	Newark		2	*Coon, Sam	Rep.	Baker
	11	*Addonizio, Hugh J.	Dem.	Newark		3	*Green, Edith	Dem.	Portland
	12	*Kean, Robert W.	Rep.	Livingston		4	*Ellsworth, Harris	Rep.	Roseburg
	13	*Sieminski, Alfred D.	Dem.	Jersey City	Pa.	1	*Barrett, William A.	Dem.	Philadelphia
	14	*Tumulty, James T.	Dem.	Jersey City		2	*Granahan, William T.	Dem.	Philadelphia
N.M.		*Fernandez, Antonio M.	Dem.	Santa Fe		3	*Byrne, James A.	Dem.	Philadelphia
		*Dempsey, John J.	Dem.	Santa Fe		4	*Chudoff, Earl	Dem.	Philadelphia
N.Y.	1	*Wainwright, Stuyvesant	Rep.	East Hampton		5	*Green, William J., Jr.	Dem.	Philadelphia
	2	*Derounian, Steven B.	Rep.	Mineola		6	*Scott, Hugh D., Jr.	Rep.	Philadelphia
	3	*Becker, Frank J.	Rep.	Lynbrook		7	*James, Benjamin F.	Rep.	Rosemont
	4	*Latham, Henry J.	Rep.	Queens Village		8	*King, Karl C.	Rep.	Morrisville
	5	*Bosch, Albert H.	Rep.	Richmond Hill		9	*Dague, Paul B.	Rep.	Downingtown
	6	*Holtzman, Lester	Dem.	Rego Park		10	*Carrigg, Joseph L.	Rep.	Susquehanna
	7	*Delaney, James J.	Dem.	Long Island City		11	*Flood, Daniel J.	Dem.	Wilkes-Barre
	8	*Anfuso, Victor L.	Dem.	Brooklyn		12	*Fenton, Ivor D.	Rep.	Mahanoy City
	9	*Keogh, Eugene J.	Dem.	Brooklyn		13	*McConnell, Samuel K., Jr.	Rep.	Wynnewood
	10	*Kelly, Edna F.	Dem.	Brooklyn		14	*Rhodes, George M.	Dem.	Reading
	11	*Celler, Emanuel	Dem.	Brooklyn		15	*Walter, Francis E.	Dem.	Easton
	12	*Dorn, Francis E.	Rep.	Brooklyn		16	*Mumma, Walter M.	Rep.	Harrisburg
	13	*Multer, Abraham J.	Dem.	Brooklyn		17	*Bush, Alvin R.	Rep.	Muncy
	14	*Rooney, John J.	Dem.	Brooklyn		18	*Simpson, Richard M.	Rep.	Huntingdon
	15	*Ray, John H.	Rep.	Staten Island		19	*Quigley, James M.	Dem.	Camp Hill
	16	*Powell, Adam Clayton, Jr.	Dem.	New York city		20	*Van Zandt, James E.	Rep.	Altona
	17	*Coudert, Frederic R., Jr.	Rep.	New York city		21	*Kelley, Augustine B.	Dem.	Greensburg
	18	*Donovan, James G.	Dem.	New York city		22	*Saylor, John P.	Rep.	Johnstown
	19	*Klein, Arthur G.	Dem.	New York city		23	*Gavin, Leon H.	Rep.	Oil City
	20	*Davidson, Irwin D.	Dem.	New York city		24	*Kearns, Carroll D.	Rep.	Farrell
	21	*Zelenko, Herbert	Dem.	New York city		25	*Kearns, Frank M.	Dem.	Bessemer
	22	(Vacancy) ¹				26	*Morgan, Thomas E.	Dem.	Fredericktown
	23	*Dollinger, Isidore	Dem.	New York city	R.I.	27	*Fulton, James G.	Rep.	Pittsburgh
	24	*Buckley, Charles A.	Dem.	New York city		28	*Eberharter, Herman P.	Dem.	Pittsburgh
	25	*Fino, Paul A.	Rep.	New York city		29	*Corbett, Robert J.	Rep.	Pittsburgh
	26	*Gamble, Ralph A.	Rep.	Larchmont		30	(Vacancy) ²		
	27	*Gwinn, Ralph W.	Rep.	Bronxville	S.C.	1	*Forand, Aime J.	Dem.	Cumberland
	28	*St. George, Katharine	Rep.	Tuxedo Park		2	*Fogarty, John E.	Dem.	Harmony
	29	*Wharton, J. Ernest	Rep.	Richmondville		1	*Rivers, L. Mendel	Dem.	Charleston
	30	*O'Brien, Leo W.	Dem.	Albany		2	*Riley, John J.	Dem.	Sumter
	31	*Taylor, Dean P.	Rep.	Troy		3	*Dorn, W. J. Bryan	Dem.	Greenwood
	32	*Kearney, Bernard W.	Rep.	Glavoersville	S.D.	4	*Ashmore, Robert T.	Dem.	Greenville
	33	*Kilburn, Clarence E.	Rep.	Malone		5	*Richards, James P.	Dem.	Lancaster
	34	*Williams, William R.	Rep.	Cassville		6	*McMillan, John L.	Dem.	Florence
	35	*Riehlman, R. Walter	Rep.	Tully		1	*Lovre, Harold O.	Rep.	Watertown
	36	*Taber, John	Rep.	Auburn		2	*Berry, E. Y.	Rep.	McLaughlin
	37	*Cole, W. Sterling	Rep.	Bath	Tenn.	1	*Reece, B. Carroll	Rep.	Johnson City
	38	*Keating, Kenneth B.	Rep.	Rochester		2	*Baker, Howard H.	Rep.	Huntsville
	39	*Ostertag, Harold C.	Rep.	Attica		3	*Frazier, James B., Jr.	Dem.	Chattanooga
	40	*Miller, William E.	Rep.	Lockport					
	41	*Radwan, Edmund P.	Rep.	Buffalo					
	42	*Pillion, John R.	Rep.	Lackawanna					
	43	*Reed, Daniel A.	Rep.	Dunkirk					

UNIVERSITIES AND COLLEGES

713

State	Dist.	Name	Party	Residence
	4	*Ewins, Joe L.		
	5	*Priest, J. Percy	Dem.	Smithville
	6	Bass, Ross	Dem.	Nashville
	7	*Murray, Tom	Dem.	Pulaski
	8	*Cooper, Jere	Dem.	Jackson
	9	*Davis, Clifford	Dem.	Dyersburg
			Dem.	Memphis
Tex.	1	*Patman, Wright		
	2	*Brooks, Jack	Dem.	Texarkana
	3	*Gentry, Brady	Dem.	Beaumont
	4	*Rayburn, Sam	Dem.	Tyler
	5	Alger, Bruce	Dem.	Bonham
	6	*Teague, Olin E.	Rep.	Dallas
	7	*Dowdy, John	Dem.	College Station
	8	*Thomas, Albert	Dem.	Athens
	9	*Thompson, Clark W.	Dem.	Houston
	10	*Thornberry, Homer	Dem.	Galveston
	11	*Poage, W. R.	Dem.	Austin
	12	Wright, Jim	Dem.	Waco
	13	*Ikard, Frank	Dem.	Weatherford
	14	Bell, John J.	Dem.	Wichita Falls
	15	Kilgore, Joe M.	Dem.	Cuero
	16	Rutherford, J. T.	Dem.	McAllen
	17	*Burleson, Omar	Dem.	Odessa
	18	*Rogers, Walter	Dem.	Anson
	19	*Mahon, George H.	Dem.	Pampa
	20	*Kilday, Paul J.	Dem.	Lubbock
	21	*Fisher, O. C.	Dem.	San Antonio
		*Dies, Martin	Dem.	San Angelo
Utah	1	Dixon, Henry A.		
	2	*Dawson, William A.	Rep.	Lufkin
Vi.		*Prouty, Winston L.	Rep.	Logan
				Salt Lake City
Va.	1	*Robeson, Edward J., Jr.	Rep.	Newport City
	2	*Hardy, Porter, Jr.		
	3	*Gory, J. Vaughan	Dem.	Newport News
	4	*Abbitt, Watkins M.	Dem.	Churchland
	5	*Tuck, William M.	Dem.	Richmond
	6	*Poff, Richard H.	Dem.	Appomattox
	7	*Harrison, Burr P.	Dem.	South Boston
	8	*Smith, Howard W.	Rep.	Roadford
	9	Jennings, Pat.	Dem.	Winchester
	10	*Broynhill, Joel T.	Dem.	Broad Run
			Rep.	Marion
				Arlington
Wash.	1	*Pelly, Thomas M.		
	2	*Westland, Jack	Rep.	Seattle
	3	*Mack, Russell V.	Rep.	Everett
	4	*Holmes, Hal	Rep.	Hoquiam
	5	*Horan, Walt	Rep.	Ellensburg
	6	*Tollefson, Thor C.	Rep.	Wenatchee
		*Magnuson, Don	Rep.	Tacoma
			Dem.	Seattle
W.Va.	1	*Mollohan, Robert H.		
	2	*Staggers, Harley O.	Dem.	Fairmont
	3	*Bailey, Cleveland M.	Dem.	Keyser
	4	Burnside, M. G.	Dem.	Clarksburg
	5	*Kee, Elizabeth	Dem.	Huntington
	6	*Byrd, Robert C.	Dem.	Bluefield
			Dem.	Sophia
Wis.	1	*Smith, Lawrence H.		
	2	*Davis, Glenn R.	Rep.	Racine
	3	*Withrow, Gardner R.	Rep.	Waukesha
	4	*Zablocki, Clement J.	Rep.	La Crosse
	5	Reuss, Henry S.	Dem.	Milwaukee
	6	*Van Pelt, William K.	Dem.	Milwaukee
	7	*Laird, Melvin R.	Rep.	Fond du Lac
	8	*Byrnes, John W.	Rep.	Marshfield
	9	*Johnson, Lester R.	Rep.	Green Bay
	10	*O'Konski, Alvin E.	Dem.	Black River Falls
		Thomson, E. Keith	Rep.	Mercer
			Rep.	Cheyenne

¹Caused by the resignation of Sidney A. Fine, effective Jan. 2, 1956.
²Caused by the death of Vera Buchanan, Nov. 26, 1955.

United States Government Departments and Bureaus: see GOVERNMENT DEPARTMENTS AND BUREAUS, U.S.
 also see under specific name, e.g., COAST GUARD, U.S., etc.

United States Investments Abroad: see FOREIGN INVESTMENTS.

United States Junior Chamber of Commerce: see SOCIETIES AND ASSOCIATIONS, U.S.

United States Mint: see COINAGE.

Universities and Colleges. The following 10 pages carry a selected list of accredited schools of college and junior college grade in the United States and Canada, with certain information for the 1955 spring session. The asterisk * denotes data previous to 1955. The symbol † is used to designate men's schools and ‡ to designate women's schools; those with no symbols are coeducational. (See also EDUCATION.)

Institution and Location	Year Founded	Chief Executive	Full Time Students	Part Time Students	Faculty	Endowment	Bound Library Volumes	Institution and Location	Year Founded	Chief Executive	Full Time Students	Part Time Students	Faculty	Endowment	Bound Library Volumes
A															
Abilene Christian College, Abilene, Texas	1906	Don H. Morris	1,503	1,709	89	\$1,926,992	36,000	Amarillo College (Jr.), Amarillo, Tex.	1929	A. M. Meyer	543	1,022	56	—	15,282
Abraham Baldwin Agricultural College (Jr.), Tifton, Georgia	1933	Geo. P. Donaldson	333	333	27	—	7,500	American Institute for Foreign Trade, Phoenix, Arizona	1946	Carl A. Sauer	190	194	25	—	8,842
Acadia University, Wolfville, N.S., Can.	1838	Watson Kirkconnell	421	650	63	1,388,000	99,230	American Int. Coll., Springfield, Mass.	1885	John F. Hines, Jr.	750	1,204	61	200,000	40,000
Adams State Col., Alamosa, Colo.	1921	F. J. Plachy	1,739	2,978	106	605,000	38,689	Amherst College, Amherst, Mass.	1893	Hurst R. Anderson	866	4,408	150	955,000	141,000
†Agnes Scott Coll., Decatur, Ga.	1889	Paul D. Eddy	534	538	61	3,200,000	65,000	Anderson College and Theological Seminary, Anderson, Ind.	1825	Charles W. Cole	1,072	1,076	124	20,654,939	297,339
Akron, University of, Akron, Ohio	1889	Wallace M. Altton	2,125	2,484	215	269,824	98,961	†Andrew College (Jr.), Culbert, Ga.	1917	John A. Morrison	847	1,071	45	—	26,468
Alabama, University of, University, Ala.	1831	Norman P. Auburn	7,100	7,500	850	21,000,000	450,000	Antelope Valley Jr. Coll., Lancaster, Calif.	1854	Albert W. Ray	47	85	10	350,000	7,500
†Alabama Polytechnic Inst., Normal, Ala.	1875	Joseph C. Carmichael	1,087	1,087	76	—	36,287	Appalachian State Univ., Boone, N.C.	1852	Frank J. Fleming	300	450	30	—	11,405
Alabama State Tch. Col., Florence, Ala.	1872	Ralph B. Draughon	6270	6324	60	671,733	65,000	Aquinas College, Grand Rapids, Mich.	1903	Samuel B. Gould	980	996	73	3,000,000	80,000
Alabama State Tch. Col., Jacksonville, Ala.	1863	Herbert B. Norton	1,018	1,032	439	737,340	205,000	Arizona College, Tucson, Ariz.	1923	Arthur F. Bukowski	1,500	1,643	105	—	64,000
Alabama State Tch. Col., Livingston, Ala.	1835	Houston Cole	1,169	1,751	80	—	30,734	Arizona State Col., Flagstaff, Ariz.	1885	Richard A. Harvill	467	594	40	—	26,000
Alabama State Tch. Col., Montgomery, Ala.	1874	D. P. Culp	409	489	32	—	34,310	Arkansas Agricultural, Mechanical and Normal College, Pine Bluff, Ark.	1883	Lacey A. Eastburn	525	638	375	179,317	255,118
Alabama, University of, College, Ala.	1867	C. B. Smith	240	240	49	—	33,000	Arkansas Univ. of Fayetteville, Ark.	1871	Grady Gammage	4,335	5,040	225	—	46,110
Albany State Coll. of Educ., Albany, Ga.	1903	E. N. Paffy	859	1,082	49	—	4,572	Arkansas Univ. of Med. Sci., Little Rock, Ark.	1887	J. T. Caldwell	4,566	5,612	445	—	204,342
†Albertus Magnus, Edinmont, Alta., Can.	1925	William H. Dennis, Jr.	328	381	51	18,894	39,880	Arkansas State Coll., Russellville, Ark.	1873	Lawrence A. Davis	1,025	1,040	95	—	326,000
Albion College, Albion, Mich.	1836	Andrew Stewart	406	457	40	—	34,000	Arkansas State College, State College, Ark.	1909	J. W. Hull	1,078	1,078	95	—	25,201
Albright College, Reading, Pa.	1856	Sister M. Lucia	3,933	4,423	270	500,000	150,000	Arlington State Tch. Col., Conway, Ark.	1907	Carl R. Reng	1,378	1,609	70	—	30,000
Alcorn A. and M. College, Lorman, Miss.	1856	Harry W. Whitehouse	1,130	1,138	78	5,501,070	84,814	Arlington State Coll. (Jr.), Arlington, Tex.	1907	Stas D. Snow	957	1,204	92	—	30,000
Allen Hancock Coll., Santa Maria, Calif.	1836	J. R. Otis	582	602	48	1,153,464	43,200	Armstrong College (Jr.), Savannah, Ga.	1917	E. H. Hereford	1,928	2,317	60	—	50,000
Allen University, Greenville, S.C.	1920	William S. Houpt	890	1,056	58	209,871	19,800	Asbury College, Wilmore, Ky.	1935	Foreman M. Hawes	1,928	2,317	96	—	40,000
Allen University, Meadville, Pa.	1815	W. Ellis Drake	211	252	26	—	10,389	Ashtand College, Ashland, Ohio	1878	Z. T. Johnson	804	877	56	121,000	51,069
Alma College, Lima, Mich.	1872	Samuel R. Higgins	933	933	74	2,475,878	129,000	Assumption College, Ashland, Ky.	1878	Glenn L. Clayton	380	592	46	1,880,000	13,936
Alma College, Cambridge Springs, Pa.	1870	Arthur P. Coleman	744	760	39	350,000	17,261	Assumption College, Worcester, Mass.	1857	Clyde Lewis	175	232	7	—	28,000
Alverno College, Milwaukee, Wis.	1886	John Stanley Harker	503	518	19	—	23,000	Atlanta Div. Univ. of Ga., Atlanta, Ga.	1914	Armand H. Desautels	591	1,022	54	—	10,000
	1936	Sister M. Augustine	417	697	73	6,000	59,250	Atlantic Union College, S. Lancaster, Mass.	1882	Rufus E. Clement	3,883	5,672	22	—	27,000

Institution and Location	Year Founded	Chief Executive	Full Time Students	Part Time Students	Faculty	Endowment	Bound Volumes	Institution and Location	Year Founded	Chief Executive	Full Time Students	Part Time Students	Faculty	Endowment	Bound Volumes
Augsburg College and Theological Seminary, Minneapolis, Minn.	1869	Bernhard Christensen	577	610	55	\$ 100,000	29,000	Bucknell University, Lewisburg, Pa.	1846	Merle M. Odgers	1,821	1,861	140	\$ 27,39,571	140,000
Augusta College, Augusta, Ga.	1925	A. P. Markert	250	260	73	—	31,000	Buena Vista College, Storm Lake, Ia.	1891	John A. Fisher	382	495	32	204,500	31,000
Augustana College, Rock Island, Ill.	1860	Conrad Bergendoff	867	1,168	74	2,350,000	87,000	Buffalo, University of Buffalo, N.Y.	1846	Clifford Furnas	4,226	9,006	1,243	8,609,047*	298,966*
Augustana College, Sioux Falls, S.D.	1860	L. M. Stavig	759	801	97	708,986	36,313	Baylor University, Waco, Tex.	1850	Maurice O. Ross	3,100	4,831	210	6,179,000	165,000
Aurora College, Aurora, Ill.	1893	T. P. Stephens	256	463	37	78,986	39,482	Caldwell College for Women, Caldwell, N.J.	1939	Mother Mary Joseph	210	300	32	—	20,000
Austin College, Sherman, Tex.	1849	John Dean Mosley	415	611	42	1,108,500	35,000	California State Polytechnic College, San Luis Obispo, Calif.	1868	Robert G. Sproul	34,628	—	4,883	73,555,934	3,499,299
Austin Peay State College, Clarksville, Tenn.	1859	Halbert Harvill	700	1,750	60	93,000	8,950	California State Polytechnic College, San Luis Obispo, Calif.	1874	Lee A. DuRinger	981	1,007	215	30,000,000	100,000
Averett College (Jr.), Danville, Va.	1927	Curtis V. Bishop	213	301	24	—	—	California State Polytechnic College, San Luis Obispo, Calif.	1901	Gordon Woods	105	270	27	460,000	7,000
Babson Institute of Business Administration, Babson Park, Mass.	1919	Edward B. Hinkley	496	500	30	2,494,642	20,000	California State Polytechnic College, San Luis Obispo, Calif.	1901	Julian A. McPhee	2,745	2,745	180	—	44,000
Bakersfield College (Jr.), Bakersfield, Calif.	1913	Ralph Prator	1,199	2,781	73	—	—	Calvin College and Seminary, Grand Rapids, Mich.	1876	William Spoelhof	1,300	1,342	60	245,000	55,000
Baker University, Baldwin City, Kan.	1858	Nelson P. Horn	570	378	38	1,676,098	87,494	Campbell College (Jr.), Buie's Creek, N.C.	1887	Ledlie H. Campbell	610	641	30	180,000	11,755
Baldwin-Wallace College, Berea, Ohio	1845	Harry J. Smith	1,213	1,510	86	2,612,557	58,357	Campbellsville Col., (Jr.), Campbellville, Ky.	1906	John M. Carter	325	330	18	100,000	8,700
Ball State Teachers College, Muncie, Ind.	1918	John R. Emms	2,692	3,499	240	—	—	Canal Zone Jr. Col., Balboa Heights, C.Z.	1933	Roger C. Hockett	134	299	20	—	12,000
Barclay College, Lake Forest, Ill.	1863	Mother Margaret Burke	213	231	37	—	30,630	Canal Zone Jr. Col., Balboa Heights, C.Z.	1933	Roger C. Hockett	134	299	20	—	12,000
Barber-Scotia College, Concord, N.C.	1867	L. S. Cozart	210	280	25	1,500,000	48,761	Canine Junior College, Ripposop, Ky.	1923	Alfred S. Lloyd	115	115	10	—	30,000
Barclay College, Annandale-on-Hudson, N.Y.	1860	Jamies H. Case, Jr.	222	228	37	1,753,395	48,761	Capitol College, Buffalo, N.Y.	1870	Philip E. Dobson	1,087	1,850	86	194,000	69,000
Barclay College, New York, N.Y.	1889	Matthew C. Madnos	1,200	1,275	150	8,000,000	75,000	Capital University, Columbus, Ohio	1850	Harold L. Yochum	1,010	1,073	89	678,487	75,000
Barry College, Miami, Fla.	1940	Mother Mary Gerald	302	467	29	2,242,960	94,000	Cardinal Stritch College, Milwaukee, Wis.	1937	Malcolm M. Bertholon	278	315	44	—	8,000
Bates College, Lewiston, Me.	1864	Charles F. Phillips	831	833	55	—	—	Carleton College, Northfield, Minn.	1867	Laurence M. Gould	873	875	30	4,702,677	148,969
Baylor University, Waco, Tex.	1845	Eric J. Bradner	428	606	37	6,925,000	33,777	Carroll College, Helena, Mont.	1900	John C. Warner	3,012	4,148	366	29,600,000	130,000
Bay City Junior College, Bay City, Mich.	1853	William R. White	3,125	4,491	235	665,971	40,000	Carroll College, Helena, Mont.	1900	R. V. Kavanaugh	1,67	487	42	700,000	21,000
Beaver College, Jenkintown, Pa.	1853	Raymond M. Kistler	526	546	54	—	—	Carroll College, Helena, Mont.	1900	R. V. Kavanaugh	1,67	487	42	700,000	21,000
Belhaven College, Jacksonville, Miss.	1894	R. McFerran Crowe	151	161	19	—	—	Carroll College, Helena, Mont.	1900	R. V. Kavanaugh	1,67	487	42	700,000	21,000
Belmont Abbey College, Belmont, N.C.	1952	John J. McMahon	133	133	19	—	—	Carroll College, Helena, Mont.	1900	R. V. Kavanaugh	1,67	487	42	700,000	21,000
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Institution and Location	Year Founded	Chief Executive	Full Time Students	Part Time Students	Faculty	Endowment	Bound Volumes	Institution and Location	Year Founded	Chief Executive	Full Time Students	Part Time Students	Faculty	Endowment	Bound Volumes	Institution and Location	Year Founded	Chief Executive	Full Time Students	Part Time Students	Faculty	Endowment	Bound Volumes
Claremont Graduate Sch., Claremont, Calif.	1925	Frederick Hard	94	406	131	\$ 3,768,934	240,000	E	Earlham College, Richmond, Ind.	1847	Thomas E. Jones	568	637	60	84,000	Fairleigh Dickinson Univ., Fairleigh, N.J.	1942	Joseph D. Fitzgerald	664	951	49	1,325,000	25,000
Claremont Men's College, Claremont, Calif.	1947	George C. Benson	324	331	35	275,000	240,000	East Carolina College, Greenville, N.C.	1907	J. D. Messick	2,150	2,318	120	90,840	Fairleigh Dickinson Univ., Fairleigh, N.J.	1941	John W. Pence	1,894	5,122	214	41,200	52,346	
Clark College, Atlanta, Ga.	1877	James P. Browley	630	636	43	1,006,360	9,000	East Central College, Decatur, Miss.	1928	W. A. Vincent	402	38	38	8,875	Fairleigh Dickinson Univ., Fairleigh, N.J.	1940	John W. Pence	805	1,075	60	41,200	52,346	
Clark College, Dubuque, Ia.	1843	Sister Mary Anne Leone	375	472	56	305,625	28,750	East Central Junior College, Ada, Okla.	1908	Chas. F. Spencer	1,007	1,363	68	8,500	Fairleigh Dickinson Univ., Fairleigh, N.J.	1939	G. B. Earnest	680	680	39	33,940	33,940	
Clark Memorial College (Jr.), Newton, Mass.	1908	W. Lowrey Comper	406	406	21	1,452,925	30,000	East Central State College, Concord, Calif.	1948	Leland L. Mersker	888	3,003	41	13,000	Fairleigh Dickinson Univ., Fairleigh, N.J.	1938	Charles S. De Marco	225	725	45	15,000	15,000	
Clarkson College of Technology, Potsdam, N.Y.	1895	William G. Van Nale	1,004	1,004	85	6,382,623	210,000	East Central State College, Concord, Calif.	1948	Leland L. Mersker	888	3,003	41	13,000	Fairleigh Dickinson Univ., Fairleigh, N.J.	1938	Charles S. De Marco	225	725	45	15,000	15,000	
Clarkson College of Technology, Worcester, Mass.	1887	Robert B. Jefferson	725	1,181	85	6,382,623	210,000	Eastern Illinois State College, Charleston, Ill.	1952	Gilbert L. Guiffin	1,537	1,773	148	80,000	Fairleigh Dickinson Univ., Fairleigh, N.J.	1937	Marshall S. Woodson	273	293	31	19,132	19,132	
Clemson Agricultural College, Clemson, S.C.	1889	Howard B. Poole	2,447	2,559	259	456,538	142,000	Eastern Illinois State College, Charleston, Ill.	1952	Gilbert L. Guiffin	1,537	1,773	148	80,000	Fairleigh Dickinson Univ., Fairleigh, N.J.	1937	Marshall S. Woodson	273	293	31	19,132	19,132	
Coe College, Cedar Rapids, Ia.	1932	Alfred M. Livingston	172	186	28	2,197,330	35,000	Eastern Kentucky State College, Richmond, Ky.	1906	W. F. O'Donnell	1,460	1,834	90	90,000	Fairleigh Dickinson Univ., Fairleigh, N.J.	1936	George W. Gore, Jr.	9,272	9,272	176	331,427	331,427	
Coker College, Hartsville, S.C.	1851	Howell H. Brooks	683	731	60	1,500,000	29,000	Eastern Kentucky State College, Richmond, Ky.	1906	W. F. O'Donnell	1,460	1,834	90	90,000	Fairleigh Dickinson Univ., Fairleigh, N.J.	1936	George W. Gore, Jr.	9,272	9,272	176	331,427	331,427	
Colby College, Waterville, Maine	1813	Joseph Clarke Robert	216	245	28	5,070,000	158,000	Eastern Montana College of Education, Billings, Mont.	1927	A. G. Peterson	501	661	36	19,156	Fairleigh Dickinson Univ., Fairleigh, N.J.	1935	James R. Cope	148	180	16	40,000	6,600	
Colby Junior College, New London, N.H.	1837	Joseph S. Bixler	1,040	1,045	81	700,000	22,000	Eastern Nazarene College, Quincy, Mass.	1918	Edward S. Mann	412	466	31	25,000	Fairleigh Dickinson Univ., Fairleigh, N.J.	1934	R. W. Puryear	254	269	14	16,000	16,000	
Colgate University, Hamilton, N.Y.	1819	H. Leslie Sawyer	1,275	1,302	110	6,449,019	211,000	Eastern Nazarene College, Quincy, Mass.	1918	Edward S. Mann	412	466	31	25,000	Fairleigh Dickinson Univ., Fairleigh, N.J.	1934	R. W. Puryear	254	269	14	16,000	16,000	
Colorado State College of Education, Greeley, Colo.	1876	Everett N. Cose	8,501	8,724	715	1,150,000	730,000	Eastern Oklahoma Agricultural & Mechanical College (Jr.), Wilburton, Okla.	1909	Floyd D. Galden	876	1,070	60	35,000	Fairleigh Dickinson Univ., Fairleigh, N.J.	1933	Doak S. Campbell	5,365	6,691	470	223,700	343,444	
Colorado State College of Education, Greeley, Colo.	1876	William E. Morgan	3,695	3,989	285	640,690	730,000	Colorado College (Jr.), Denver, Colo.	1909	E. T. Dunlap	602	854	24	9,537	Fairleigh Dickinson Univ., Fairleigh, N.J.	1932	Laurence J. McGinley	5,624	9,198	457	1,475,854	301,465	
Colorado State College of Education, Greeley, Colo.	1876	William E. Morgan	3,695	3,989	285	640,690	730,000	Colorado State College of Education, Greeley, Colo.	1909	E. T. Dunlap	602	854	24	9,537	Fairleigh Dickinson Univ., Fairleigh, N.J.	1932	Laurence J. McGinley	5,624	9,198	457	1,475,854	301,465	
Colorado State College of Education, Greeley, Colo.	1876	William E. Morgan	3,695	3,989	285	640,690	730,000	Colorado State College of Education, Greeley, Colo.	1909	E. T. Dunlap	602	854	24	9,537	Fairleigh Dickinson Univ., Fairleigh, N.J.	1932	Laurence J. McGinley	5,624	9,198	457	1,475,854	301,465	
Colorado State College of Education, Greeley, Colo.	1876	William E. Morgan	3,695	3,989	285	640,690	730,000	Colorado State College of Education, Greeley, Colo.	1909	E. T. Dunlap	602	854	24	9,537	Fairleigh Dickinson Univ., Fairleigh, N.J.	1932	Laurence J. McGinley	5,624	9,198	457	1,475,854	301,465	
Colorado State College of Education, Greeley, Colo.	1876	William E. Morgan	3,695	3,989	285	640,690	730,000	Colorado State College of Education, Greeley, Colo.	1909	E. T. Dunlap	602	854	24	9,537	Fairleigh Dickinson Univ., Fairleigh, N.J.	1932	Laurence J. McGinley	5,624	9,198	457	1,475,854	301,465	
Colorado State College of Education, Greeley, Colo.	1876	William E. Morgan	3,695	3,989	285	640,690	730,000	Colorado State College of Education, Greeley, Colo.	1909	E. T. Dunlap	602	854	24	9,537	Fairleigh Dickinson Univ., Fairleigh, N.J.	1932	Laurence J. McGinley	5,624	9,198	457	1,475,854	301,465	
Colorado State College of Education, Greeley, Colo.	1876	William E. Morgan	3,695	3,989	285	640,690	730,000	Colorado State College of Education, Greeley, Colo.	1909	E. T. Dunlap	602	854	24	9,537	Fairleigh Dickinson Univ., Fairleigh, N.J.	1932	Laurence J. McGinley	5,624	9,198	457	1,475,854	301,465	
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Colorado State College of Education, Greeley, Colo.	1876	William E. Morgan	3,695	3,989	285	640,690	730,000	Colorado State College of Education, Greeley, Colo.	1909	E. T. Dunlap	602	854	24	9,537	Fairleigh Dickinson Univ., Fairleigh, N.J.	1932	Laurence J. McGinley	5,624	9,198	457	1,475,854	301,465	
Colorado State College of Education, Greeley, Colo.	1876	William E. Morgan	3,695	3,989	285	640,690	730,000	Colorado State College of Education, Greeley, Colo.	1909	E. T. Dunlap	602	854	24	9,537	Fairleigh Dickinson Univ., Fairleigh, N.J.	1932	Laurence J. McGinley	5,624	9,198	457	1,475,854	301,465	
Colorado State College of Education, Greeley, Colo.	1876	William E. Morgan	3,695	3,989	285	640,690	730,000	Colorado State College of Education, Greeley, Colo.	1909	E. T. Dunlap	602	854	24	9,537	Fairleigh Dickinson Univ., Fairleigh, N.J.	1932	Laurence J. McGinley	5,624	9,198	457	1,475,854	301,465	
Colorado State College of Education, Greeley, Colo.	1876	William E. Morgan	3,695	3,989	285	640,690	730,000	Colorado State College of Education, Greeley, Colo.	1909	E. T. Dunlap	602	854	24	9,537	Fairleigh Dickinson Univ., Fairleigh, N.J.	1932	Laurence J. McGinley	5,624	9,198	457	1,475,854	301,465	
Colorado State College of Education, Greeley, Colo.	1876	William E. Morgan	3,695	3,989	285	640,690	730,000	Colorado State College of Education, Greeley, Colo.	1909	E. T. Dunlap	602	854	24	9,537	Fairleigh Dickinson Univ., Fairleigh, N.J.	1932	Laurence J. McGinley	5,624	9,198	457	1,475,854	301,465	
Colorado State College of Education, Greeley, Colo.	1876	William E. Morgan	3,695	3,989	285	640,690	730,000	Colorado State College of Education, Greeley, Colo.	1909	E. T. Dunlap	602	854	24	9,537	Fairleigh Dickinson Univ., Fairleigh, N.J.	1932	Laurence J. McGinley	5,624	9,198	457	1,475,854	301,465	
Colorado State College of Education, Greeley, Colo.	1876	William E. Morgan	3,695	3,989	285	640,690	730,000	Colorado State College of Education, Greeley, Colo.	1909	E. T. Dunlap	602	854	24	9,537	Fairleigh Dickinson Univ., Fairleigh, N.J.	1932	Laurence J. McGinley	5,624	9,198	457	1,475,854	301,465	
Colorado State College of Education, Greeley, Colo.	1876	William E. Morgan	3,695	3,989	285	640,690	730,000	Colorado State College of Education, Greeley, Colo.	1909	E. T. Dunlap	602	854	24	9,537	Fairleigh Dickinson Univ., Fairleigh, N.J.	1932	Laurence J. McGinley	5,624	9,198	457	1,475,854	301,465	
Colorado State College of Education, Greeley, Colo.	1876	William E. Morgan	3,695	3,989	285	640,690	730,000	Colorado State College of Education, Greeley, Colo.	1909	E. T. Dunlap	602	854	24	9,537	Fairleigh Dickinson Univ., Fairleigh, N.J.	1932	Laurence J. McGinley	5,624	9,198	457	1,475,854	301,465	
Colorado State College of Education, Greeley, Colo.	1876	William E. Morgan	3,695	3,989	285	640,690	730,000	Colorado State College of Education, Greeley, Colo.	1909	E. T. Dunlap	602	854	24	9,537	Fairleigh Dickinson Univ., Fairleigh, N.J.	1932	Laurence J. McGinley	5,624	9,198	457	1,475,854	301,465	
Colorado State College of Education, Greeley, Colo.	1876	William E. Morgan	3,695	3,989	285	640,690	730,000	Colorado State College of Education, Greeley, Colo.	1909	E. T. Dunlap	602	854	24	9,537	Fairleigh Dickinson Univ., Fairleigh, N.J.	1932	Laurence J. McGinley	5,624	9,198	457	1,475,854	301,465	
Colorado State College of Education, Greeley, Colo.	1876	William E. Morgan	3,695	3,989	285	640,690	730,000	Colorado State College of Education, Greeley, Colo.	1909	E. T. Dunlap	602	854	24	9,537	Fairleigh Dickinson Univ., Fairleigh, N.J.	1932	Laurence J. McGinley	5,624	9,198	457	1,475,854	301,465	
Colorado State College of Education, Greeley, Colo.	1876	William E. Morgan	3,695	3,989	285	640,690	730,000	Colorado State College of Education, Greeley, Colo.	1909	E. T. Dunlap	602	854	24	9,537	Fairleigh Dickinson Univ., Fairleigh, N.J.	1932	Laurence J. McGinley	5,624	9,198	457	1,475,854	301,465	
Colorado State College of Education, Greeley, Colo.	1876	William E. Morgan	3,695	3,989	285	640,690	730,000	Colorado State College of Education, Greeley, Colo.	1909	E. T. Dunlap	602	854	24	9,537	Fairleigh Dickinson Univ., Fairleigh, N.J.	1932	Laurence J. McGinley	5,624	9,198	457	1,475,854	301,465	
Colorado State College of Education, Greeley, Colo.	1876	William E. Morgan	3,695	3,989	285	640,690	730,000	Colorado State College of Education, Greeley, Colo.	1909	E. T. Dunlap	602	854	24	9,537	Fairleigh Dickinson Univ., Fairleigh, N.J.	1932	Laurence J. McGinley	5,624	9,198	457	1,475,854	301,465	
Colorado State College of Education, Greeley, Colo.	1876	William E. Morgan	3,695	3,989	285	640,690	730,000	Colorado State College of Education, Greeley, Colo.	1909	E. T. Dunlap	602	854	24	9,537	Fairleigh Dickinson Univ., Fairleigh, N.J.	1932	Laurence J. McGinley	5,624	9,198	457	1,475,854	301,465	
Colorado State College of Education, Greeley, Colo.	1876	William E. Morgan	3,695	3,989	285	640,690	730,000	Colorado State College of Education, Greeley, Colo.	1909	E. T. Dunlap	602	854	24	9,537	Fairleigh Dickinson Univ., Fairleigh, N.J.	1932	Laurence J. McGinley	5,624	9,198	457	1,475,854	301,465	
Colorado State College of Education, Greeley, Colo.	1876	William E. Morgan	3,695	3,989	285	640,690	730,000	Colorado State College of Education, Greeley, Colo.	1909	E. T. Dunlap	602	854	24	9,537	Fairleigh Dickinson Univ., Fairleigh, N.J.	1932	Laurence J. McGinley	5,624	9,198	457	1,475,854	301,465	
Colorado State College of Education, Greeley, Colo.	1876	William E. Morgan	3,695	3,989	285	640,690	730,000	Colorado State College of Education, Greeley, Colo.	1909	E. T. Dunlap	602	854	24	9,537	Fairleigh Dickinson Univ., Fairleigh, N.J.	1932	Laurence J. McGinley	5,624	9,198	457	1,475,854	301,465	
Colorado State College of Education, Greeley, Colo.	1876	William E. Morgan	3,695	3,989	285	640,690	730,000	Colorado State College of Education, Greeley, Colo.	1909	E. T. Dunlap	602	854	24	9,537	Fairleigh Dickinson Univ., Fairleigh, N.J.	1932	Laurence J. McGinley	5,624	9,198	457	1,475,854	301,465	
Colorado State College of Education, Greeley, Colo.	1876	William E. Morgan	3,695	3,989	285	640,690	730,000	Colorado State College of Education, Greeley, Colo.	1909	E. T. Dunlap	602	854	24	9,537	Fairleigh Dickinson Univ., Fairleigh, N.J.	1932	Laurence J. McGinley	5,624	9,198	457	1,475,854	301,465	
Colorado State College of Education, Greeley, Colo.	1876	William E. Morgan	3,695	3,989	285	640,690	730,000	Colorado State College of Education, Greeley, Colo.	1909	E. T. Dunlap	602	854	24	9,537	Fairleigh Dickinson Univ., Fairleigh, N.J.	1932	Laurence J. McGinley	5,624	9,198	457	1,475,854	301,465	
Colorado State College of Education, Greeley, Colo.	1876	William E. Morgan	3,695	3,989	285	640,690	730,000	Colorado State College of Education, Greeley, Colo.	1909	E. T. Dunlap	602	854	24	9,537	Fairleigh Dickinson Univ., Fairleigh, N.J.	1932	Laurence J. McGinley	5,624	9,198	457	1,475,854	301,465	
Colorado State College of Education, Greeley, Colo.	1876	William E. Morgan	3,695	3,989	285	640,690	730,000	Colorado State College of Education, Greeley, Colo.	1909	E. T. Dunlap	602	854	24	9,537	Fairleigh Dickinson Univ., Fairleigh, N.J.	1932	Laurence J. McGinley	5,624	9,198	457	1,475,854	301,465	
Colorado State College of Education, Greeley, Colo.	1876	William E. Morgan	3,695	3,989	285	640,690	730,000	Colorado State College of Education, Greeley, Colo.	1909	E. T. Dunlap	602	854	24	9,537	Fairleigh Dickinson Univ., Fairleigh, N.J.	1932	Laurence J. McGinley	5,624	9,198	457	1,475,854	301,465	
Colorado State College of Education, Greeley, Colo.	1876	William E. Morgan	3,695	3,989	285	640,690	730,000	Colorado State College of Education, Greeley, Colo.	1909	E. T. Dunlap	602	854	24	9,537	Fairleigh Dickinson Univ., Fairleigh, N.J.	1932	Laurence J. McGinley	5,624	9,198	457	1,475,854	301,465	
Colorado State College of Education, Greeley, Colo.	1876	William E. Morgan	3,695	3,989	285	640,690	730,000	Colorado State College of Education, Greeley, Colo.	1909	E. T. Dunlap	602	854	24	9,537	Fairleigh Dickinson Univ., Fairleigh, N.J.	1932	Laurence J. McGinley	5,624	9,198	457	1,475,854	301,465	
Colorado State College of Education, Greeley, Colo.																							

Institution and Location	Year Founded	Chief Executive	Full Time Students	Part Time Students	Faculty	Endowment	Bound Volumes	Institution and Location	Year Founded	Chief Executive	Full Time Students	Part Time Students	Faculty	Endowment	Bound Volumes
Fullerton Junior College, Fullerton, Calif.	1913	H. Lynn Sheller	1,421	1,500	90	—	19,103	Henderson St. Tch. Col., Arkadelphia, Ark.	1929	D. D. McBrien	762	889	72	\$2,144,923	36,326
Furman University, Greenville, S.C.	1826	John Laney Ryler	1,300	1,365	81	\$4,291,486	90,000	Hendrix College, Conway, Ark.	1884	Marl L. Ellis	463	473	41	—	58,000
†Gannon College, Erie, Pa.	1944	Joseph J. Wehrle	734	1,025	66	3,700,000	35,100	Henry Ford Community College (Jr.), Dearborn, Mich.	1938	Fred Eshelman	800	3,000	60	—	9,000
†Gardner-Webb College, Boiling Springs, N.C.	1905	Philip Lovin Elliott	364	413	25	260,674	4,000	Hershey Junior College, Hershey, Pa.	1916	S. A. Fenstermacher	114	114	14	—	5,000
†Garland School (Jr.), Boston, Mass.	1872	Glady's Beckett Jones	150	150	35	—	—	Hibbing Junior College, Hibbing, Minn.	1916	S. A. Fenstermacher	250	280	22	—	7,850
†General Assembly's Training School, Richmond, Va.	1914	Chas. E. S. Kraemer	126	139	17	1,043,694	27,254	Highland Park Jr. Col., Highland Park, Mich.	1918	G. O. Withey	1,020	1,311	56	562,566	26,200
General Beadle Sr. Tch. Col., Madison, S.D.	1881	V. A. Lowry	709	500	28	—	70,319	High Point College, High Point, N.C.	1924	Dennis H. Cooke	847	864	42	888,291	34,570
Geneva College, Beaver Falls, Pa.	1848	Charles M. Lee	300	1,598	50	901,000	58,000	Hillsdale College, Hillsdale, Mich.	1844	J. Donald Phillips	518	564	207	—	20,000
George Peabody College for Teachers, Nashville, Tenn.	1862	Henry H. Hill	451	1,372	95	8,841,493	65,000	Hillsdale College, Hillsdale, Mich.	1844	Alan S. Wilson	518	564	207	—	20,000
George Peabody College for Teachers, Nashville, Tenn.	1862	Hugh M. Tiner	711	907	95	1,000,000	50,000	Hillsdale College, Hillsdale, Mich.	1844	Alan S. Wilson	518	564	207	—	20,000
Georgetown College, Georgetown, Ky.	1829	H. Leo Eddleman	680	949	48	457,000	33,000	Hinds Junior College, Raymond, Miss.	1879	G. M. McLendon	700	900	50	3,230,965	67,000
Georgetown University, Washington, D.C.	1789	Edward B. Bunn	4,804	5,271	1,106	5,000,000	254,500	Hiram College, Hiram, Ohio	1815	Paul H. Fall	500	500	40	1,280,569	57,000
†Georgetown Visitation Jr. College, Washington, D.C.	1919	Sister Mary Leonard	135	135	20	—	16,500	Hofstra College, Hempstead, N.Y.	1935	John C. Adams	2,315	5,500	230	1,480,840	57,000
†George Washington Univ., Washington, D.C.	1821	Whipple	135	135	20	—	16,500	Hollins College, Hollins College, Va.	1842	John R. Everett	481	501	52	1,280,840	57,000
George Williams College, Chicago, Ill.	1890	Cloyd H. Marvin	3,951	11,286	836	3,450,000	300,000	Holy Cross College, Worcester, Mass.	1843	William A. Donaghy	1,844	1,844	118	638,596	164,883
Georgia College, Athens, Ga.	1828	John R. McCurdy	2,112	2,500	373	2,454,548	31,193	Holy Names College, Spokane, Wash.	1868	Sister M. Theresa	387	511	48	—	36,500
Georgia Institute of Tech., Atlanta, Ga.	1885	Omer Clyde Adair	4,533	5,184	303	1,377,360	145,000	Hood College, Frederick, Md.	1893	Andrew Gehr Truxal	201	413	32	—	15,000
†Georgia Military College (Jr.), Milledgeville, Ga.	1879	Blake R. Van Leer	4,272	5,475	303	—	20,000	Hood College, Frederick, Md.	1893	Andrew Gehr Truxal	201	413	32	—	15,000
†Georgia State College, Lakewood, N.J.	1908	Ren A. Thorne	130	136	14	—	20,000	Houghton College, Houghton, N.Y.	1866	Irwin J. Lubbers	829	954	57	1,099,172	47,000
Georgia Southwestern College (Jr.), Americus, Ga.	1926	Sister Marie Anna	170	201	40	—	20,000	Houston Univ. of Houston, Tex.	1883	Stephen W. Paine	553	577	49	480,495	34,697
†Georgia St. Col. for Women, Milledgeville, Ga.	1898	Lloyd A. Moll	314	317	20	—	11,300	Howard College, Birmingham, Ala.	1842	A. D. Bruce	7,512	12,520	608	3,244,327	128,399
Georgia Teachers College, Collegeboro, Ga.	1869	Henry King Stanford	475	587	60	—	43,000	Howard Payne College, Brownwood, Tex.	1889	Harold G. Davis	1,238	1,327	78	922,165	55,421
†Gettysburg College, Gettysburg, Pa.	1832	Zach S. Henderson	580	586	103	593,687	70,000	Howard University, Washington, D.C.	1867	Thomas H. Taylor	576	797	52	1,835,167	51,837
Glendale College (Jr.), Glendale, Calif.	1927	W. C. Langsam	1,238	2,011	96	—	18,000	Humboldt State College, Arcata, Calif.	1913	Cornelius H. Siemens	2,576	4,204	61	1,843,000	45,000
Glenville State College, Glenville, W. Va.	1872	Gerhard E. Ehmman	1,434	2,061	31	—	32,000	Huntingdon College, Huntingdon, Pa.	1870	George N. Shuter	7,925	12,255	365	466,036	188,363
Gogebic Community College (Jr.), Ironwood, Mich.	1932	Harry B. Heffin	548	623	31	—	10,000	Huron College, Huron, S.D.	1883	Hubert Searcy	552	636	45	600,000	41,563
Golden Gate College, San Francisco, Calif.	1930	Jacob A. Solin	120	165	18	—	10,000	Huston-Tillotson College, Austin, Texas	1876	Daniel E. Kerr	300	500	28	650,000	30,000
†Good Counsel College, White Plains, N.Y.	1887	Nagel T. Miner	220	225	141	—	20,635	Huston-Tillotson College, Austin, Texas	1876	Matthew S. Davage	—	597	43	12,742	41,000
†Good Counsel College, White Plains, N.Y.	1887	Francis E. Dorey	1,305	1,435	87	—	20,635	Huston-Tillotson College, Austin, Texas	1876	Matthew S. Davage	—	597	43	12,742	41,000
†Good Counsel College, White Plains, N.Y.	1887	Francis E. Dorey	1,305	1,435	87	—	20,635	Huston-Tillotson College, Austin, Texas	1876	Matthew S. Davage	—	597	43	12,742	41,000
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†Good Counsel College, White Plains, N.Y.	1887	Francis E. Dorey	1,305	1,435	87	—	20,635	Huston-Tillotson College, Austin, Texas	1876	Matthew S. Davage	—	597	43	12,742	41,000
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†Good Counsel College, White Plains, N.Y.	1887	Francis E. Dorey	1,305	1,435	87	—	20,635	Huston-Tillotson College, Austin, Texas	1876	Matthew S. Davage	—	597	43	12,742	41,000
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†Good Counsel College, White Plains, N.Y.	1887	Francis E. Dorey	1,305	1,435	87	—	20,635	Huston-Tillotson College, Austin, Texas	1876	Matthew S. Davage	—	597	43	12,742	41,000
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†Good Counsel College, White Plains, N.Y.	1887	Francis E. Dorey	1,305	1,435	87	—	20,635	Huston-Tillotson College, Austin, Texas	1876	Matthew S. Davage	—	597	43	12,742	41,000
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†Good Counsel College, White Plains, N.Y.	1887	Francis E. Dorey	1,305	1,435	87	—	20,635	Huston-Tillotson College, Austin, Texas	1876	Matthew S. Davage	—	597	43	12,742	41,000
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†Good Counsel College, White Plains, N.Y.	1887	Francis E. Dorey	1,305	1,435	87	—	20,635	Huston-Tillotson College, Austin, Texas	1876	Matthew S. Davage	—	597	43	12,742	41,000
†Good Counsel College, White Plains, N.Y.	1887	Francis E. Dorey	1,305	1,435	87	—	20,635	Huston-Tillotson College, Austin, Texas	1876	Matthew S. Davage	—	597	43	12,742	41,000
†Good Counsel College, White Plains, N.Y.	1887	Francis E. Dorey	1,305	1,435	87	—	20,635	Huston-Tillotson College, Austin, Texas	1876	Matthew S. Davage	—	597	43	12,742	41,000
†Good Counsel College, White Plains, N.Y.	1887	Francis E. Dorey	1,305	1,435	87	—	20,635	Huston-Tillotson College, Austin, Texas	1876	Matthew S. Davage	—	597	43	12,742	41,000
†Good Counsel College, White Plains, N.Y.	1887	Francis E. Dorey	1,305	1,435	87	—	20,635	Huston-Tillotson College, Austin, Texas	1876	Matthew S. Davage	—	597	43	12,742	41,000
†Good Counsel College, White Plains, N.Y.	1887	Francis E. Dorey	1,305	1,435	87	—	20,635	Huston-Tillotson College, Austin, Texas	1876	Matthew S. Davage	—	597	43	12,742	

Institution and Location	Year Founded	Chief Executive	Full Time Students	Part Time Students	Faculty	Endowment	Bound Volumes
Joplin Junior College, Joplin, Mo.	1938	Rol S. Wood	458	508	29	—	10,200
†Judson College, Marion, Ala.	1838	J. I. Riddle	221	230	25	\$640,769	20,000
†Juniata College, Huntingdon, Pa.	1876	Calvert N. Ellis	589	598	37	1,183,450	69,000
K							
Kalamazoo College, Kalamazoo, Mich.	1833	Weimer K. Hicks	590	593	45	2,150,000	59,000
Kansas, University of, Lawrence, Kan.	1865	Franklin D. Murphy	6,766	7,231	1,069	2,500,000	500,000
Kansas City, Jr. College of, Kansas City, Mo.	1915	Miles G. Blim	1,147	3,156	67	96	35,000
Kansas City, University of, Kansas City, Mo.	1929	Earl J. McGrath	1,349	3,017	228	160,398	160,398
Kansas City Kansas Junior College, Kansas City, Kan.	1923	C. W. Harvey	399	405	22	—	7,979
Kansas State College of Agri. and App. Sci., Manhattan, Kan.	1863	James A. McCain	4,800	5,100	1,112	557,601	190,000
Kansas State Tech. Coll., Emporia, Kan.	1863	John E. King, Jr.	1,351	2,572	139	250,000	125,000
Kansas State Tech. Coll., Pittsburg, Kan.	1903	Rees H. Hughes	1,622	2,047	165	—	100,000
†Kennebec College, Keene, N.H.	1909	Lloyd P. Young	525	710	50	250,000	23,500
†Kean Teachers College, Keene, N.H.	1844	H. C. Johnston	300	300	50	—	130,000
Kent State University, Kent, Ohio	1910	George A. Bowman	5,294	6,381	339	201,617	650,000
Kent State University of Lexington, Ky.	1865	H. L. Donovan	5,400	6,030	509	—	22,609
Kentucky St. Coll., Frankfort, Ky.	1886	R. B. Atwood	449	467	48	—	25,000
Kentucky Wesleyan College, Owensboro, Ky.	1866	Oscar W. Lever	321	454	32	417,349	25,000
†Kenyon College, Gambier, Ohio	1824	Gordon K. Chalmers	485	489	53	2,964,978	135,500
†Kewka College, Kewka Park, N.Y.	1892	Katherine G. Blyley	330	339	40	472,807	44,975
†Keystone Junior College, La Plume, Pa.	1868	Blake Tewksbury	205	205	23	330,000	12,000
†Kildare College, Bristol, N.Y.	1935	Cruce Stark	761	1,205	50	—	15,343
King College, Raleigh, N.C.	1867	R. T. Linton	234	250	19	750,000	40,000
King's College, Raleigh, N.C.	1879	H. L. Puxley	98	138	16	1,150,000	90,500
Knox College, Galesburg, Ill.	1837	Shirley G. Umbek	747	754	75	4,181,507	90,500
Knoxville College, Knoxville, Tenn.	1875	James A. Colton	390	415	38	557,113	16,832
L							
†Lafayette College, Easton, Pa.	1826	Ralph C. Hutchison	1,403	1,413	142	6,177,000	133,189
La Grange College, La Grange, Ga.	1831	Wrights G. Henry, Jr.	186	298	28	—	16,970
†Lake Erie College, Painesville, Ohio	1856	Paul Weaver	248	338	32	692,451	42,005
†Lake Forest College, Lake Forest, Ill.	1857	Ernest A. Johnson	597	953	58	1,943,791	70,000
Lamar St. Coll. of Tech., Beaumont, Tex.	1923	F. L. McDonald	2,067	4,070	125	26,754	28,056
Lambuth College, La Grange, Tenn.	1924	Luher L. Gobbel	232	242	24	341,974	15,236
Lander College, Greenwood, S.C.	1872	B. M. Grier	242	242	22	2,500,000	19,118
Lane College, Jackson, Tenn.	1882	C. A. Kirkendall	394	473	23	52,976	10,000
Langston University, Langston, Okla.	1897	G. L. Harrison	653	735	59	—	35,000
La Salle College, Philadelphia, Pa.	1863	Brother E. Stanislaus	1,511	2,826	124	—	13,000
La Salle-Peru College, Jr. Coll., La Salle, Ill.	1924	Francis H. Dolan	220	220	35	—	14,837
†Lasell Junior College, Auburndale, Mass.	1851	Raymond C. Wess	587	587	47	75,000	37,400
La Sierra College, Arlington, Calif.	1922	Norman F. Pearce	603	814	59	—	1,500
Lassen Junior College, Susanville, Calif.	1925	Carl F. Koracek	170	188	12	—	379,540
Laval University, Quebec, Que., Can.	1852	Alphonse-Marie	7,036	8,392	1,332	5,000,000	74,000
Lawrence College, Appleton, Wis.	1847	Douglas M. Knight	786	811	69	2,421,000	85,815
Lebanon Valley College, Annville, Pa.	1846	Fredrick K. Miller	508	508	36	850,000	16,000
Lee College (Jr.), Baytown, Tex.	1924	R. G. Landolt	169	759	38	—	13,000
Lees-McRae College, Jackson, Ky.	1880	George H. Geniry	170	173	11	—	3,000
Lehigh University, Bethlehem, Pa.	1865	Fletcher Norton	2,540	2,990	316	11,217,806	330,000
Lehigh University, Bethlehem, Pa.	1865	Marion D. Whitaker	400	470	25	2,047	21,000
Le Moyne College, Memphis, Tenn.	1870	Robert F. Price	915	1,627	65	800,000	25,000
Le Moyne College, Syracuse, N.Y.	1866	Robert F. Price	850	882	67	100,000	36,250
Le Roy College, Hickory, N.C.	1909	Yolga R. Green	300	550	20	457,000	20,000
Lehigh College, Cambridge, Mass.	1867	Trentwell M. White	950	977	85	100,000	20,000
Lewis and Clark College, Portland, Ore.	1867	Morgan S. Odell	262	262	21	814,740	16,000
†Limestone College, Gaffney, S.C.	1845	A. J. Eastwood	144	152	21	1,300,000	27,000
Lincoln College (Jr.), Lincoln, Ill.	1867	Raymond N. Dooley	429	464	34	889,864	89,207
Lincoln Memorial Univ., Harrogate, Tenn.	1897	Robert L. Kincaid	715	766	70	—	54,000
Lincoln University, Jefferson City, Mo.	1866	Sherman D. Scroggs	249	257	38	1,134,000	50,000
†Lincoln University, Lincoln University, Pa.	1854	Harold M. Bond	332	334	45	2,863,557	35,388
†Lindenwood College, St. Charles, Mo.	1827	Francis L. McCluer	556	556	12	41,060	10,510
†Lindsey Wilson College, Jr. Coll., Columbia, Ky.	1904	John B. Horton	159	176	17	1,100,000	42,017
†Lindsey Wilson College, Jr. Coll., Columbia, Ky.	1858	Harry L. Dillon	556	581	47	—	25,000
Little Rock Junior College, Little Rock, Ark.	1927	E. Q. Brinkley	597	1,208	37	2,500,000	32,330
Livingstone College, Salisbury, N.C.	1879	William J. Trent	410	415	35	—	57,419
Long Beach City Coll. (Jr.), Long Beach, Calif.	1927	George E. Dotson	3,100	19,126	265	—	—
M							
Macalester College, St. Paul, Minn.	1885	Charles J. Turck	1,359	1,418	139	2,400,000	66,000
MacGill University, Montreal, Que., Can.	1821	F. Cyril James	6,276	6,703	1,039	40,001,487	480,000
McGill University, Hamilton, Ont., Can.	1887	G. P. Gilmore	482	508	43	1,971,755	87,100
McMurry Coll. for Women, Jacksonville, Ill.	1846	L. W. Morris	547	632	39	4,120,644	58,080
McNeese State College, Lake Charles, La.	1922	Harold Graves Cooke	547	632	39	1,300,000	30,000
McPherson College, McPherson, Kan.	1939	Leith E. Fraser	357	421	35	520,000	22,000
Madison College, Harrisonburg, Va.	1887	Desmond W. Bittenger	357	421	35	—	74,000
Maine University of, Orono, Me.	1908	G. Tyler Miller	1,020	1,133	93	1,788,000	260,700
Manchester College, N. Manchester, Ind.	1865	Arthur A. Hauck	2,884	2,932	215	636,166	43,499
Manchester College, New York, N.Y.	1889	V. F. Schwalm	802	802	55	—	59,670
Manhattanville Coll. of Soc. Hrls., Purchase, N.Y.	1849	Br. Augustine Philip	2,421	2,727	194	—	99,000
Manitoba University of, Winnipeg, Man., Can.	1841	Eleanor M. O'Byrne	484	513	83	400,000	180,000
Marietta College, Marietta, Ohio	1877	H. H. Saunders	4,092	5,797	42	2,274,748	180,000
Marion College of (Jr.), Kentfield, Calif.	1835	W. Bay Irvine	775	820	39	1,845,652	19,536
Marion College of (Jr.), Marion, Ala.	1926	Ward H. Austin	532	728	25	—	5,000
Marquette University, Milwaukee, Wis.	1842	Robert C. Provine	309	309	25	6,205,000	250,000
Marshall College, Huntington, W. Va.	1857	Edward J. O'Donnell	2,093	2,855	179	457,771	200,000
Mars Hill College (Jr.), Mars Hill, N.C.	1856	Stewart K. Smith	907	950	50	181,787	9,854
Mary Baldwin College, Staunton, Va.	1870	J. Fort Fowler	158	165	14	620,000	44,000
Mary College, Baltimore, Md.	1842	Charles W. McKenzie	251	255	31	—	33,603
Mary Hardin-Baylor College, Belton, Tex.	1846	Sister M. Honora	671	696	81	1,506,738	33,200
Maryland State College, College Park, Md.	1934	Arthur K. Tyson	432	432	38	—	25,000
Maryland State College, Prince Anne, Md.	1807	Mother Mary Joseph	102	132	24	3,778,961	285,000
Maryland State Coll. Tech. Coll., Bowie, Md.	1886	John Taylor Williams	404	440	48	—	25,000
Maryland State Coll. Tech. Coll., Frostburg, Md.	1867	William E. Henry	346	346	21	—	26,368
Maryland State Coll. Tech. Coll., Salisbury, Md.	1899	R. Bowen Hardisty	501	501	35	—	48,000
Maryland State Coll. Tech. Coll., Towson, Md.	1925	J. D. Blackwell	363	510	20	—	30,000
Maryland State Coll. Tech. Coll., Towson, Md.	1865	Earle T. Hawkins	1,007	1,058	58	—	27,500
Maryland State Coll. Tech. Coll., Towson, Md.	1893	Sr. M. Elizabeth Clare	323	328	38	—	28,000
Marymount College, Toledo, Ohio	1922	Sister Vincent de Paul	230	508	55	—	30,000
Marymount College, Salina, Kan.	1922	Mother Mary Helena	319	415	40	—	37,459
Marymount College, Tarrytown, N.Y.	1907	Mother M. de Sacre	570	570	64	2,276,141	32,103
Maryville College, Maryville, Tenn.	1819	Coeur Smith	680	688	39	—	57,459
Maryville College, St. Louis, Mo.	1872	Ralph W. Lloyd	570	570	38	—	37,459
Mary Washington College of the University of Virginia, Fredericksburg, Va.	1908	Mother Odeide Mouton	1,577	1,863	90	89,500	106,000

Institution and Location	Year Founded	Chief Executive	Full Time Students	Part Time Students	Faculty	Endowment	Bound Library Volumes	Institution and Location	Year Founded	Chief Executive	Full Time Students	Part Time Students	Faculty	Endowment	Bound Library Volumes
*Marywood College, Scranton, Pa.	1915	Sister M. Eugenia	669	889	64	\$ 117,721	44,583	Morgan State College, Baltimore, Md. . .	1867	Martin D. Jenkins	1,978	2,403	123	—	50,000
*Mass. City Junior Coll., Macon, City, Ia. . .	1918	C. H. Beem	280	1,200	46	—	12,600	Morningside College, Sioux City, Ia. . .	1889	E. A. Roodman	660	697	45	\$ 922,093	60,000
*Mass. Univ. of Tech., Boston, Mass.	1863	J. Paul Moher	4,303	4,371	377	297,961	212,000	Morris Brown College, Atlanta, Ga. . . .	1881	John H. Lewis	631	778	45	479,048	12,637
*Mass. Sch. of Tech., Boston, Mass.	1863	Gordon L. Reynolds	4,950	5,250	1,600	63,083,524	8,500	Morris Brown Normal and Industrial College (Jr.), Morrisown, Tenn.	1881	H. L. Dickson	337	333	16	—	13,000
*Mass. Sch. of Tech., Boston, Mass.	1873	William F. Looney	410	1,216	28	—	31,200	Morton Junior College, Cicero, Ill. . . .	1924	Allen R. Moore	367	333	40	—	1,000
*Mass. State Tch. Coll., Bridgewater, Mass. .	1833	C. C. Maxwell	694	694	56	—	33,000	Mt. Allison Univ., Sackville, N.B., Can. .	1840	W. T. R. Flemington	842	1,085	58	659,528	77,000
*Mass. State Tch. Coll., Fitchburg, Mass. . .	1894	Ralph F. Weston	486	641	56	—	33,000	Mt. Aloysius Junior College, Cresson, Pa. .	1939	Sr. Mary Magdalene	82	194	28	—	1,000
*Mass. State Tch. Coll., Framingham, Mass. .	1839	Martin F. O'Connor	546	553	39	—	22,500	Mt. Angel Seminary, St. Benedict, Ore. . .	1889	Damian Jengda	188	188	25	—	40,000
*Mass. State Tch. Coll., Lowell, Mass. . . .	1894	Daniel H. O'Leary	420	556	44	—	11,435	Mt. Angel Women's College, Mt. Angel, Ore.	1887	Sister Mary Ida	39	50	15	—	10,000
*Mass. State Tch. Coll., North Adams, Mass. .	1894	Eugene L. Freal	128	303	23	—	12,400	Mt. Holyoke College, St. Hadley, Mass. . .	1837	Roswell G. Ham	1,219	1,224	137	799,879	240,000
*Mass. State Tch. Coll., Salem, Mass. . . .	1854	Frederick A. Meier	604	604	39	—	22,000	Mt. Mercy College, Milwaukee, Wis. . . .	1872	Sr. M. John Francis	600	940	71	63,000	50,000
*Mass. State Tch. Coll., Worcester, Mass. . .	1871	Eugene A. Sullivan	437	450	30	—	18,000	Mt. Mercy College, Pittsburgh, Pa.	1933	Mary Corbett	354	354	52	—	30,031
*Medical Evangelists, College of, Loma Linda and Los Angeles, Calif.	1909	G. T. Anderson	667	727	144	—	83,000	Mt. Mercy Jr. College, Cedar Rapids, Ia. .	1928	Sister Mary Ildephose	177	225	39	—	14,576
*Memorial University of Newfoundland, St. John's, Newfoundland, Can.	1925	Raymond Gushue	486	584	42	—	35,000	Mt. St. Agnes Coll., Baltimore, Md. . . .	1867	Sister M. Cleophas	219	219	31	—	25,000
*Memphis State College, Memphis, Tenn. . .	1909	J. M. Smith	2,700	3,027	170	—	72,000	Mt. St. Clare College (Jr.), Clinton, Iowa .	1918	Mother M. Regis Cleary	101	135	19	—	—
*Menlo College, Menlo Park, Calif.	1923	William E. Kraft	300	300	35	15,000	96,000	Mt. St. Joseph-on-the-Olio, Col. of, Mt. St. Joseph, Ohio	1854	Mother Mary Romana	461	473	54	785,000	41,000
*Mercer University, Macon, Ga.	1833	George B. Connell	984	1,210	75	4,000,000	22,000	Mt. St. Mary's College, Buffalo, N.Y. . .	1937	Sister M. Hubert	50	400	30	—	30,000
*Mercy College, Detroit, Mich.	1926	Sr. M. Lucille Middleton	402	466	43	—	21,800	Mt. St. Mary's College, Emmitsburg, Md. .	1934	Sister M. Mauritia	134	134	22	—	75,000
*Meridian College, Raleigh, N.C.	1891	Mother M. Eustace	558	589	46	611,000	15,000	Mt. St. Mary's College, Los Angeles, Calif.	1925	Sister Agnes Marie	564	694	67	269,000	40,000
*Merrimack College, Andover, Massachusetts	1927	J. O. Carson	750	902	46	2,500,000	20,000	Mt. St. Vincent College, Atchison, Kan. . .	1863	Mother Alfred Schroll	389	449	40	252,260	25,499
*Merrimack College, Andover, Massachusetts	1927	Vincent A. McQuade	570	902	46	2,500,000	20,000	Mt. St. Vincent College of New York, N.Y. .	1910	Sister Catherine Marie	470	470	60	—	40,000
*Miami University, Oxford, Ohio	1825	Joy F. W. Pearson	674	10,439	578	35,008,280	230,434	Mt. St. Vincent College, N.S., Can. . . .	1873	Sister Francis d'Assisi	234	284	28	—	20,000
*Michigan College of Min. and Tech., Houghton, Mich.	1885	Harlan H. Hatcher	17,752	20,609	1,727	—	66,000	Mt. St. Vincent College, Panama, Calif. . .	1946	George H. Bell	1,206	3,234	124	1,500,000	100,000
*Michigan State Univ., E. Lansing, Mich. . .	1849	Grover C. Dillman	1,795	1,837	142	—	112,000	Mt. Union College, Alliance, Ohio	1846	Carl Bracy	717	935	52	1,240,301	88,000
*Michigan State Univ., E. Lansing, Mich. . .	1849	Eugene B. Elliott	2,200	3,800	275	70,000	684,920	Mt. Union College, Allentown, Pa. . . .	1848	J. Conrad Seegers	717	762	52	—	10,000
*Michigan State Univ., E. Lansing, Mich. . .	1849	John A. Hannah	1,525	16,496	1,195	8,348,351	124,657	Mt. Union College, Allentown, Pa. . . .	1897	John S. Griffith	103	876	68	—	10,000
*Middlebury College (incl. "Women's College of Middlebury"), Middlebury, Vt. . .	1800	Samuel S. Stratton	1,223	1,223	79	8,348,351	124,657	Mt. Union College, Allentown, Pa. . . .	1929	Sister Mary John Michael Lee	868	904	93	—	52,000
*Middle Georgia College (Jr.), Cochran, Ga. .	1938	Lucien E. Roberts	301	301	18	—	12,000	Mt. Union College, Allentown, Pa. . . .	1922	Ralph H. Woods	1,393	1,541	67	—	210,000
*Middle Tenn. St. Coll., Murfreesboro, Tenn.	1867	Q. M. Smith	1,623	2,013	92	—	52,000	Mt. Union College, Allentown, Pa. . . .	1926	A. G. Umbreit	327	492	31	—	41,000
*Midland College, Fremont, Neb.	1897	Paul W. Dieckman	368	518	33	200,000	30,000	Mt. Union College, Allentown, Pa. . . .	1837	R. N. Montgomery	789	840	65	1,079,778	—
*Midway Junior College, Midway, Ky. . . .	1922	Lewis A. Piper	217	218	21	1,560,432	8,373	Mt. Union College, Allentown, Pa. . . .	1926	A. G. Umbreit	327	492	31	—	41,000
*Miles College, Birmingham, Ala.	1907	James B. Boren	1,004	1,357	67	400,000	25,000	Mt. Union College, Allentown, Pa. . . .	1926	A. G. Umbreit	327	492	31	—	41,000
*Mills College, Oakland, Calif.	1891	W. A. Bell	577	853	46	—	14,677	Mt. Union College, Allentown, Pa. . . .	1926	A. G. Umbreit	327	492	31	—	41,000
*Mills College, Oakland, Calif.	1901	J. Walter Malone	792	1,255	84	2,750,000	50,000	Mt. Union College, Allentown, Pa. . . .	1926	A. G. Umbreit	327	492	31	—	41,000
*Mills College, Oakland, Calif.	1891	Lynn White, Jr.	538	553	84	3,246,898	108,000	Mt. Union College, Allentown, Pa. . . .	1926	A. G. Umbreit	327	492	31	—	41,000
*Mills College, Oakland, Calif.	1891	H. E. Finger, Jr.	629	724	38	1,343,484	36,000	Mt. Union College, Allentown, Pa. . . .	1926	A. G. Umbreit	327	492	31	—	41,000
*Mills College, Oakland, Calif.	1851	John B. Johnson, Jr.	148	200	51	2,729,000	64,000	Mt. Union College, Allentown, Pa. . . .	1926	A. G. Umbreit	327	492	31	—	41,000
*Miner Teachers College, Washington, D.C. .	1851	Matthew J. Whitehead	409	30,79	1,499	50,781,192	1,702,067	Mt. Union College, Allentown, Pa. . . .	1926	A. G. Umbreit	327	492	31	—	41,000
*Minnesota Univ. of, Minneapolis, Minn. . .	1851	James L. Morrill	18,759	30,79	1,499	50,781,192	1,702,067	Mt. Union College, Allentown, Pa. . . .	1926	A. G. Umbreit	327	492	31	—	41,000
*Minnesota State Tch. Coll., Bemidji, Minn. .	1913	C. R. Sattgast	601	651	48	—	34,000	Mt. Union College, Allentown, Pa. . . .	1926	A. G. Umbreit	327	492	31	—	41,000
*Minnesota State Tch. Coll., Mankato, Minn. .	1867	C. L. Crawford	1,645	2,567	130	—	43,000	Mt. Union College, Allentown, Pa. . . .	1926	A. G. Umbreit	327	492	31	—	41,000
*Minnesota State Tch. Coll., Moorhead, Minn. .	1887	Oto W. Snorr	718	902	62	—	27,000	Mt. Union College, Allentown, Pa. . . .	1926	A. G. Umbreit	327	492	31	—	41,000
*Minnesota State Tch. Coll., St. Cloud, Minn. .	1869	George F. Budd	1,468	2,188	111	—	32,718	Mt. Union College, Allentown, Pa. . . .	1926	A. G. Umbreit	327	492	31	—	41,000
*Minnesota State Tch. Coll., Winona, Minn. . .	1858	Nels Minné	545	575	50	—	30,100	Mt. Union College, Allentown, Pa. . . .	1926	A. G. Umbreit	327	492	31	—	41,000
*Mississippi College, Oxford, Miss.	1824	Sister Mary Gonzaga	557	789	66	1,100,000	450,000	Mt. Union College, Allentown, Pa. . . .	1926	A. G. Umbreit	327	492	31	—	41,000
*Mississippi College, Oxford, Miss.	1824	J. D. Williams	2,469	2,511	284	858,657	450,000	Mt. Union College, Allentown, Pa. . . .	1926	A. G. Umbreit	327	492	31	—	41,000
*Mississippi College, Oxford, Miss.	1826	D. M. Nelson	1,495	1,567	61	1,116,818	450,000	Mt. Union College, Allentown, Pa. . . .	1926	A. G. Umbreit	327	492	31	—	41,000
*Mississippi College, Oxford, Miss.	1910	R. A. McLemore	2,656	2,959	200	—	71,000	Mt. Union College, Allentown, Pa. . . .	1926	A. G. Umbreit	327	492	31	—	41,000
*Mississippi State Coll., State College, Miss.	1874	Ben Hilburn	2,567	3,080	220	—	165,000	Mt. Union College, Allentown, Pa. . . .	1926	A. G. Umbreit	327	492	31	—	41,000
*Mississippi State Coll., State College, Miss.	1874	C. P. Hogarth	899	925	83	248,789	95,000	Mt. Union College, Allentown, Pa. . . .	1926	A. G. Umbreit	327	492	31	—	41,000
*Missouri Valley College, Marshall, Mo. . . .	1888	Elmer Ellis	9,000	9,500	1,060	615,000	735,000	Mt. Union College, Allentown, Pa. . . .	1926	A. G. Umbreit	327	492	31	—	41,000
*Mobile Branch, Alabama State College for Negroes, Mobile, Alabama	1936	H. Council Trenholm	320	—	13	—	4,572	Mt. Union College, Allentown, Pa. . . .	1926	A. G. Umbreit	327	492	31	—	41,000
*Modesto Junior College, Modesto, Calif. . .	1921	Roy C. McColl	1,472	1,596	91	—	25,000	Mt. Union College, Allentown, Pa. . . .	1926	A. G. Umbreit	327	492	31	—	41,000
*Moline Community College (Jr.), Moline, Ill. .	1946	Dwight Davis	135	467	84	—	8,937	Mt. Union College, Allentown, Pa. . . .	1926	A. G. Umbreit	327	492	31	—	41,000
*Monmouth College, Monmouth, Ill.	1853	R. W. Gibson	566	569	49	1,965,130	65,043	Mt. Union College, Allentown, Pa. . . .	1926	A. G. Umbreit	327	492	31	—	41,000
*Monmouth Junior College, Long Branch, N.J.	1933	Edward G. Schaefer	202	587	35	—	23,700	Mt. Union College, Allentown, Pa. . . .	1926	A. G. Umbreit	327	492	31	—	41,000
*Montana School of Mines, Butte, Mont. . .	1893	J. R. Van Pelt	2,684	2,767	225	1,636,000	120,000	Mt. Union College, Allentown, Pa. . . .	1926	A. G. Umbreit	327	492	31	—	41,000
*Montana State College, Bozeman, Mont. . .	1893	R. R. Renne	2,684	2,767	225	1,636,000	120,000	Mt. Union College, Allentown, Pa. . . .	1926	A. G. Umbreit	327	492	31	—	41,000
*Montana State University, Missoula, Mont. .	1893	Carl McFarland	2,290	2,340	227	905,656	387,100	Mt. Union College, Allentown, Pa. . . .	1926	A. G. Umbreit	327	492	31	—	41,000
*Monterey Peninsula College (Jr.), Monterey, Calif.	1946	Calvin C. Flint	520	935	36	—	10,287	Mt. Union College, Allentown, Pa. . . .	1926	A. G. Umbreit	327	492	31	—	41,000
*Montgomery Jr. Coll., Takoma Park, Md. . .	1947	Donald E. Deyo	316	476	38	—	7,000	Mt. Union College, Allentown, Pa. . . .	1926	A. G. Umbreit	327	492	31	—	41,000
*Monticello College (Jr.), Godfrey, Ill. . . .	1835	Russell T. Sharpe	249	249	33	106,000	25,000	Mt. Union College, Allentown, Pa. . . .	1926	A. G. Umbreit	327	492	31	—	41,000
*Montreal University of, Montreal, Que., Can.	1876	Oliver Muralet	10,788	12,345	1,762	521,280	65,000	Mt. Union College, Allentown, Pa. . . .	1926	A. G. Umbreit	327	492	31	—	41,000
*Morehead State College, Morehead, Ky. . . .	1903	Raymond S. Haupt	548	563	39	1,200,000	63,000	Mt. Union College, Allentown, Pa. . . .	1926	A. G. Umbreit	327	492	31	—	41,000
*Morehead State College, Morehead, Ky. . . .	1923	Adrian Doran	735	997	70	—	46,935	Mt. Union College, Allentown, Pa. . . .	1926	A. G. Umbreit	327	492	31	—	41,000
*Morehead State College, Morehead, Ky. . . .	1867	Benjamin E. Mays	600	602	41	2,000,000	135,000	Mt. Union College, Allentown, Pa. . . .	1926	A. G. Umbreit	327	492	31	—	41,000
*Morehead State College, Morehead, Ky. . . .	1867	Benjamin E. Mays	600	602	41	2,000,000	135,000	Mt. Union College, Allentown, Pa. . . .	1926	A. G. Umbreit	327	492	31	—	41,000

Institution and Location	Year Founded	Chief Executive	Full Time Students	Part Time Students	Faculty	Endowment	Bound Library Volumes	Institution and Location	Year Founded	Chief Executive	Full Time Students	Part Time Students	Faculty	Endowment	Bound Library Volumes
New Mexico College of Agriculture and Mechanic Arts, State College, N.M.	1888	Roger B. Corbett	1,520	1,972	140	\$985,089	88,054	Northern Oklahoma Jr. Col., Tonkawa, Okla.	1901	V. R. Easterling	414	632	25	—	13,000
New Mexico Highlands Univ., Las Vegas, N.M.	1893	T. C. Donnelly	561	645	58	—	62,000	Northern State Tech. Coll., Aberdeen, S.D.	1901	Warren Lovinger	760	790	54	—	38,000
New Mexico Institute of Mining and Technology, Socorro, N.M.	1889	E. J. Workman	151	178	23	118,000	20,000	Sheridan, Wyo.	1948	John O. Goodman	143	537	12	—	9,500
New Mexico Military Inst., Roswell, N.M.	1893	C. F. Ward	623	623	60	—	33,000	North Georgia Col., Dahlonega, Ga.	1873	Merritt E. Hoag	579	579	38	—	30,500
New Mexico Western Col., Silver City, N.M.	1893	J. C. Miller	355	500	68	—	30,000	North Idaho Jr. Col., Coeur d'Alene, Ida.	1939	George O. Kidow	168	183	19	—	11,186
New Rochelle, Col. of New Rochelle, N.Y.	1904	Mother M. Dorothea Dunkerley	844	844	68	—	64,257	North Park College [Jr.], Chicago, Ill.	1891	Clarence A. Nelson	527	799	68	—	27,861
Newton Col. of the Sacred Heart, Newton, Mass.	1946	Eleanor S. Kenny	208	220	35	—	29,000	North Texas State Coll., Denton, Tex.	1890	J. C. Matthews	4,489	4,864	242	—	260,000
New York, State University of, Albany, N.Y.	1948	William S. Carlson	21,774	26,423	2,183	—	1,036,116	Northwestern Junior College, Orange City, Ia.	1928	J. E. Christensen	125	200	17	—	3,500
Agricultural and Tech. Inst. [Jr.], Alfred, N.Y.	1908	Walter C. Hinkle	1,110	1,117	65	—	6,000	Northwestern State College, Alva, Okla.	1898	Luther D. Brown	204	410	21	—	10,000
Agricultural and Tech. Inst. [Jr.], Canton, N.Y.	1906	Albert E. French	355	404	39	—	5,300	Northwestern State College of Louisiana, Natchitoches, La.	1884	John S. Kyser	1,458	1,741	108	—	74,057
Agricultural and Tech. Inst. [Jr.], Delhi, N.Y.	1916	William R. Kunsela	205	208	27	—	4,600	Northwestern Univ., Evanston, Ill.	1851	J. Roscoe Miller	7,990	17,983	1,255	61,416,029	1,146,163
College of Agriculture, Ithaca, N.Y.	1904	Malcolm B. Galbreath	465	465	51	—	5,250	Northwest Mississippi Jr. Col., Senatobia, Miss.	1927	Resce D. McLendon	300	340	20	—	5,000
College of Ceramics, Alfred, N.Y.	1900	William I. Myers	1,948	1,985	321	—	210,000	Northwest Missouri St. Col., Maryville, Mo.	1905	J. W. Jones	928	928	69	—	45,000
College of Forestry, Syracuse, N.Y.	1911	John F. McMahon	354	366	30	—	10,500	Northwest Nazarene College, Nampa, Ida.	1913	J. E. Riley	440	497	37	—	19,000
College of Home Economics, Ithaca, N.Y.	1925	Hardy L. Shirley	618	631	67	—	72,000	Northwestern University, Northfield, Vt.	1819	Ernest N. Harmon	670	670	54	—	1,168,308
Downstate Medical Center, Brooklyn, N.Y.	1857	Helen G. Canoyer	686	695	106	—	210,000	Noire Dame University, Notre Dame, Ind.	1842	T. M. Hesburgh	5,406	5,443	566	10,670,000	382,503
Harpur College, Endicott, N.Y.	1946	Howard W. Potter	600	644	108	—	31,000	Noire Dame College, South Euclid, Ohio	1923	Mother Mary Anselm	259	262	37	—	28,053
Inst. of Agr. and Home Econ. [Jr.], Cobleskill, N.Y.	1914	Glenn G. Bartle	498	755	63	—	65,000	Noire Dame College of Staten Island, Staten Island, N.Y.	1931	Mother Saint Egbert	250	250	25	—	16,000
Long Island Agr. and Tech. Inst. [Jr.], Farmingdale, N.Y.	1876	Ray L. Wheeler	272	272	29	—	5,300	Noire Dame of Md., Col. of, Baltimore, Md.	1873	Sister Margaret Mary	280	450	59	—	260,000
Maritime College, Fort Schuyler, N.Y.	1814	Halsey B. Knapp	1,139	3,784	140	—	17,500	Noire Dame Seminary, New Orleans, La.	1923	Thomas U. Bolduc	106	106	10	—	30,000
Sch. of Indust. and Labor Relations, Ithaca, N.Y.	1945	Martin B. Catherwood	358	358	33	—	30,000	Nova Scotia Agr. Col., Truro, N.S., Can.	1903	Kenneth Cox	97	97	31	—	2,500
Teachers College, Albany, N.Y.	1844	Evon R. Collins	749	2,110	156	—	31,000	Oberlin College, Oberlin, Ohio	1833	William E. Stevenson	1,877	1,996	193	24,515,898	510,500
Teachers College, Buffalo, N.Y.	1841	Donald M. Tower	945	1,059	96	—	31,000	Occidental College, Los Angeles, Calif.	1887	Arthur G. Coons	1,158	1,247	106	3,273,913	117,000
Teachers College, Cortland, N.Y.	1869	Harvey M. Rice	2,127	2,581	176	—	36,000	Oceanside Caribad College [Jr.], Oceanside, Calif.	1934	Robert V. Rodgers	809	2,619	55	—	8,500
Teachers College, Fredonia, N.Y.	1867	Donna V. Smith	1,607	1,710	124	—	23,000	Odessa College [Jr.], Odessa, Texas	1946	Murray H. Fly	243	1,800	68	—	6,944
Teachers College, Genesee, N.Y.	1867	Harry W. Porter	650	732	82	—	43,000	Oglethorpe University, Oglethorpe University, Ga.	1913	George C. Seward	228	432	28	1,072,519	19,978
Teachers College, New Paltz, N.Y.	1886	Francis J. Moench	595	598	76	—	36,000	Ohio State University, Columbus, Ohio	1870	Howard L. Bevis	17,164	18,838	2,259	10,460,078	1,066,176
Teachers College, Oneonta, N.Y.	1886	William J. Haggerty	869	1,047	94	—	38,000	Ohio Wesleyan University, Delaware, Ohio	1842	John Calhoun Baker	5,200	5,238	320	350,000	234,000
Teachers College, Oswego, N.Y.	1861	Royal F. Netzer	1,217	1,298	102	—	50,000	Oklahoma A. and M. College, Stillwater, Okla.	1890	Arthur S. Fleming	1,998	2,063	145	5,601,760	192,956
Teachers College, Plattsburgh, N.Y.	1889	George W. Brown	845	891	92	—	36,000	Oklahoma Baptist University, Shawnee, Okla.	1890	George Lynn Cross	8,686	9,471	637	504,382	327,000
Teachers College, Potsdam, N.Y.	1866	Frederick W. Crumb	762	768	92	—	32,000	Oklahoma City Univ., Oklahoma City, Okla.	1904	O. S. Wilham	7,303	7,963	530	7,082,615	327,000
Upstate Medical Center, Syracuse, N.Y.	1834	William R. Willard	428	498	76	—	26,000	Oklahoma Coll. for Women, Chickasha, Okla.	1908	John W. Riley	964	1,115	67	251,950	50,700
Veterinary College, Ithaca, N.Y.	1894	William A. Hagan	205	215	50	—	210,000	Olympic Coll. Acad. [Jr.], Bremerton, Wash.	1919	C. Q. Smith	1,015	3,060	152	969,045	47,000
New York University, New York, N.Y.	1831	Henry Townsend Head	13,345	35,692	2,354	1,028,892	58,000	Omaha Agricultural Coll., Omaha, Neb.	1908	Homer M. Ledbetter	197	197	19	—	10,000
Nichols Junior College, Dudley, Mass.	1856	Francis L. Meade	287	1,175	104	125,000	5,575	Ontario Agricultural Coll., Guelph, Ont., Can.	1908	L. J. Elias	515	2,352	109	—	6,808
North Carolina Agr. and Tech. Col. of Greensboro, N.C.	1815	James L. Conrad	285	285	20	—	52,411	Orange Coast Coll. [Jr.], Costa Mesa, Calif.	1874	Philip Milo Bell	1,897	2,352	147	137,954	101,000
North Carolina Univ. of Chapel Hill, N.C.	1789	F. D. Buford	2,552	2,950	159	—	662,978	Oregon State Coll. of Educ., Monmouth, Ore.	1872	J. D. MacLachlan	1,897	2,247	170	—	50,000
North Carolina Woman's College of the University of Greensboro, N.C.	1910	R. B. House	6,061	6,209	937	4,447,610	158,234	Oregon State College, Corvallis, Ore.	1858	Basil H. Peterson	962	4,000	58	—	550,000
North Carolina Col. at Durham, Durham, N.C.	1891	Edward K. Graham	2,270	2,388	203	494,828	—	Ottawa University, Ottawa, Ont., Can.	1858	R. E. Luehlin	4,439	4,438	448	—	361,500
North Carolina State College of Agr. and Eng., Raleigh, N.C.	1910	A. Elder	4,425	1,560	113	—	144,300	Ottawa University, Ottawa, Ont., Can.	1848	A. L. Strand	5,737	6,239	345	—	300,000
North Central College, Naperville, Ill.	1887	C. H. Boston	4,425	4,725	457	795,797	56,000	Ottawa University, Ottawa, Ont., Can.	1865	Rodrigue Normandin	1,492	4,821	436	—	195,000
North Dakota, Univ. of, Grand Forks, N.D.	1861	C. Harvey Gaiger	517	685	50	1,764,070	—	Ottawa University, Ottawa, Ont., Can.	1847	A. B. Martin	400	463	31	580,057	31,714
North Dakota Agricultural Coll., Fargo, N.D.	1883	George W. Starcher	2,710	2,975	175	—	108,950	Ottawa University, Ottawa, Ont., Can.	1847	J. Gordon Howard	683	753	59	1,368,094	45,000
North Dakota State Normal and Industrial College, Ellendale, N.D.	1889	Fred Samuel Hultz	2,000	2,160	160	—	21,464	Ottawa University, Ottawa, Ont., Can.	1886	Sister Marie Ancille	531	181	22	—	12,000
North Dakota State Tech. Col., Valley City, N.D.	1889	T. S. Jenkins	130	230	19	—	22,000	Ottawa University, Ottawa, Ont., Can.	1886	Ralph A. Phelps, Jr.	582	600	45	637,000	42,000
North Dakota State Tech. Col., Dickinson, N.D.	1916	Charles E. Scott	360	365	25	—	40,000	Ottawa University, Ottawa, Ont., Can.	1928	C. J. Weiden	280	370	28	—	20,004
North Dakota State Tech. Col., Mayville, N.D.	1889	O. A. DeLong	310	330	35	—	22,000	Ottawa University, Ottawa, Ont., Can.	1896	John L. McMahon	274	577	25	660,288	55,985
North Dakota State Tech. Col., Minot, N.D.	1913	C. P. Lura	727	727	70	—	40,000	Ottawa University, Ottawa, Ont., Can.	1891	Winslow S. Drummond	221	237	75	341,000	35,336
North Dakota State Tech. Col., Valley City, N.D.	1889	R. L. Lokken	405	415	38	692,000	—	Ottawa University, Ottawa, Ont., Can.	1851	Robert E. Burns	893	1,294	133	1,047,000	60,000
North Dakota State Tech. Col., Dickinson, N.D.	1919	Bruce G. Carter	483	721	35	—	9,750	Ottawa University, Ottawa, Ont., Can.	1894	H. C. Eschwald	949	1,370	56	68,213	42,019
North Dakota State Tech. Col., Mayville, N.D.	1846	Parrell E. Garrison	1,196	1,361	66	—	60,000	Ottawa University, Ottawa, Ont., Can.	1882	S. L. Sommerberg	706	843	65	46,011	46,011
North Dakota State Tech. Col., Minot, N.D.	1898	Carl S. Eli	4,452	13,099	615	5,275,450	80,346	Ottawa University, Ottawa, Ont., Can.	1849	Charles C. Armstrong	440	489	48	474,216	48,380
North Dakota State Tech. Col., Valley City, N.D.	1867	Lewis C. Slater	1,067	1,286	73	—	125,000	Ottawa University, Ottawa, Ont., Can.	1845	Paul D. Sharfer	39	39	20	959,012	13,147
North Dakota State Tech. Col., Valley City, N.D.	1867	Walter H. Kyle	1,354	1,354	83	—	50,500	Ottawa University, Ottawa, Ont., Can.	1883	R. C. Matheson	205	232	14	175,000	5,687
North Dakota State Tech. Col., Valley City, N.D.	1913	Charles W. Koller	290	357	24	77,430	93,021	Ottawa University, Ottawa, Ont., Can.	1883	Edmund C. Peters	291	352	23	35,690	28,513
North Dakota State Tech. Col., Valley City, N.D.	1899	Leslie A. Holmes	2,112	2,570	155	—	54,304	Ottawa University, Ottawa, Ont., Can.	1946	John L. Leonard	260	343	17	8,500	8,500
North Dakota State Tech. Col., Valley City, N.D.	1899	H. A. Tape	645	719	66	—	25,000	Ottawa University, Ottawa, Ont., Can.	1946	John A. Howard	400	118	17	12,000	12,000
North Dakota State Tech. Col., Valley City, N.D.	1929	L. O. Brockmann	325	325	34	—	54,304	Ottawa University, Ottawa, Ont., Can.	1947	John A. Howard	125	135	16	5,000	5,000
North Dakota State Tech. Col., Valley City, N.D.	1929	L. O. Brockmann	325	325	34	—	25,000	Ottawa University, Ottawa, Ont., Can.	1927	R. P. Ward	739	1,358	60	14,500	14,500
North Dakota State Tech. Col., Valley City, N.D.	1929	L. O. Brockmann	325	325	34	—	25,000	Ottawa University, Ottawa, Ont., Can.	1924	J. R. Mclemore	446	615	29	8,321	8,321

Institution and Location	Year Founded	Chief Executive	Full Time Students	Part Time Students	Faculty	Endowment	Bound Volumes	Institution and Location	Year Founded	Chief Executive	Full Time Students	Part Time Students	Faculty	Endowment	Bound Volumes
Park College, Parkville, Mo.	1875	Millard G. Roberts	345	345	38	\$2,047,937	70,000	†Regis College, Denver, Colo.	1888	Richard F. Ryan	558	749	52	\$ 160,000	78,480
†Parsons College, Fairfield, Ia.	1875	William Langsdorf	237	244	32	688,777	30,000	†Regis College, Weston, Mass.	1927	Sister Mary Alice	569	569	63	—	46,922
†Pasadena City Coll. [Jr.], Pasadena, Calif.	1924	Westlake T. Purkiser	3,620	6,368	253	—	50,354	†Reinhardt College [Jr.], Waleska, Ga.	1883	J. R. Burgess, Jr.	213	219	13	334,000	4,448
†Pasadena College, Pasadena, Calif.	1901	William C. Presley	720	814	42	—	45,000	†Rensselaer Polytechnic Inst., Troy, N.Y.	1882	L. Livingston W. Houston	2,799	3,195	416	22,584,186	54,895
†Peace College [Jr.], Raleigh, N.C.	1857	William C. Presley	212	257	19	225,000	10,000	†Rhode Island Coll. of Educ., Providence, R.I.	1892	Carl R. Woodward	2,039	2,070	211	—	120,842
†Pearl River Junior Coll., Poplarville, Miss.	1912	H. Johnston	564	601	35	—	6,500	†Rhode Island Coll. of Educ., Providence, R.I.	1854	W. C. Gaige	506	2,083	64	—	35,000
†Pembroke State College, Pembroke, N.C.	1887	Ralph D. Wellons	157	201	19	—	23,115	†Rhode Island Coll. of Educ., Providence, R.I.	1872	Max W. Sullivan	638	708	81	7,837,819	21,633
†Pennsylvania Coll. of Podiatric Med. & Chiro., Philadelphia, Pa.	1740	Gaylord P. Horanwell	8,881	15,795	2,813	44,000,000	48,000	†Rice Institute, Houston, Tex.	1912	William V. Houston	1,684	1,684	130	41,500,000	250,000
†Pennsylvania Coll. for Women, Pittsburgh, Pa.	1869	Paul R. Anderson	500	575	50	3,000,000	20,000	†Richmond, University of [incl. 1 Westhampton College], Richmond, Virginia	1877	George M. Modlin	1,804	2,989	160	3,466,839	125,000
†Pennsylvania Military College of Optometry, Philadelphia, Pa.	1919	Ed. E. MacMorland	642	756	46	100,000	5,000	†Richmond Professional Institute of the College of William and Mary, Richmond, Va.	1917	H. H. Hibbs	1,238	2,393	140	100,000	40,000
†Pa. State Tch. Coll., Bloomsburg, Pa.	1839	Albert Fitch	225	225	38	330,000	30,000	†Ricker College [Jr.], Houston, Me.	1848	Robert L. Willett	607	104	16	—	10,000
†Pa. State Tch. Coll., California, Pa.	1852	C. Herman Grose	778	845	38	—	28,924	†Ricks College, Rexburg, Ida.	1888	John L. Clarke	808	714	41	—	25,000
†Pa. State Tch. Coll., Cheyney, Pa.	1836	J. H. Duckrey	407	457	29	—	25,000	†Ripon College, Ripon, Wis.	1850	Frederick Oliver	527	531	48	1,509,753	54,888
†Pa. State Tch. Coll., Clarion, Pa.	1866	Paul G. Chandler	512	540	40	—	44,975	†Riverside College [Jr.], Riverside, Calif.	1916	Orlando W. Noble	943	1,007	54	—	20,000
†Pa. State Tch. Coll., Shippensburg, Pa.	1893	Joseph F. Noonan	826	829	53	—	35,000	†Riverside College, Nashua, N.H.	1933	Sister Marie Carmella	181	311	33	—	24,000
†Pa. State Tch. Coll., Shippensburg, Pa.	1857	Thomas R. Miller	432	604	52	—	43,000	†Roanoke College, Salem, Va.	1842	H. Sherman Oliver	435	455	33	797,323	33,413
†Pa. State Tch. Coll., Easton, Pa.	1871	Willis E. Pratt	1,611	—	106	—	46,054	†Rochester University of Rochester, N.Y.	1850	Kiewit	2,956	6,478	926	60,283,503	580,400
†Pa. State Tch. Coll., Indiana, Pa.	1866	Q. A. W. Rohrbach	762	858	57	—	42,050	†Rockford College, Rockford, Ill.	1847	Leland H. Carlson	211	792	61	—	47,000
†Pa. State Tch. Coll., Kutztown, Pa.	1877	Richard T. Parsons	590	595	41	—	36,000	†Rockhurst College, Kansas City, Mo.	1910	M. E. Van Ackeren	475	1,004	77	—	27,859
†Pa. State Tch. Coll., Lackawanna, Pa.	1858	James G. Morgan	535	550	70	—	40,000	†Rocky Mountain College, Billings, Mont.	1883	Herbert W. Hines	218	260	28	532,673	27,000
†Pa. State Tch. Coll., Mansfield, Pa.	1854	H. B. Blensinger	841	900	71	—	38,007	†Rollins College, Winter Park, Fla.	1885	H. F. McKean	532	758	73	3,380,000	90,706
†Pa. State Tch. Coll., Millersburg, Pa.	1874	Harry L. Krine	703	715	35	—	25,700	†Rollins College, Winter Park, Fla.	1945	Edward J. Sparling	2,000	3,500	138	10,000	85,000
†Pa. State Tch. Coll., Shippensburg, Pa.	1889	Dale W. Houk	765	768	65	—	60,000	†	1848	Sister Mary Timothea	673	710	86	221,697	72,000
†Pa. State Tch. Coll., Slippery Rock, Pa.	1869	Charles S. Swope	1,750	1,932	111	—	410,000	†Roseary College, River Forest, Ill.	1921	Mother Mary Chrysostom	391	393	54	—	49,500
†Pa. State Tch. Coll., West Chester, Pa.	1855	William S. Eisenhower	13,110	14,271	1,719	517,000	81,449	†Rosemont College, Rosemont, Pa.	1921	Mother Mary Chrysostom	391	393	54	—	49,500
†Pennsylvania State Univ., Univ. Park, Pa.	1855	J. J. Hagen, Jr.	610	637	37	—	10,000	†Rose Polytechnic Institute, Terre Haute, Ind.	1874	Ford L. Wilkinson, Jr.	363	371	40	3,231,340	25,330
†Perkinston Junior College, Perkinsville, Miss.	1911	J. L. Stiles, Jr.	375	375	28	900,000	31,957	†Royal Military College of Canada, Kingston, Ont., Can.	1876	D. A. R. Bradshaw	401	401	70	—	42,000
†Philaider Smith College, Little Rock, Ark.	1868	M. Lacey Stiles Harris	665	665	64	1,400,000	64,300	†Royal Military College of Canada, Kingston, Ont., Can.	1916	Lewis A. Froman	650	650	59	1,180,000	63,000
†Phillips University, Enid, Okla.	1906	Eugene S. Briggs	800	1,015	64	—	27,650	†Russell Sage College, Troy, N.Y.	1866	L. M. McCoy	223	1,397	31	29,217	6
†Phoenix College [Jr.], Phoenix, Ariz.	1920	Robert J. Hamelty	1,164	2,520	54	—	7,000	†Rust College, Holly Springs, Miss.	1886	Lewis Webster Jones	5457	12,359	1,243	9,188,500	698,585
†Phoenix School of Agriculture [Jr.], Canoga Park, Calif.	1947	E. B. Angier	700	3,500	75	—	16,652	†Rutgers University, New Brunswick and Newark, N.J.	1766	Lewis Webster Jones	5457	12,359	1,243	9,188,500	698,585
†Pikeville College [Jr.], Pikeville, Ky.	1889	A. A. Pugh	277	290	28	350,000	10,000	†Sacramento Jr. Coll., Sacramento, Calif.	1916	J. Paul Mohr	2,287	2,287	112	—	41,000
†Pine Manor Junior Coll., Walesey, Mass.	1889	Alfred H. Hill	250	250	40	—	10,000	†Sacramento Jr. Coll., Sacramento, Calif.	1917	Guy Ashley West	1,606	3,521	108	—	52,000
†Pittsburgh University of Pittsburgh, Pa.	1781	Rufus H. Fitzgerald	8,202	21,329	1,723	30,253,000	694,000	†Sacred Heart, College of the, Sanituce, P.R.	1880	Mother Angeles Echevarria	95	503	18	—	23,782
†Plymouth Teachers College, Plymouth, N.H.	1870	Harold E. Hyde	300	429	24	—	17,000	†Sacred Heart Jr. Coll. and Acad., Belmont, N.C.	1892	Mother M. Maura	160	190	20	10,712	9,228
†Plymouth College, Claremont, Calif.	1887	E. Elison Lyon	1,018	1,024	98	7,500,000	138,611	†St. Ambrose College [incl. 1 Marycrest College], Davenport, Ia.	1882	Ambrase J. Burke	828	1,091	56	600,000	35,000
†Porterville Coll. [Jr.], Porterville, Calif.	1923	B. E. Jamison	350	367	28	—	8,640	†St. Anselm's College, Manchester, N.H.	1889	Bertrand C. Dolan	560	715	53	—	40,000
†Port Huron Junior Coll., Port Huron, Mich.	1901	A. R. MacLaren	304	451	21	—	7,622	†St. Augustine's College, Raleigh, N.C.	1891	James A. Boyer	440	446	35	300,000	22,067
†Portland, University of, Portland, Ore.	1901	Michael J. Gavin	1,014	1,169	147	2,217,000	60,000	†St. Bede Junior College, Peru, Ill.	1891	Lawrence Vohs	450	450	32	—	6,000
†Portland State Extension Center [Jr.], Portland, Ore.	1946	J. F. Cramer	2,300	5,600	250	—	20,227	†St. Benedict's College of St. Joseph, Minn.	1913	Mother R. Peters	250	300	42	—	24,160
†Potomac State School of West Virginia University [Jr.], Keyser, W.Va.	1902	E. E. Church	438	470	35	—	12,000	†St. Bernard College [Jr.], St. Bernard, Ala.	1892	Bede Lubel	372	372	35	100,000	28,900
†Prairie View Agricultural & Mechanical College, Prairie View, Tex.	1876	F. Francis H. Horn	2,441	2,441	171	—	47,176	†St. Bonaventure Univ., St. Bonaventure, N.Y.	1937	Bertrand J. Campbell	838	1,437	93	58,000	58,000
†Pratt Institute, Brooklyn, N.Y.	1887	Marshall W. Brown	1,500	3,219	180	11,000,000	155,000	†St. Catherine, College of, St. Paul, Minn.	1859	Juvenal Lalor	1,330	1,707	116	120,000	77,991
†Presbyterian Junior College, Clinton, S.C.	1880	Louis C. LaMotte	134	196	14	927,000	41,500	†St. Charles' College [Jr.], Catonsville, Md.	1905	Sister Antonine O'Brien	1,066	1,687	113	668,869	70,837
†Princeton University, Princeton, N.J.	1746	Harold W. Dadds	3,496	3,496	458	61,221,000	12,000	†St. Charles' College [Jr.], Catonsville, Md.	1831	George A. O'Leason	400	400	27	—	40,000
†Principia College, Elmhurst, Ill.	1898	William E. Morgan	452	453	44	1,056,114	30,000	†St. Dunstan's Coll., Charlottetown, P.E.I., Can.	1931	R. V. MacKenzie	314	314	20	—	15,000
†Pueblo Junior College, Pueblo, Colo.	1917	Robert J. Slavin	1,206	1,229	94	100,000	41,256	†St. Edward's Seminary, Kennebec, Wash.	1899	Sr. Hildegard Marie Mahoney	146	146	16	—	20,000
†Pueblo Junior College, Pueblo, Colo.	1933	Marvin C. Knudson	540	1,630	67	—	20,435	†St. Francis, College of, Joliet, Ill.	1874	Sister M. Elvira	448	468	51	—	38,400
†Puerto Rico, Polytech. Inst. of San German, P.R.	1912	Edward G. Seel	611	627	46	387,000	23,000	†St. Francis College, Loretto, Pa.	1847	Xavier Crowley	283	444	47	16,000	50,000
†Puerto Rico, Univ. of, Rio Piedras, P.R.	1903	Jaime Benitez	8,540	13,232	965	50,000	74,000	†St. Francis Xavier Coll. for Women, Chicago, Ill.	1912	Mother Mary Huberto	300	478	38	—	20,000
†Puguet Sound, College of, Tacoma, Wash.	1888	R. Franklin Thompson	990	1,448	97	2,000,000	333,921	†St. Francis Xavier Univ., Antigonish, N.S., Can.	1853	John R. MacDonald	906	918	57	600,000	62,500
†Purdue University, West Lafayette, Ind.	1869	Frederick L. Hoyde	10,173	10,232	1,187	340,000	116,000	†St. John College of Cleveland, Cleveland, Ohio	1928	Robert B. Navin	339	362	57	—	35,000
†Queens College, Charlotte, N.C.	1857	Edwin R. Walker	421	588	36	673,648	29,421	†St. John's College, Annapolis, Md.	1696	Richard D. Weigle	137	139	19	1,000,000	43,000
†Queens College, Flushing, N.Y.	1937	John J. Theobald	3,542	6,968	310	—	91,930	†St. John's College, Ammarillo and Los Angeles, Calif.	1926	J. W. Richardson	128	128	25	—	43,000
†Queen's University, Kingston, Ontario, Can.	1841	W. A. Mackintosh	2,348	2,995	203	15,153,000	267,000	†St. John's University, Brooklyn, N.Y.	1870	John A. Flynn	3,476	6,856	242	—	140,493
†Quincy College, Quincy, Illinois	1860	Julian Woods	440	575	58	—	38,000	†St. Joseph College, Emmitsburg, Minn.	1857	Baldwin Dwarshak	954	954	75	265,000	94,350
†Radcliffe College, Cambridge, Mass.	1879	Wilbur K. Jordan	1,434	1,434	3,070	9,636,601	116,000	†St. Joseph College, W. Hartford, Conn.	1809	Mother M. Ethelreda	248	261	37	—	28,000
†Radford College, Woman's Division of Virginia Polytechnic Institute, Radford, Va.	1910	C. K. Martin, Jr.	731	792	58	1,420,768	39,771	†St. Joseph Junior Coll., St. Joseph, Mo.	1915	Nelle Blum	350	456	48	—	9,918
†Randolph-Macon College, Ashland, Va.	1830	E. Carl Moreland	418	421	75	—	80,000	†St. Joseph's College, Collegeville, Ind.	1889	Edward H. Gross	456	625	56	240,000	59,000
†Randolph-Wacon Woman's Coll., Lynchburg, Va.	1893	W. F. Quillian, Jr.	650	650	75	1,402,000	80,000	†St. Joseph's College, Philadelphia, Pa.	1851	Edward G. Jacklin	1,168	1,900	78	—	35,000
†Redlands, University of, Redlands, Calif.	1907	George H. Armacost	921	1,118	98	3,750,000	93,000	†St. Joseph's Coll. for Women, Brooklyn, N.Y.	1916	William T. Dillon	1,284	284	42	47,179	38,515
†Reed College, Portland, Ore.	1904	Frank L. Griffin	588	619	67	1,906,154	12,000	†							
†Reedley College [Jr.], Reedley, Calif.	1926	G. A. Reimer	615	649	44	—	—								

UNIVERSITIES AND COLLEGES

721

Institution and location	Year Founded	Chief Executive	Full Time Students	Part Time Students	Faculty	Endowment	Bound Volumes	Institution and location	Year Founded	Chief Executive	Full Time Students	Part Time Students	Faculty	Endowment	Bound Volumes
St. Joseph's Seminary (Jr.), Callicoon, N.Y.	1901	Cassian J. Kirk	104	104	10	—	8,704	Seattle Pacific College, Seattle, Wash.	1891	C. Hoyt Watson	762	878	57	\$ 527,000	34,500
St. Joseph's University, St. Joseph and Moncton, N.B., Can.	1864	T. Gallant	620	950	42	\$ 50,000	40,000	Seattle University, Seattle, Wash.	1892	Albert A. Lemieux	1,872	2,046	133	—	50,000
St. Lawrence University, Canton, N.Y.	1856	Eugene G. Bewkes	1,227	1,275	90	2,000,000	100,000	Seneca College of the Genesee, N.Y.	1892	Alan W. Brown	876	903	72	852,170	93,415
St. Martin's College, Olympia, Wash.	1818	Paul C. Reinert	6,200	10,784	1,181	4,016,948	498,075	William Smith College	1822	Alan W. Brown	647	663	72	—	—
St. Mary College, Xavier, Kan.	1895	Raphael Heider	190	200	33	—	—	Sequoias College of the (Jr.), Visalia, Calif.	1908	Alan W. Brown	229	240	72	—	—
St. Mary of the Springs, Col. of Columbus, Ohio	1860	Arthur M. Murphy	274	402	59	—	53,000	Seset Hill College, Greensburg, Pa.	1925	Ivan C. Crookshanks	928	1,054	53	—	12,040
St. Mary-of-the-Wasatch, Col. of Salt Lake City, Utah	1868	Sister M. Angelita	250	283	48	—	30,000	Shasta College (Jr.), Redding, Calif.	1856	William Granger Ryan	2,417	6,230	334	—	106,711
St. Mary-of-the-Woods Col., St. Mary-of-the-Woods, Ind.	1926	Sr. Marie de Lourdes	92	102	18	—	1,460	Shaw University, Raleigh, N.C.	1883	G. A. Collier	422	467	70	—	38,000
St. Mary's Col., Notre Dame, Ind.	1840	Sister Francis Joseph	313	313	51	546,435	—	Shenandoah College, Shenandoah, Va.	1850	W. R. Strasser	430	557	32	315,000	20,000
St. Mary's College, Mary's College, Calif.	1863	Sister M. Madeleva	668	775	40	85,600	—	Shiner College, Shepherdstown, W. Va.	1875	Troy R. Brady	112	131	18	57,000	20,064
St. Mary's College, Winona, Minn.	1912	Brother W. Thomas	406	410	37	173,000	—	Shorner College, Rome, Ga.	1853	Oliver S. Kenberry	511	659	37	—	22,997
St. Mary's Dominican Col., New Orleans, La.	1920	Brother J. Ambrose	652	660	32	—	32,000	Siena Heights College, Adrian, Mich.	1873	Christenberry	219	435	19	208,542	14,135
St. Mary's School and Jr. Col., Raleigh, N.C.	1842	Sister Mary Louise	210	297	27	—	39,681	Sierra College (Jr.), Auburn, Calif.	1919	Harold Mary Gerald	294	400	43	577,796	29,917
St. Michael's College, Nova Scotia, Can.	1791	Richard G. Stone	288	306	27	—	19,000	Simmons College, Boston, Mass.	1936	Mathew Weaver	500	518	33	15,000	15,000
St. Mary's University, San Antonio, Tex.	1841	F. J. Lynch	254	928	46	314,000	143,000	St. George Williams Col., Montreal, Que., Can.	1899	William E. Kerstetter	1,349	1,613	192	3,988,479	100,000
St. Michael's College, Winoski Park, Vt.	1852	Francis E. Moriarty	940	1,457	109	300,000	55,000	St. Ignace College, Mount Vernon, Wash.	1873	Kenneth E. Norris	706	845	36	1,500,000	42,000
St. Olaf College, West De Pere, Wis.	1894	Walter Buehler	700	700	54	80,000	—	St. Joseph's College, Northampton, Mass.	1911	George Hadson	226	276	135	—	26,597
St. Patrick's Seminary, Menlo Park, Calif.	1874	St. M. Killen	621	728	52	—	50,000	St. Joseph's College, Boaz, Ala.	1871	Henry T. Moore	1,037	1,049	36	—	6,000
St. Paul's Seminary, St. Paul, Minn.	1895	Clemens M. Granskou	1,636	1,647	116	1,097,789	127,000	St. Louis College, St. Louis, Mo.	1883	Benjamin F. Wright	2,185	2,274	107	1,148,000	74,000
St. Peter's College, Lawrenceville, Va.	1888	R. G. Bondas	371	421	20	—	50,000	St. Mary's College, St. Mary, N.Y.	1935	Virgil B. McCain, Jr.	113	156	15	14,358,572	394,209
St. Peter's College, Jersey City, N.J.	1927	Earl H. McClenney	430	430	25	250,000	40,000	St. Mary's College, St. Mary, N.Y.	1888	Lester B. Whetten	269	299	25	160,100	81,411
St. Philip's College, Jersey City, N.J.	1872	M. M. Bennett	563	499	32	—	25,000	St. Mary's College, St. Mary, N.Y.	1888	Edward McCrady	468	471	53	4,457,000	71,000
St. Rose College of Albany, N.Y.	1892	James J. Shanahan	1,504	2,057	111	—	13,000	St. Mary's College, St. Mary, N.Y.	1881	Donald Russell	1,273	3,656	248	350,000	44,434
St. Scholastica College of Duluth, Minn.	1912	J. O. Loflin	193	327	37	—	3,700	St. Mary's College, St. Mary, N.Y.	1882	B. C. Turner	1,608	1,608	140	—	150,000
St. Teresa, Col. of Kansas City, Mo.	1867	Sister Catherine Francis	497	807	81	—	39,000	St. Mary's College, St. Mary, N.Y.	1885	Fay L. Parillo	603	606	72	100,000	22,000
St. Teresa, Col. of Kansas City, Mo.	1867	Mother Mary Berenice	300	450	61	—	39,000	St. Mary's College, St. Mary, N.Y.	1885	J. W. Headley	1,955	1,955	225	—	106,000
St. Thomas College of St. Paul, Minn.	1910	O'Neill	202	435	40	550,000	41,000	St. Mary's College, St. Mary, N.Y.	1883	L. H. Dyson	1,150	1,228	109	—	47,236
St. Thomas Seminary (Jr.), Bloomfield, Conn.	1865	St. M. Camille Bowe	1,140	1,581	70	335,850	60,000	St. Mary's College, St. Mary, N.Y.	1909	A. E. Shearer	926	1,270	70	—	45,000
St. Thomas, Univ. of Houston, Tex.	1897	Vincent J. Flynn	1,50	150	96	600,000	22,500	St. Mary's College, St. Mary, N.Y.	1883	W. W. Parker	1,254	1,254	66	—	110,000
St. Vincent College, Latrobe, Pa.	1846	J. J. Guinan	250	300	23	340,000	12,500	St. Mary's College, St. Mary, N.Y.	1873	Albert C. Canger	240	51	7	—	1,500
Salem College, Winston-Salem, N.C.	1772	Dennis Strimmar	575	575	62	1,009,422	68,000	St. Mary's College, St. Mary, N.Y.	1879	Fred D. Fagg, Jr.	7,801	16,280	945	2,600,000	708,606
San Antonio College, San Antonio, Tex.	1879	Dale H. Granley	299	323	40	—	88,000	St. Mary's College, St. Mary, N.Y.	1911	Delyle W. Morris	4,208	6,663	296	—	138,521
San Antonio College (Jr.), San Antonio, Tex.	1928	Harmon Lowman	1,868	1,954	85	—	9,322	St. Mary's College, St. Mary, N.Y.	1893	Willis M. Tate	3,291	4,398	280	6,647,091	312,965
San Benito County Jr. Col., Hallister, Calif.	1925	Raymond M. Givness	500	585	35	—	13,000	St. Mary's College, St. Mary, N.Y.	1926	Kenneth A. Wright	700	750	50	—	23,560
San Bernardino Valley College, (Jr.), San Bernardino, Calif.	1919	J. O. Loflin	1,126	3,926	165	—	—	St. Mary's College, St. Mary, N.Y.	1909	Elmo N. Stevenson	876	1,002	65	—	30,000
San Diego Junior College, San Diego, Calif.	1926	Frank Bauman	27	36	21	—	—	St. Mary's College, St. Mary, N.Y.	1881	Dolph Camp	327	327	25	210,000	20,009
San Diego State College, San Diego, Calif.	1914	John L. Lounsbury	1,575	4,200	128	—	32,000	St. Mary's College, St. Mary, N.Y.	1880	F. G. Clark	3,128	3,673	208	—	72,006
San Francisco City College of (Jr.), San Francisco, Calif.	1897	Waller L. Thatcher	1,596	3,408	360	160,000	20,000	St. Mary's College, St. Mary, N.Y.	1906	Royden C. Brathwaite	436	475	38	—	17,253
San Francisco Col. of (Jr.), San Francisco, Calif.	1855	Malcolm A. Love	4,525	5,800	255	—	40,000	St. Mary's College, St. Mary, N.Y.	1888	William S. Smith	328	328	17	—	10,320
San Francisco State Col., San Francisco, Calif.	1921	Louis G. Conlan	4,843	6,057	235	—	51,463	St. Mary's College, St. Mary, N.Y.	1885	Peyton N. Rhodes	520	585	56	2,800,000	70,000
San Jose Jr. College, San Jose, Calif.	1899	Mother Marion Kent	343	470	36	110,000	108,000	St. Mary's College, St. Mary, N.Y.	1898	Joel L. Fletcher	320	410	38	580,761	29,000
San Jose State Col., San Jose, Calif.	1921	J. Paul Leonard	4,793	7,387	302	—	15,000	St. Mary's College, St. Mary, N.Y.	1901	R. H. Burton	2,804	2,989	245	—	108,000
San Luis Obispo Junior College, San Luis Obispo, Calif.	1857	Charles E. Franseen	1,500	3,737	53	—	15,500	St. Mary's College, St. Mary, N.Y.	1840	William C. Finch	997	1,210	75	—	43,907
San Mateo, Col. of (Jr.), San Mateo, Calif.	1936	J. T. Wahlquist	7,102	7,726	328	—	6,600	St. Mary's College, St. Mary, N.Y.	1906	Roy Ellis	1,800	1,900	110	75,000	70,000
San Rafael, Dominican Col. of San Rafael, Calif.	1922	Frank C. Holt	143	161	22	20,000	—	St. Mary's College, St. Mary, N.Y.	1881	John G. Flowers	1,892	1,892	94	85,000	6,000
Santa Ana College (Jr.), Santa Ana, Calif.	1915	Elon Earl Hildreth	1,699	2,050	91	—	42,874	St. Mary's College, St. Mary, N.Y.	1885	Albert E. Manley	471	471	45	1,137,000	45,000
Santa Barbara Jr. Col., Santa Barbara, Calif.	1915	Sister Mary Patrick	317	397	47	—	20,575	St. Mary's College, St. Mary, N.Y.	1929	Donald C. Stone	922	1,235	79	—	13,664
Santa Clara, Univ. of Santa Clara, Calif.	1846	Daniel C. McLaughlin	603	668	45	—	80,000	St. Mary's College, St. Mary, N.Y.	1830	M. Ernestine Ketterer	267	335	28	—	4,000
Santa Monica City Col. (Jr.), Santa Monica, Calif.	1851	Leonard L. Bowman	1,427	650	37	—	2,277,000	St. Mary's College, St. Mary, N.Y.	1885	J. E. Wallace Sterling	702	1,040	64	400,567	1,257,698
Santa Rosa Junior Col., Santa Rosa, Calif.	1929	Herman J. Hauck	2,027	1,270	94	—	80,000	St. Mary's College, St. Mary, N.Y.	1917	Paul L. Boynton	6,268	6,802	951	47,709,470	1,257,698
Sarah Lawrence College, Bronxville, N.Y.	1918	Wade F. Thomas	2,669	4,682	85	—	15,000	St. Mary's College, St. Mary, N.Y.	1883	J. O. Edwards	1,069	1,516	83	—	45,008
Saskatchewan, Univ. of, Saskatchewan, Sask.	1926	Floyd P. Bailey	1,018	1,111	56	—	16,000	St. Mary's College, St. Mary, N.Y.	1883	J. O. Edwards	1,009	1,383	95	388,997	53,438
Savannah State College, Savannah, Ga.	1907	Harold Taylor	337	360	61	500,000	287,422	St. Mary's College, St. Mary, N.Y.	1876	Jess Harrison Davis	800	1,600	85	1,319,000	64,596
Scarlett College, Nashville, Tenn.	1890	W. K. Payne	2,660	2,997	225	—	65,000	St. Mary's College, St. Mary, N.Y.	1935	Samuel Bureau Hay	278	281	26	4,500,000	37,000
Schreiner Institute (Jr.), Kerensville, Tex.	1892	W. P. Thompson	782	863	73	535,419	14,000	St. Mary's College, St. Mary, N.Y.	1903	Julio L. Borja	3,116	3,343	184	16,000	15,000
Schreiner University of Sherman, Tex.	1888	Hugh C. Stuntz	1,67	167	19	22,000	8,000	St. Mary's College, St. Mary, N.Y.	1896	Verne C. Frylund	796	796	61	30,000	60,000
Scripps College, Claremont, Calif.	1926	Andrew Edington	287	305	26	680,000	22,000	St. Mary's College, St. Mary, N.Y.	1906	Ossie Sanders	131	131	15	—	16,000
		John J. Long	1,049	1,819	106	2,500,000	11,500	St. Mary's College, St. Mary, N.Y.	1870	Robert J. Muncie	611	967	65	—	60,000
		Frederick Hard	223	223	22	4,704,415	43,004	St. Mary's College, St. Mary, N.Y.	1920	Bryan Widenhail	300	300	35	—	39,386
								St. Mary's College, St. Mary, N.Y.	1911	W. B. Horton	670	714	46	—	40,984
								St. Mary's College, St. Mary, N.Y.	1858	G. Morris Smith	350	350	26	—	8,500
								St. Mary's College, St. Mary, N.Y.	1864	Courtesy Craig Smith	396	447	36	550,000	30,000
								St. Mary's College, St. Mary, N.Y.			894	899	98	10,638,229	172,507

Institution and Location	Year Founded	Chief Executive	Full Time Students	Part Time Students	Faculty	Endowment	Bound Volumes	Institution and Location	Year Founded	Chief Executive	Full Time Students	Part Time Students	Faculty	Endowment	Bound Volumes
†Sweet Briar College, Sweet Briar, Va.	1901	Anne G. Pannell	472	472	58	\$ 1,112,961	79,384	Vermont University of State Agricultural	1791	C. W. Borgmann	2,467	2,658	340	\$ 4,452,276	200,000
Syracuse University, Syracuse, N.Y.	1870	William P. Tolley	8,688	12,498	885	10,630,000	486,355	Col., Burlington, Vt.	1834	Ralph Edward Noble	163	186	15	143,000	8,500
Taft College (Jr.), Taft, Calif.	1922	Garlyn A. Basham	225	250	16	1,136,975	10,000	†Vermont Junior College, Montpelier, Vt.	1834	J. D. Moore	410	686	39	—	6,600
Talladega College, Talladega, Ala.	1867	Arthur D. Gray	289	290	27	—	27,216	†Victoria College (Jr.), Victoria, Tex.	1925	James Aurelia	138	260	44	—	20,300
Tampa University of Tampa, Fla.	1931	Elwood C. Nance	971	1,162	34	540,000	27,000	†Villa Maria College, Erie, Pa.	1925	Mohes Dannelia	2,451	3,759	152	4,480,367	115,118
Tarkio College, Tarkio, Mo.	1883	Clyde H. Canfield	234	247	23	330,000	21,800	Virginia University, Charlottesville, Va.	1842	Colgate W. Darden, Jr.	3,574	3,785	447	16,000,000	746,834
Tartleton State Col. (Jr.), Stephenville, Tex.	1899	E. J. Howell	710	863	70	—	36,850	Virginia Intermun College (Jr.), Bristol, Va.	1819	Robun L. Brantley	3,754	4,255	35	600,000	17,000
Taylor University, Upland, Ind.	1846	Evan Bergwall	480	492	38	115,730	38,000	Virginia Military College, Lexington, Va.	1872	Floyd B. Moe	923	925	22	22,200	22,200
Temple University, Philadelphia, Pa.	1884	Robert L. Johnson	4,109	5,723	875	1,793,876	598,923	Virginia Polytechnic Inst., Blacksburg, Va.	1872	Walter S. Newman	3,100	3,128	360	1,524,000	69,128
Tennessee A. & I. Univ., Nashville, Tenn.	1909	Clode E. Rehman	4,351	5,951	481	1,123,000	275,881	Virginia Union University, Richmond, Va.	1882	Robert Prantiss Daniel	3,469	5,356	272	173,000	69,576
Tennessee Polytechnic Inst., Cookeville, Tenn.	1915	Everett Derryberry	1,843	2,141	123	285,000	47,631	Wabash College, Crawfordsville, Ind.	1832	Samuel DeWitt Proctor	700	850	54	1,000,000	29,969
Tennessee Wesleyan Col. (Jr.), Athens, Tenn.	1866	LeRoy A. Martin	278	349	26	—	18,363	Wagner Lutheran Col., Staten Island, N.Y.	1883	Sister M. Francesca	206	275	39	—	5,300
Texas A. & M. Col. of Agriculture, Texas A. & M. Univ., Austin, Tex.	1876	H. W. Stilwell	6,400	7,002	537	516,000	6,000	Wake Forest College, Wake Forest, N.C.	1833	Harold W. Tribble	862	1,475	105	460,000	45,000
Texas Christian University, Fort Worth, Tex.	1881	Logan Wilson	13,350	15,350	1,092	215,500,558	1,131,797	Waldorf College (Jr.), Forest City, Ia.	1903	Sidney A. Rand	240	250	57	4,901,059	9,500
Texas College, Tyler, Tex.	1873	M. E. Sadler	738	738	42	—	23,770	Wallis Walla Col., College Place, Wash.	1892	George W. Bowers	800	917	25	56,936	46,420
Texas Col. of Arts and Ind., Kingsville, Tex.	1894	D. R. Glass	1,477	2,268	99	—	65,072	Warren Wilson College (Jr.),	1894	Arthur M. Bannerman	198	198	24	—	15,000
Texas Lutheran University, Seguin, Tex.	1891	Ed. A. Sagebiel	383	401	29	45,906	32,000	Washington Col. of Topeka, Topeka, Kansas	1865	C. H. Becker	653	670	50	268,630	33,720
Texas Southern University, Houston, Tex.	1947	R. O'Hara Lanier	1,675	2,794	166	—	65,000	Washington State Col. of Pullman, Wash.	1889	Bryce Sewall Stoffer	982	1,664	122	2,300,000	76,212
Texas Southwest Col. (Jr.), Brownsville, Tex.	1926	C. J. Garland	284	730	37	—	117,738	Washington University of Seattle, Wash.	1861	C. Clement French	4,513	4,842	459	20,429,865	655,000
Texas State Col. for Wm., Denton, Tex.	1901	John A. Gunn	1,918	2,103	160	—	139,000	Washington and Jefferson Col., Wash., Pa.	1861	Henry Schmitz	8,225	13,675	900	26,867,000	855,000
Texas Technological Col., Lubbock, Tex.	1923	E. N. Jones	7,229	7,229	351	1,135,216	412,000	Washington College, Chestertown, Md.	1787	Boyd C. Patterson	502	510	49	2,157,787	87,100
Texas Wesleyan College, Ft. Worth, Tex.	1881	Frank Anthony Rose	403	408	37	2,272,523	42,350	Washington Missionary Col., Takoma Pk., Wash., D.C.	1782	Francis P. Gaines	1,044	1,047	91	6,280,000	179,080
†Trinity College, Hartford, Conn.	1823	Albert Charles Jacobs	85	144	22	—	16,000	Washington State Col., Pullman, Wash.	1889	W. H. Shepherd	524	750	53	—	42,658
†Trinity College, Hartford, Conn.	1823	Albert Charles Jacobs	925	1,205	95	5,543,638	360,000	Waynesburg College, Waynesburg, Pa.	1853	Ethan A. H. Shepley	5,400	11,400	1,400	37,671,879	572,650
†Trinity University, San Antonio, Tex.	1869	Sister Mary Patrick	487	487	58	289,990	66,582	West Virginia University, Morgantown, W. Va.	1839	Paul R. Stewart	530	540	35	512,782	39,000
†Trinity University (Jr.), Jackson College, Medford, Mass.	1852	J. W. Laurie	1,352	2,927	83	1,306,763	250,000	Westbrook Junior College, Portland, Me.	1881	C. B. Hilberry	7,360	17,296	558	21,200	460,000
Tufts University, Boston, Mass.	1862	Nils Yngve Westell	3,362	3,474	1,000	11,691,036	63,000	West Contra Costa Junior College, Richmond, California	1948	F. E. Heebler	58	58	8	—	8,500
Tulane Univ. of Louisiana, New Orleans, La.	1834	Rufus C. Harris	3,694	5,458	1,259	19,500,000	559,417	Webster College (Jr.), Ogden, Utah	1889	William P. Miller	1,626	2,924	162	—	28,500
Tulane University of Tulsa, Okla.	1894	C. I. Pontius	2,200	2,500	120	3,292,493	160,000	Webster College, Webster Groves, Mo.	1915	Sister Mariella Collins	920	1,724	52	—	28,500
Tusculum College, Greeneville, Tenn.	1894	Raymond C. Rankin	231	257	20	740,000	25,500	Wellesley College, Wellesley, Mass.	1870	Margaret Clapp	1,727	1,734	178	21,916,038	294,000
Tuskegee Institute, Tuskegee Institute, Ala.	1881	L. H. Foster, Jr.	1,730	2,164	233	7,424,680	106,000	Wells College, Aurora, N.Y.	1868	Louis Jefferson Long	353	353	41	2,602,312	116,000
†Tyler Junior College, Tyler, Tex.	1926	H. E. Jenkins	1,506	2,164	104	—	9,200	Wenatchee Jr. Col., Wenatchee, Wash.	1939	James M. Starr	300	300	30	—	5,000
Union College, Barboursville, Ky.	1879	Conway Boatman	419	622	24	726,207	52,904	†Wentworth Mil. Acad. (Jr.), Lexington, Mo.	1886	B. Joseph Martin	375	375	40	1,787,161	46,408
Union College, Lincoln, Neb.	1891	Harvey C. Hartman	707	877	38	—	27,904	Wesleyan College, Macon, Ga.	1836	J. C. Mullinax	450	483	60	—	6,500
Union University (Union College only), Schenectady, N.Y.	1795	Carter Davidson	1,800	2,100	195	14,000,000	175,000	Wesleyan Methodist Col. (Jr.), Central, S.C.	1906	R. C. Mullinax	142	183	14	20,000,000	400,000
Union University, Jackson, Tenn.	1834	Warren F. Jones	400	472	31	526,210	30,349	Wesleyan University, Middletown, Conn.	1831	Victor L. Butterfield	746	883	104	130,000	7,000
U.S. Coast Guard Acad., New London, Conn.	1876	R. J. Moveman	420	420	53	—	31,000	Westbrook Junior College, Portland, Me.	1881	J. Paul Slaybaugh	170	204	18	—	10,000
U.S. Merchant Marine Academy, Kings Point, N.Y.	1928	Gordon McIntock	2,043	2,243	67	—	35,000	West Contra Costa Junior College, Richmond, California	1948	Joseph P. Cosand	939	2,696	76	—	14,057
U.S. Naval Academy, West Point, N.Y.	1802	Lt. Gen. B. S. Bryan	624	624	330	—	150,000	Western Carolina College, Cullowhee, N.C.	1889	Paul A. Reid	844	954	50	—	28,629
U.S. Military Academy, Annapolis, Md.	1845	Walter F. Boone	3,437	3,437	457	—	138,000	Western College, Oxford, Ohio	1853	Herrick B. Young	275	277	48	362,000	49,455
Upper Iowa University, Fayette, Ia.	1857	Eugene E. Garbee	275	390	25	321,000	26,000	Western Illinois State Col., Macomb, Ill.	1899	Frank A. Bau	1,584	2,245	125	—	80,600
Ursula College, East Orange, N.J.	1893	B. E. Lawson	1,535	1,927	136	282,324	47,000	Western Kentucky State Col., Bowling Green, Ky.	1906	Lowell Skinner Ensor	1,373	1,681	110	1,123,000	85,643
Ursinus College, Lewisville, Pa.	1869	Norman E. McClure	685	778	49	1,200,000	45,000	Western Maryland Col., Westminster, Md.	1868	—	642	998	60	—	100,000
Ursuline College, Louisville, Ky.	1938	Mother Marie	239	344	31	27,874	26,600	Western Michigan College of Education, Kalamazoo, Mich.	1903	Paul V. Sangren	4,428	4,983	310	—	—
Ursuline Col. for Women, Cleveland, Ohio	1871	Mother Marie	239	339	34	—	27,874	Western Montana College of Education, Dillon, Mont.	1893	Rush Jordan	243	250	20	—	25,480
Utah State Agricultural Col., Logan, Utah	1888	A. Ray Olpin	6,000	7,000	552	35,988	307,909	Western Ontario Univ. of London, Ont., Can.	1878	G. Edward Hall	2,462	3,635	360	1,175,351	210,000
Valdosta State College, Valdosta, Ga.	1906	J. Ralph Thaxton	347	428	27	—	32,000	Western Reserve University, Cleveland, Ohio	1826	John Schoff Mills	3,131	7,204	785	27,555,504	694,067
Vallejo College (Jr.), Vallejo, Calif.	1945	Harry D. Wiser	565	580	75	—	10,293	Western State Col. of Colo., Gunnison, Colo.	1901	Peter P. Mickelson	747	747	63	—	54,569
Valley Forge Military Academy, Wayne, Pa.	1928	Milton G. Baker	675	765	69	—	77,200	Western Washington College of Education, Bellingham, Wash.	1899	Wm. P. Haggard	1,421	1,533	92	—	12,354
Valparaiso University, Valparaiso, Ind.	1859	O. P. Kretzmann	1,803	1,881	134	384,591	655,274	West Georgia Col. (Jr.), Carrollton, Ga.	1907	L. S. Ingram	364	364	22	—	29,939
Vanderbilt University, Nashville, Tenn.	1872	Harvie Branscomb	3,146	3,180	547	33,289,000	17,000	West Liberty State Col., W. Liberty, W. Va.	1837	Paul N. Elin	627	980	33	—	26,000
Vassar College, Poughkeepsie, N.Y.	1861	Sarah G. Blanding	1,427	1,423	206	18,000,000	300,868	Westminster College, Le Mars, Iowa	1851	D. O. Kime	403	441	39	213,710	50,000
Ventura College (Jr.), Ventura, Calif.	1929	Hugh G. Price	794	1,031	59	—	17,000	Westminster College, Fulton, Mo.	1851	Robert L. D. Davidson	351	354	33	625,000	20,000

Institution and Location	Year Founded	Chief Executive	Full Time Students	Part Time Students	Faculty	Endowment	Bound Library Volumes	Institution and Location	Year Founded	Chief Executive	Full Time Students	Part Time Students	Faculty	Endowment	Bound Library Volumes
West Texas State Col., Canyon, Tex. . . .	1909	James P. Cornette	1,232	2,165	94	—	50,487	Wisconsin State Col., La Crosse, Wis. . . .	1909	Rexford S. Mitchell	1,033	1,108	82	—	45,000
West Virginia State Col., Institute, W. Va. . .	1891	W. J. L. Wallace	874	1,091	83	47,258	—	Wisconsin State Col., Milwaukee, Wis. . . .	1880	J. Martin Kloische	1,944	2,251	130	—	77,000
West Virginia State Col., Morgantown, W. Va. .	1867	Irvin Stewart	4,553	5,341	502	115,000	283,000	Wisconsin State Col., Oskosh, Wis. . . .	1871	Forrest R. Polk	856	871	59	—	51,899
West Virginia Wesleyan Col., Buckhannon, W. Va. . .	1890	W. J. Scarborough	611	840	35	650,000	41,000	Wisconsin State Col., Platteville, Wis. . . .	1866	C. O. Newlin	756	776	56	—	35,000
Wharton County Junior Col., Wharton, Texas . .	1946	J. M. Hodges	591	592	32	—	6,901	Wisconsin State Col., River Falls, Wis. . . .	1874	E. H. Kleinpell	848	859	63	—	35,000
Wheaton College, Norton, Mass. . . .	1834	A. Howard Menely	530	530	66	1,342,000	70,000	Wisconsin State Col., Stevens Point, Wis. . .	1893	W. C. Hansen	918	924	63	—	52,272
Wheaton College, Wheaton, Ill. . . .	1860	V. Raymond Edman	1,650	1,759	135	4,126,783	100,842	Wisconsin State Col., Superior, Wis. . . .	1893	Jim Dan Hill	694	709	68	—	55,000
Wheelock College, Boston, Mass. . . .	1889	Winifred E. Bain	365	395	25	—	17,000	Wisconsin State Col., Whitewater, Wis. . .	1868	R. C. Williams	809	811	66	—	40,000
Whitman College, Walla Walla, Wash. . . .	1859	Chester C. Moxey	642	668	53	3,040,494	90,523	Wittenberg College, Springfield, Ohio . . .	1845	F. P. Gaines, Jr.	676	762	35	2,956,000	97,020
Whitman College, Whittier, Calif. . . .	1901	Paul S. Smith	943	1,008	66	1,416,200	80,000	Wofford College, Spartanburg, S.C. . . .	1854	J. C. Stoughton	1,117	1,271	86	978,398	53,800
Whitworth College, Spokane, Wash. . . .	1890	Frank F. Warren	730	801	51	124,246	31,000	Woodstock College, Woodstock, Md. . . .	1867	Joseph F. Murphy	282	340	32	—	162,000
Wichita Municipal Univ. of Wichita, Kan. . .	1895	Harry F. Corbin	2,808	3,848	238	92,000	118,000	Wooster College of Wooster, Ohio . . .	1866	Howard F. Lowry	1,009	1,018	91	4,036,000	124,613
Wilkes College, Wilkes-Barre, Pa. . . .	1873	J. S. Scott	557	711	40	625,000	17,000	Worcester College of Worcester, Mass. . .	1938	Harold Bentley	408	1,078	75	—	7,500
Willamette University, Salem, Ore. . . .	1833	Eugene S. Farley	950	1,013	81	2,350,000	35,000	Worcester Polytechnic Inst., Worcester, Mass.	1865	Arthur B. Bronwell	741	781	90	6,710,475	40,000
William and Mary Col. of Williamsburg, Va. .	1693	G. Herbert Smith	1,685	1,732	136	2,161,600	75,500	Wyoming, University of, Laramie, Wyo. . .	1886	G. D. Humphrey	2,163	2,284	259	6,298,818	188,784
William and Mary Col. of Williamsburg, Va. .	1693	Alvin Duke Chandler	1,685	1,732	136	2,161,600	75,500								
William Jewell Col., Liberty, Mo. . . .	1930	Lewis W. Webb, Jr.	2,130	2,215	110	—	25,000								
William Jewell Col., Liberty, Mo. . . .	1849	Walter Pope Bins	683	715	48	2,987,175	71,603	Xavier University, Cincinnati, Ohio . . .	1831	Paul L. O'Connor	1,312	2,898	147	221,665	109,210
William Jewell Col., Liberty, Mo. . . .	1791	James P. Boxier, III	1,064	1,072	137	15,521,611	210,000	Xavier University, New Orleans, La. . . .	1925	Mother M. Agatha	1,113	1,113	109	—	73,500
William Woods College of Fulton, Mo. . . .	1890	T. T. Sweeting	300	325	28	650,000	16,000								
William Woods College of Fulton, Mo. . . .	1889	J. Eugene Smith	233	250	51	—	20,000								
William Woods College of Fulton, Mo. . . .	1947	John T. Roggord	220	250	10	—	7,500								
Wilmington College, Wilmington, N.C. . . .	1865	Samuel D. Marble	526	556	32	561,259	29,000	Yakima Valley Jr. Col., Yakima, Wash. . .	1928	H. A. Hoeglund	506	1,023	24	—	11,000
Wilmington College, Wilmington, N.C. . . .	1865	Paul Swain Havens	349	352	52	1,290,000	65,000	Yale University, New Haven, Conn. . . .	1701	Alfred W. Griswald	6,974	7,248	1,718	150,089,379	4,245,583
Wilson Teachers College, Wash., D.C. . . .	1893	Walter E. Hager	515	572	53	—	32,000	Yankton College, Yankton, S.D. . . .	1881	Adrian Rondleau	234	251	38	789,160	50,000
Wingate Junior College, Wingate, N.C. . . .	1896	Budd E. Smith	323	356	20	100,000	7,000	Yeshiva University, New York, N.Y. . . .	1897	Samuel Belkin	1,877	2,672	285	1,445,991	95,000
Winston-Salem Tech. Col., Winston-Salem, N.C. . .	1892	Francis L. Atkins	749	749	46	100,000	33,428	Young L. O. Harris Col. (Jr.), Young Harris, Ga. . . .	1886	C. R. Clegg	320	325	24	516,000	14,000
Winthrop College, Rock Hill, S.C. . . .	1886	Henry R. Sims	1,047	1,099	110	—	102,000	Youngstown University, Youngstown, Ohio .	1908	Howard W. Jones	1,900	3,790	271	1,088,923	67,522
Wisconsin, University of, Madison, Wis. . . .	1848	Edwin Brown Fred	14,892	16,461	1,868	9,347,241	903,000	Yuba College (Jr.), Marysville, Calif. . . .	1927	J. J. Collins	650	1,900	35	—	10,000
Wisconsin State Col., Eau Claire, Wis. . . .	1913	W. R. Davies	1,028	1,365	70	—	40,000								

Uranium. Since uranium came to popular notice in the mid-1940s, hordes of prospectors seeking wealth had sought the element in all parts of the world and especially in the United States. Relatively few succeeded in finding sources of it capable of being mined and processed economically. Uranium does not occur alone naturally but in combination with other elements. More than 100 known uranium-bearing elements are widely distributed over the earth.

In 1954 about 900 mines were producing from deposits of uranium-bearing minerals in the United States. In addition, operations were maintained in the Belgian Congo, the Union of South Africa, Australia, Canada, Czechoslovakia, France and Portugal. The Colorado plateau, consisting of parts of Colorado, Utah, Arizona and New Mexico, was the most important area in the United States. The state of Washington, at the Spokane Indian reservation, Stevens county, produced in 1955 for the first time. Some uranium was produced in Kern county, Calif. One mine in Nevada came into operation late in 1954 with a small yield. Uranium operations in Pennsylvania were started late in 1954. In the Boulder area of Jefferson and Broadwater counties, Mont., minor quantities were being produced. In addition, some uranium was produced as a by-product of Florida phosphates.

All the uranium ore that was mined in the U.S. was purchased by the U.S. Atomic Energy commission at ore-buying stations, some of which were operated in conjunction with the uranium mills in Colorado, Utah and New Mexico that produce high-grade concentrates. In South Dakota, Wyoming and Arizona there were mills under construction. The uranium concentrates were shipped to Atomic Energy commission refineries at St. Louis, Mo. (run by the Mallinckrodt Chemical Works), and at Fernald, O. (the National Lead Co. of Ohio). These refineries make uranium tetrafluoride and uranium metal, which are used at atomic energy installations. (See ATOMIC ENERGY; METALLURGY.)

(F. E. H.)

Urban Redevelopment: see BUILDING AND CONSTRUCTION INDUSTRY; HOUSING; MUNICIPAL GOVERNMENT; TOWN AND REGIONAL PLANNING; URBAN TRANSPORTATION, U.S.

Urban Transportation, U.S. As of Jan. 1, 1955, the urban transit industry in the United States was composed of 1,587 operating companies. This total included 1,496 companies engaged exclusively in the operation of motorbuses; 56 companies having composite fleets including motorbuses, electric railway cars or trolley coaches or both; 28 companies engaged exclusively in electric railway freight and switching service; 7 companies using railway facilities exclusively in passenger service. There were five rapid transit systems (elevated and subway operations) included in the foregoing.

The transit industry in the United States carried 7,650,000,000 passengers during the first eight months of 1955, 7.84% less than the number carried during the corresponding period of 1954.

The competition from the private automobile, changes in travel habits as the result of the shorter work week and the widespread introduction of television in many areas continued to reduce the number of transit riders, as did strikes of transit companies in various cities.

Operating revenues for the first eight months of 1955 totalled \$936,000,000, off nearly 4% from the same period in 1954. Approximately 180 transit companies in U.S. cities of more than 25,000 population were granted fare increases during the 12-month period ended Aug. 31, 1955. Higher operating costs and the decline in riding made these increases necessary to

maintain the solvency of individual operations.

Except for a few instances where higher premium fares were charged for express service, the 20-cent cash fare continued as the top rate for urban transit companies in cities having a universal city-wide flat fare. The cities served by urban transit companies with fares in this bracket totalled 65.

During the year the industry increased its efforts to arrest the downward trend in traffic and placed greater emphasis on such objectives as speed, convenience, public acceptance and others.

Of all such stimulants, speed was by far the most important. The riders' reaction to a faster ride was most favourable. Total elapsed time from point of origin to point of destination was the most significant reason why people preferred to ride in private automobiles.

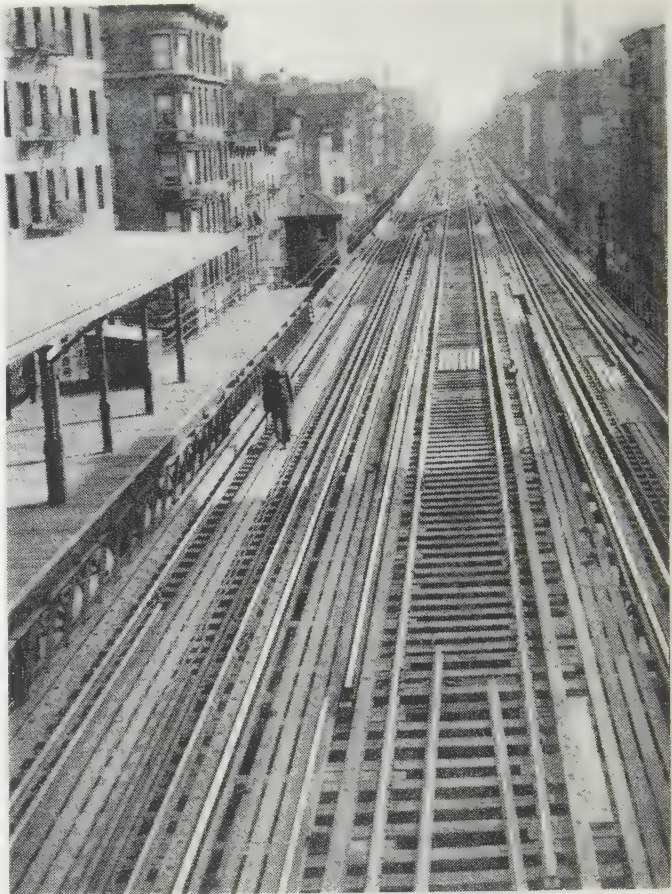
To meet this competition, express bus service was being offered in St. Louis, Atlanta, Washington, Cleveland, Chicago, Los Angeles, Philadelphia, Dallas, Detroit, Pittsburgh, San Francisco, Indianapolis, Milwaukee, Minneapolis and St. Paul, among others. Running time from various stops to downtown and time saving over regular service were emphasized.

That there had been an unwarranted exaggeration of the importance of fares in the passenger's mind was evidenced by the fact that, by and large, express service was gaining riders at premium fares while passenger decline continued in regular forms of transit service.

Perhaps the most publicized of all transit merchandising efforts was the club bus plan initiated in Cincinnati. After canvassing the residents of a suburban community, the transit company began operating three buses daily each way into and out of downtown, at times specified by the riders as most convenient to them and on practically a door-to-door service basis. A monthly charge of \$10 was made, plus ten cents, or half the regular fare, per ride. Each club member had a guaranteed seat. The cost to the user of the service, which embraced the principle of a stand-by charge, a feature enjoyed by other utilities but not by transit, was below the cost of driving and parking. That this club plan was working, and being expanded to other communities near Cincinnati and considered by other transit systems, was encouraging, for it represented a specific instance of getting people out of their cars and back onto the transit vehicle.

There were many more examples of how transit was converting to a business that does much more than merely "provide" service. Some heartening results emerged from these efforts. In many communities, relief was granted from gross receipts taxes and other taxes unrelated to earnings. In Wisconsin a law was enacted granting state-wide relief to transit operators and basing taxes on earnings.

In many cities committees of citizens were making thorough studies of how the transit system could be integrated efficiently with the over-all transportation system. In short,



EMPTY TRACKS of New York city's Third avenue elevated, discontinued in 1955, patrolled by a policeman

there was developing a definite trend toward thinking in terms of moving people instead of vehicles. (See also MUNICIPAL GOVERNMENT; RAILROADS.)

(A. W. Br.)

U.S. Urban Transportation Statistics, 1954

Item	Amount	Item	Amount
Miles of line and miles of route operated (Dec. 31)		Vehicle miles operated (calendar year), total	2,548,800,000
Electric railway line	3,712	Electric railway car miles	591,400,000
Surface railway line	3,342	Surface railway car miles	(215,800,000)
Subway and elevated line	370	Subway and elevated car miles	(375,600,000)
Trolley coach line	1,878	Trolley coach miles	196,700,000
Motorbus line	45,800	Motorbus miles	1,760,700,000
Total line mileage	51,390	Total passengers carried (calendar year), total	12,392,000,000
Electric railway—miles of single track	6,765	Electric railway	3,401,000,000
Surface railway—miles of single track	5,547	Surface railway	(1,489,000,000)
Subway and elevated—miles of single track	1,218	Subway and elevated	(1,912,000,000)
Trolley coach—miles of negative overhead wire	3,630	Trolley coach	1,367,000,000
Motorbus—miles of route round trip	99,000	Motorbus	7,624,000,000
Passenger vehicles owned (Dec. 31), total	76,198	Revenue passengers carried (calendar year), total	9,858,000,000
Electric railway cars	15,600	Electric railway	2,820,000,000
Surface railway cars	6,400	Surface railway	(1,053,000,000)
Subway and elevated cars	9,200	Subway and elevated	(1,767,000,000)
Trolley coaches	6,598	Trolley coach	993,000,000
Motorbuses	54,000	Motorbus	6,045,000,000
Gross investment (Dec. 31), total	\$3,863,000,000	Number of employees (year average), total	211,000
Electric railway	2,942,000,000	Electric railway	71,000
Surface railway	(692,000,000)	Surface railway	(29,000)
Subway and elevated	(2,250,000,000)	Subway and elevated	(42,000)
Trolley coach	165,000,000	Trolley coach	18,000
Motorbus	756,000,000	Motorbus	122,000
Operating revenue (calendar year), total	\$1,471,800,000	Payroll (calendar year), total	\$895,000,000
Electric railway	473,400,000	Electric railway	302,000,000
Surface railway	(204,200,000)	Surface railway	(123,000,000)
Subway and elevated	(269,200,000)	Subway and elevated	(179,000,000)
Trolley coach	141,500,000	Trolley coach	75,000,000
Motorbus	856,900,000	Motorbus	518,000,000
Passenger revenue (calendar year), total	\$1,410,000,000	Expenditures for materials (calendar year), total	\$194,800,000
Electric railway	435,900,000	Maintenance materials	96,000,000
Surface railway	(174,500,000)	Operating materials	98,800,000
Subway and elevated	(261,400,000)	Coal	(12,900,000)
Trolley coach	138,800,000	Gasoline	(42,000,000)
Motorbus	835,300,000	Diesel oil	(14,500,000)
		Propane	(1,600,000)
		Lubricants	(3,200,000)
		Electric power (purchased)	(24,600,000)
		Electrical energy consumed, kw.hr. (calendar year)	3,650,000,000

Uruguay. A republic in southeastern South America. Uruguay is bounded on the north by Brazil, on the south by the Río de la Plata, on the east by the Atlantic ocean and on the west by Argentina. It is the smallest country in South America, with an area of 68,369 sq.mi. It has a population of 2,800,924 (est. 1954), mostly of European extraction. Montevideo, the capital, has 810,969 inhabitants (1954 est.). Other leading cities (with pop., 1954 est.) are Mercedes 44,900; Salto 44,900; Paysandú 44,000; Minas 36,700; Melo 36,000; Florida 34,200; Rocha 34,000. Religion: Christian, mostly Roman Catholic. President of the governing national council in 1955: Luis Batlle Berres.

History.—On March 1, 1955, Uruguay inaugurated a newly elected national council. This nine-member group executive included six members of the majority Colorado party and three of the Nationalist party. The liberal Colorados had won 387,803 votes in the Nov. 1954 elections against 266,960 for the conservative Nationalists. Former Pres. Luis Batlle Berres, who was elected president of the council, promised to encourage industry and farm production.

Declining world wool prices depressed the market for Uruguay's leading export product. The resulting decrease in foreign exchange earnings made it difficult for the government to support wool prices. The meat export industry was inactive most of the year, except for by-products from animals slaughtered for home consumption, because of lack of agreement on government subsidies to private packers. Corollary effects were a decline in livestock population and an extensive black market in cattle with Brazil. In July foreign packers began slaughtering on a small scale, but by August the relative inactivity provoked a labour crisis arising from exhaustion of unemployment insurance funds. A compromise allowing concessions to packers as well as to workers averted a strike, but exports were not expected to rise until livestock and subsidy questions were solved. The national council ordered domestic consumption of beef cut and arranged for the importation of 60,000 head of cattle from Argentina. The number of animals slaughtered in 1955 was about 60% of the 1954 figure.

Brazil took 85% of the wheat surplus, and good crops of other products such as flaxseed helped to brighten the picture. Nevertheless, rising prices and deficit spending prompted measures to tax retail beverages, lottery tickets and excess profits. A 20% rise in the prices of staples hindered attempts to control the cost of living. The government set up retail outlets to help curb rising prices, but because of protests by small merchants the government-operated outlets were restricted. Hope of balancing the budget faded with the realization that the 1955 deficit would be 55,400,000 pesos, compared with a deficit in 1954 of 49,700,000 pesos.

Relations with Argentina waxed hot and cold until Juan D. Perón's downfall in September. The appointment of veteran Socialist leader Alfredo L. Palacios as the new Argentine ambassador to Uruguay was warmly received. (R. Hn.)

Education.—In 1952 there were 1,957 primary schools with 261,178 pupils and 8,282 teachers and 115 secondary schools with 37,858 students. The University of Montevideo had 11,603 students in 1951.

Finance.—The monetary unit is the peso, valued on Sept. 30, 1955, at 47.62 cents U.S. currency, controlled rate; 35.71 cents, commercial free rate; and 28.9 cents, uncontrolled rate. Actual government expenditure in 1954 (preliminary figures) was 476,800,000 pesos; revenue, 427,100,000 pesos. The public debt on June 30, 1955, amounted to 1,198,100,000 pesos, of which 102,500,000 pesos represented the external debt. Currency in circulation (Aug. 31, 1955) totalled 400,000,000 pesos; demand deposits (May 31, 1955), 337,000,000 pesos. The U.S. department of commerce estimated U.S. direct investments in 1954 at \$73,000,000, of which investments in manufacturing accounted for \$37,000,000. The cost-of-living index (Montevideo) stood at 175 in Aug. 1955 (1948=100).

Trade and Communications.—Exports in 1954 totalled \$248,958,000; imports, \$274,451,000. Leading exports were wool (37%), meat and products (18%), agricultural products (21%), textiles (14%) and hides, skins and leather (7%); leading imports, raw materials, including sugar,

iron and steel and cotton (28%), machinery and parts (16%), fuel and lubricants (14%), construction materials (10%) and motor vehicles (10%). Leading customers were the U.K. (19%), Brazil (14%), the U.S. (13%), the Netherlands (13%) and the U.S.S.R. (8%); leading suppliers, the U.S. (17%), the U.K. (15%), Brazil (12%), Germany (8%) and Venezuela (6%).

Railways (1954) totalled 1,928 mi.; highways (1948) totalled 26,000 mi., of which 3,051 mi. were paved national roads. On Jan. 1, 1954, there were 48,012 automobiles, 40,100 trucks and 1,523 buses. According to *Lloyd's Register of Shipping*, the merchant marine had 49 vessels (100 tons and over) aggregating 69,616 gross tons on June 30, 1954. Telephones (Jan. 1, 1954) numbered 104,510, of which 75% were automatic and located in Montevideo.

Agriculture.—Official preliminary production estimates for major crops in the crop year 1954-55 (in metric tons) were as follows (final figures for the preceding year in parentheses): wheat 716,883 (818,619); linseed 61,559 (64,519); barley 12,024 (13,083); malt barley 27,084 (27,326); (calendar year 1954) maize 207,977 (117,164); rice 52,518 (47,154); sunflower seed 91,688 (109,362); peanuts 3,899 (3,226). The 1951 agricultural census showed 23,408,642 sheep, 8,154,109 cattle, 511,547 milk cows, 667,251 horses and 258,980 pigs. Wool exports in the wool year 1954-55 (Oct. 1-Sept. 30) were 128,948 bales of 460 kg. each (1953-54: 156,853 bales). Meat exports in 1954 included 45,120 metric tons of frozen beef, 21,793 tons of canned beef and 6,871 tons of frozen mutton.

Manufactures.—In 1954 there were an estimated 25,000 industrial establishments with invested capital of 1,005,000,000 pesos and production valued at 1,202,000,000 pesos. Industrial workers totalled 180,185 in 1951. Production estimates in 1954 included cement 280,000 metric tons; sulphuric acid 6,000 tons; electric energy 927,000,000 kw.hr. (J. W. Mw.)

U.S.S.R.: see UNION OF SOVIET SOCIALIST REPUBLICS.

Utah. A Rocky mountain state of the United States, admitted to the union in 1896, Utah is popularly known as the "Beehive state." Area: 84,916 sq.mi. (82,346 sq.mi. land, 2,570 sq.mi. water). Pop.: (1950 census) 688,862; (July 1, 1955, est.) 776,000; urban pop. 65.3% of total (1950 census), foreign-born 4.3%, nonwhite 1.7%. Capital: Salt Lake City, pop. (1950 census) 182,121; other principal cities (with pop. 1950 census): Ogden (57,112), Provo (28,937), Logan (16,832).

History.—The 31st session of the Utah legislature ended its 60-day session early in 1955 having passed 186 bills and a number of resolutions. A major accomplishment was the legislative reapportionment bill which provided for a 25-member senate and a house of 64 representatives. Basically, it gives the state's urban areas control of the senate, while the rural districts dominate the house. The act was to go into effect for the 1956 general elections, but by October legal arguments were under way before the state supreme court to determine whether the legislature had exceeded its constitutional powers in passing the bill.

In the field of taxation the legislature approved a number of bills to increase the state's general fund by about \$5,000,000 and voted \$54,700,000 for the next biennium. The general appropriation bill provided for \$2,000,000 expenditures in unearmarked funds above the governor's recommendations, but in an unusual display of felicity between the executive and legislative branches of government, the governor immediately approved it.

Passage of a right-to-work bill, eliminating compulsory union membership as a condition to employment, placed Utah with several other states which had adopted such laws. On April 23 a special session of the state legislature met for eight hours to correct the recently adopted child labour law which left 14- and 15-year-olds with severely restricted fields of employment. The new bill permitted 14- and 15-year-olds to work in most professions formerly permitted for minors at 16.

In the field of local government the 1955 state legislature directed the Utah legislative council to appoint a commission to make a study of possible reorganization of city and county governments. On Oct. 15, 1955, the 11-man Local Government Survey commission appointed by the council reported its recommendations which included: (1) the creation of a new department of finance in county government which would place under a single administrative head the overlapping duties now performed by a treasurer, assessor and auditor, and (2) a recommendation that the State Tax commission be given the respon-

sibility of assessing all property.

The chief officers of Utah in 1955 were J. Bracken Lee, governor; LaMont F. Toronto, secretary of state; Sherman J. Preece, auditor; Sid Lambourne, treasurer; E. R. Callister, attorney general; E. Allen Bateman, superintendent of public instruction.

Education.—For the 1954-55 school year there were 119,476 full-time elementary students enrolled in 380 elementary schools and 71,976 full-time secondary students enrolled in 141 secondary schools. This total of 191,452 was an increase of 8,288 over the 1953-54 figure. During 1954-55 the state certified 3,788 elementary school teachers and 2,915 secondary school teachers. With principals and supervisors the total instructional staff for the state reached 6,894, an increase of 689 over the previous year.

Social Insurance and Assistance, Public Welfare and Related Programs.—Total expenditures for public assistance during the fiscal year July 1954 to June 1955 amounted to \$15,251,931.86 (for 26,569 persons), which was an increase of \$634,570.01 over the 1953-54 figure. The funds were distributed as follows: old-age assistance \$6,801,829.23 (9,739 persons); aid to dependent children \$4,241,983.13 (11,453 persons); aid to the blind \$178,053.50 (256 persons); aid to the disabled \$1,343,591.31 (1,940 persons); aid to unemployables \$705,607.67 (1,024); aid to employables \$685,685.33 (1,642); foster care \$272,659.75 (445 persons); medical care and sight conservation \$24,213.87 (70 persons); welfare services \$172,570; and administration \$825,738.07.

For the year July 1954 to June 1955 the four Utah welfare institutions reported the following expenditures and populations: industrial school at Ogden, \$324,945.32 and 152 students; mental hospital at Provo, \$1,637,601.11 with 1,357 patients; training school at American Fork, \$695,256.60 and 716 students; and the tuberculosis sanatorium at Ogden, \$177,500 with 76 patients.

Communications.—All highways and roads in the state (federal, state and local combined) totalled 31,039 mi. as of Dec. 31, 1954, of which 16,009.4 mi. were surfaced. State and federal funds disbursed for highways and roads totalled \$17,498,652.12 in the 1954-55 fiscal year. New road and highway construction completed during the fiscal year aggregated 368.1 mi. (new and reconstructed roads). Total registered motor vehicles as of Dec. 31, 1954, numbered 310,134 including 243,884 passenger cars. All railroads operating in the state numbered nine in 1955, with track mileage (within the state) of 3,026.64 and line mileage of 1,805.53 (as of Dec. 31, 1954); the track mileage included 96.77 mi. owned by three terminal companies in the state. Airports and airfields in 1955 numbered: commercial and municipal 44; military 5; private 54; other 10. Regularly scheduled air lines operating in the state numbered five in 1955. Operating radio stations in 1955 numbered 20 AM stations and 2 FM stations. Operating television stations in 1955 numbered three VHF stations.

Banking and Finance.—As of June 30, 1955, the 45 state banks had resources totalling \$468,711,808.44 and the 9 national banks \$342,196,997.29 for a combined total of \$810,908,805.73, an increase of \$45,441,991.61 over 1954. Deposits for the 45 state banks reached \$433,569,157.55, while the 9 national banks reported deposits of \$319,391,577.71 for a combined total of \$752,960,735.26. There were 15 state-chartered savings and loan associations with total resources of \$91,621,782.63.

State receipts for the fiscal year ending June 30, 1955, were \$110,629,405.50; disbursements amounted to \$115,672,421.90. There was no bonded indebtedness for the state as a whole.

Agriculture.—For Utah, 1954 cash receipts from livestock and products totalled \$110,539,000, down 1.25% from 1953; crops \$38,752,000, down

amounted to \$102,055,000.

Manufacturing.—Total wages for 1954 showed a decrease of \$4,744,291 from 1953. (B. D. M.)

Table III.—Mineral Production of Utah

Mineral	1952		1953	
	Quantity	Value	Quantity	Value
Asphalt (gilsonite)	61,000	\$ 1,780,000	61,000	\$ 2,184,000
Clays	190,000	1,125,000	198,000	1,458,000
Coal	6,140,000	32,410,000	6,544,000	37,689,000
Coke*	1,211,000	?	1,492,000	?
Copper	283,000	136,921,000	269,000	154,691,000
Fluorspar	17,000	439,000	16,000	375,000
Gold (oz.)	436,000	15,243,000	483,000	16,920,000
Iron ore	4,469,000	15,026,000	5,171,000	26,497,000
Lead	50,000	16,168,000	42,000	10,879,000
Natural gas (thousand cu. ft.)	3,006,000	225,000	7,075,000	807,000
Petroleum (bbl.)	1,737,000	?	1,807,000	?
Salt	136,000	523,000	154,000	772,000
Sand and gravel	3,260,000	2,350,000	4,628,000	3,180,000
Silver (oz.)	7,194,000	6,511,000	6,726,000	6,087,000
Stone	852,000	1,123,000	997,000	1,447,000
Zinc	33,000	10,938,000	29,000	6,712,000
Other minerals . . . . .	...	24,719,000	...	28,931,000
Total . . . . .	...	\$265,501,000	...	\$298,629,000

*Values for processed materials are not included in the totals.

†Value included with other minerals.

Mineral Output.—Table III shows the tonnage and value of those mineral commodities produced in Utah in 1952 and 1953 (preliminary) whose value exceeded \$100,000. In 1953 Utah was second among the states in the production of copper, gold and silver, third in manganese, fourth in iron and fifth in fluorspar; and ranked 13th in the value of its mineral output, with 2.08% of the U.S. total.

Utilities, Public: see PUBLIC UTILITIES.

Vacation: see TOURIST TRAVEL.

Vanadium: see MINERAL AND METAL PRODUCTION AND PRICES.

Varnishes: see PAINTS AND VARNISHES.

Vatican City State. This sovereign, independent state was established by the Lateran treaty between the Holy See and the Italian government on Feb. 11, 1929. The treaty was recognized in international law with the reigning pope as sovereign and was made an integral part of the constitution of Italy on March 26, 1947.

Diplomatic representatives of 45 nations are accredited to the Vatican. The Holy See in its diplomatic relations with other governments through the world is represented by 40 nuncios and internuncios.

The area of Vatican City is 108.7 ac., excluding the papal domain of Castel Gandolfo outside of Rome. Vatican City includes Saint Peter, the Vatican palace and museum, the Vatican gardens and neighbouring buildings. Thirteen basilicas and edifices in Rome, although they are outside the boundaries of the state, enjoy extraterritorial rights.

The normal population of Vatican City is approximately 1,000, most of whom are ecclesiastics. Two hundred and fifty lay persons are enrolled in the Pontifical Armed Corps which includes the Swiss Guards, the Palatine Guards of Honor, the Noble Guards and the Papal Gendarmes.

During 1955 the Vatican accepted an invitation to participate in the conference on the peaceful uses of atomic energy which took place in Geneva, Switz. A Vatican delegate, Msgr. Alfred Teobaldi, attended the first United Nations Congress on the Prevention of Crime and Treatment of Offenders which also took place in Geneva.

The West German federal government declared that "with the appointment of a West German Ambassador to the Holy See last year (1954), a new stage was begun in the good relations which have always existed between the Vatican and the Federal Republic." It paid tribute to the Vatican's relief efforts and said that Pius XII, "who contributed so much to ease the material and spiritual distress of Germany during the first post-war year, also professed his benevolent interest in Germany during the past year."

In 1955 14 world known scholars, natives of eight countries

Table I.—Principal Agricultural Products of Utah

Crop	Indicated 1955	1954	Average, 1944-53
Barley, bu.	8,385,000	7,240,000	6,000,000
Wheat, bu.	7,314,000	6,555,000	8,126,000
Oats, bu.	1,794,000	1,980,000	2,107,000
Corn, bu.	1,638,000	1,443,000	1,007,000
Potatoes, bu.	3,375,000	3,380,000	3,066,000
Sugar beets, tons	478,000	435,000	467,000
Hay (all), tons	1,246,000	1,182,000	1,161,000
Peaches, bu.	480,000	584,000	636,000
Apples, bu.	380,000	370,000	422,000
Pears, bu.	140,000	320,000	168,000
Celery, crates	126,000	159,000	330,000
Tomatoes, bu. (fresh market)	48,000	40,000	69,000
Tomatoes, tons (canning)	67,000	49,300	75,200

Source: U.S. Department of Agriculture.

4.43%; crops and livestock combined \$149,291,000, down 2.1%. Adding in government payments of \$2,662,000, total cash receipts for Utah farmers in 1954 amounted to \$151,953,000. Adding also the value of crops, livestock and products consumed in farm homes, estimated at \$1,519,000, gave a total farm income of \$153,472,000 for 1954, down 6.09% from 1953. The total value of livestock on Utah farms as of Jan. 1, 1955,

Table II.—Principal Industries of Utah

Industry	Av. workers per month	Total wages 1954
Mining	12,941	\$ 58,161,256
Contract construction	11,579	47,925,265
Manufacturing	31,219	123,678,422
Transportation, communication and utilities	12,022	45,891,202
Wholesale and retail trade	49,813	147,809,496
Finance, insurance and real estate	8,007	27,009,037
Service	15,663	36,400,974
Miscellaneous	411	893,138
Total (all industries)	141,655	\$487,768,790

and representing many branches of learning, were named by Pope Pius XII to membership in the Pontifical Academy of Science. Among those honoured was Theodore de Karman, physicist, of the California Institute of Technology at Pasadena, Calif.

In commemoration of the 500th anniversary of Fra Angelico's death, Pope Pius XII on April 20, 1955, opened an exhibition of the pious painter's work. American museums contributed by lending several pictures. (See also PIUS XII; ROMAN CATHOLIC CHURCH.)

(J. LAF.)

Veal: see MEAT.

Vegetable Oils and Animal Fats. Record U.S. oilseed crops in 1955 plus a very high level of pork and beef slaughter provided a superabundance of fats and oils. Oilseed production was a record 132% of the 1947-49 base, as compared with 118% in 1954. Included were 371,898,000 bu. of soybeans, about 6,119,000 tons of cottonseed, 1,738,725,000 lb. of peanuts and 42,985,000 bu. of flaxseed.

Table I.—U.S. Production of Principal Fats and Oils

	(In millions of pounds)			
	1955*	1954†	1953	Average 1937-41
Butter	1,600	1,563	1,677	2,224
Lard	2,850	2,590	2,208	2,091
Edible tallow	270	269	255	225
Edible vegetable oils	5,925	5,378	5,272	2,254
Soap fats and oils	2,925	2,825	2,661	1,303
Drying oils	653	742	801	364
Other oils	210	213	192	228
Total	14,433	13,580	13,066	8,689

*Forecast. †Preliminary.

Price supports were generally lower: in the case of soybeans at \$2.04 per bushel, 70% of parity, as compared with \$2.22 and 80% of parity for the 1954 crop; flaxseed at \$2.91 per bushel (65% of parity) against \$3.14 and 70% in the previous year; peanuts at 12.2 cents per pound (90% of parity) in both years; and cottonseed at \$46.34 per ton (65% of parity) as compared with \$54 per ton (75% of parity) on the 1954 crop. In October farmers averaged \$2.08 per bushel for soybeans, \$2.76 per bushel for flaxseed, 11.8 cents per pound for peanuts and \$43.50 per ton for cottonseed.

Exports of animal fats and greases were valued at \$171,670,000 in 1954-55 as compared with \$140,626,000 in the previous year. Oilseeds exported were valued at \$170,990,000 and vegetable oil exports at \$115,181,000. Supplementary imports of oilseeds were valued at \$55,748,000 and vegetable oils at \$77,099,000. Tung oil imports, almost wholly from Argentina, approxi-

Table II.—World Exports of Fats, Oils, and Oilseeds

Commodity	(In thousands of short tons)			
	1955*	1954†	Average 1945-49	Average 1935-39
Edible vegetable oils	1,935	1,810	850	1,753
Palm oils	2,380	2,365	1,543	2,205
Industrial oils	680	885	479	1,008
Animal fats	1,505	1,445	765	885
Marine oils	700	745	405	710
Total	7,200	7,250	4,042	6,561

*Forecast. †Estimate.

Source: Foreign Agricultural Service, U.S. Department of Agriculture, Foreign Crops and Markets, vol. 71, no. 9, p. 345 (Aug. 29, 1955).

mated the agreed maximum quota of 21,800,000 lb. for the year ending Oct. 31, 1955.

World production of fats, oils and oilseeds appeared likely to exceed the 28,000,000 short tons (oil equivalent) of 1954 and to be far above the average 23,995,000 tons of 1935-39.

Whale oil production was forecast at 415,000 tons and sperm oil at 85,000 tons in 1955.

Preliminary indications were that world export would reach 7,200,000 tons, oil equivalent, slightly below the record of 7,250,000 tons in 1954 but about 10% above prewar. (See also COTTON; PEANUTS; SOYBEANS.)

(J. K. R.)

Vegetables. The 1955 volume of the U.S. vegetable production for fresh use and processing was 2% larger than in 1954, approximately one-fifth more than before World War II, but slightly below the 1947-49 average. The estimated total of 24,500,000,000 lb. of commercial vegetables for sale fresh at local and distant markets (but excluding household gardens) provided 141 lb. of fresh vegetables per capita. Somewhat smaller supplies, together with higher consumer incomes, resulted in a price index of 230 (1910-14=100) for fresh vegetables in September as compared with 173 in Sept. 1954 and 221 for the full year 1954. Exports of vegetables and preparations in 1954-55 were valued at \$101,900,000 as compared with \$88,864,000 in the previous year. Imports of supplementary vegetables and preparations were valued at \$25,088,000 as compared with \$31,791,000 in 1953-54.

Table I.—U.S. Vegetable Production for Fresh Market

Crop	Unit	(In thousands)		
		Indicated 1955	1954	Average, 1949-53
Artichokes	boxes	890	900	737
Asparagus	crates	3,412	3,448	3,736
Beans, lima	bu.	1,312	1,376	1,657
Beans, snap	bu.	18,722	17,907	18,228
Beets	bu.	1,318	1,617	1,638
Broccoli	crates	5,203	4,490	4,662
Brussels sprouts	tons	19	31	25
Cabbage	tons	995	1,125	1,151
Cantaloupes	crates	15,604	16,062	14,183
Carrots	bu.	28,534	31,056	30,506
Cauliflower	crates	11,969	10,268	12,541
Celery	crates	24,711	25,145	22,962
Corn, sweet	5 doz. ears	26,838	24,981	22,870
Cucumbers	bu.	8,135	8,231	7,139
Eggplant	bu.	1,476	1,480	1,437
Escarole	bu.	2,553	2,452	1,976
Honeyball melons	crates			67
Honeydew melons	crates	3,624	4,010	2,985
Kale	bu.	990	1,050	1,172
Lettuce	crates	41,938	40,695	37,818
Onions	sacks	40,695	43,602	42,720
Peas, green	bu.	1,457	1,417	2,188
Peppers, green	bu.	11,441	11,306	9,406
Shallots	bbl.	214	127	
Spinach	bu.	9,009	9,227	11,249
Tomatoes	bu.	39,232	37,443	34,096
Watermelons	melons	131,170	119,803	100,229

Commercial Truck Crops for the Fresh Market.—The winter fresh vegetable crop of Florida, the Gulf coast and the southwest, harvested early in the year, was 1,461,100 tons, 94% as much as in 1954 and 99% of average. The spring crop of fresh vegetables was 2,531,100 tons, 4% below 1954 but 8% above average. Fresh summer vegetables were abundant; the 4,402,900 tons were 2% in excess of 1954 and 5% above average. The indicated fall fresh vegetable crop of 1,961,000 tons was 97% of 1954 and 2% below average. Preliminary indications for early 1956 were for a smaller crop of winter beets and spinach, a kale crop 5% larger than the previous year, and a record large winter lettuce crop.

Commercial Truck Crops for Processing.—The 1955 production of cucumbers for pickles, green peas, pimientos, spinach and tomatoes exceeded the 1954 tonnages, but green lima beans, snap beans, beets, kraut cabbage and sweet corn yielded less than in 1954. The 1955 packs of both canned and frozen vegetables were a little larger than in 1954, but carry-over stocks were lower; stocks of frozen vegetables in July were 410,000,000 lb., 8% less than a year earlier. Supplies per capita were 40.9 lb. of canned and 5.8 lb. of frozen vegetables, the latter 2% less than in 1954.

Dry Edible Peas and Beans.—The 1955 U.S. dry edible bean crop, indicated at 19,094,000 bags of 100 lb. each, was larger than the 18,899,000 bags of 1954 and the 1944-53 average of 17,317,000 bags. Michigan produced 4,888,000 bags; the Cali-

fornia crop was reduced below earlier prospects to 4,848,000 bags (5,122,000 bags in 1954); followed by Idaho with 2,594,-

Table II.—U.S. Production of 11 Vegetables for Processing

Crop	(In tons)		Average, 1944-53
	Indicated 1955	1954	
Asparagus	128,400	101,600	99,000
Beans, lima	87,300	103,000	70,900
Beans, snap	310,100	341,400	236,800
Beets	139,400	146,800	143,100
Cabbage	160,700	208,100	189,100
Corn, sweet*	1,168,700	1,488,800	1,239,800
Cucumbers	312,100	304,600	250,600
Peas, green†	454,200	400,100	438,200
Pimientos	34,500	22,200	20,000
Spinach	123,000	91,300	113,400
Tomatoes	3,224,500	2,697,700	3,109,100

*Husk on. †Shelled.

000 bags. Prices to producers in October averaged \$7.04 per hundredweight as compared with \$7.81 per bag a year earlier. The official support price averaged \$6.36 per hundredweight, or 70% of parity, as compared with \$7.24 per hundredweight, or 80% of parity, on the 1954 crop. U.S. export of 1,739,000 bags of dry beans in 1954-55 was 21% below 1953-54.

The dry field pea crop of 1955, largely produced in Washington and Idaho, was indicated at 2,833,000 bags, the second smallest crop since 1940, one-fifth below the 3,484,000 bags of 1954 and only three-fifths of the 1944-53 average of 4,764,000 bags. The average price to producers in October was \$6.41 per bag (100 lb.) as compared with \$4.31 a year earlier. The U.S. in 1954-55 exported, partly from Commodity Credit corporation stocks and largely to Europe, 1,233,000 bags of dry edible peas, a new record and more than double the 543,000 bags exported in 1953-54.

Of a large world lentil production, about 1,500,000 bags moved in world trade; Turkey, Argentina, Algeria and Chile were the major exporters; western Germany was a major importer. Prices were about 10% higher than in 1954. (See also POTATOES.) (J. K. R.)

Venereal Diseases.

In spite of the encouraging advances made in the treatment and control of the venereal diseases, they continued to be serious public health problems. This was reflected in morbidity data showing that approximately 374,000 cases of venereal disease were reported in 1955. The situation was further accentuated by the fact that in the fiscal year 1955, 17 states of the United States had more new cases of infectious syphilis reported than during the previous year, and 25 states showed increases in reported cases of gonorrhoea.

State and territorial health departments reported 126,931 cases of syphilis in all stages. Of this total 6,698 were cases in the early infectious lesion stage of the disease, 22,230 were cases in the early latent stage, 86,394 in the late and late latent stages. There were 5,779 cases of congenital syphilis reported in 1955. In 1954, 78.2% of the congenital syphilis patients reported by age were 10 years of age or older. Reported cases of gonorrhoea in continental United States numbering 239,787 for fiscal year 1955 were higher than for the previous 12 months. This was the first time an increase over the previous year had been shown in gonorrhoea morbidity since 1946. Chancroid, lymphogranuloma venereum and granuloma inguinale in the states and territories accounted for 4,410 cases, of which chancroid comprised two-thirds.

Total mortality from syphilis in the fiscal year 1955 was estimated at 4,970 deaths, a rate of 3.1 per 100,000 population. This estimate was based on information given as to the cause of death on a 10% sample of death certificates. In 1953 the infant mortality rate resulting from syphilis was 1.4 per 100,000

live births. These deaths from syphilis represented casefinding and treatment failures.

The rate of first admissions to all mental hospitals (exclusive of Veterans administration facilities) from psychoses resulting from syphilis was 1.8 per 100,000 population in 1952. However, the tragic consequences of uncontrolled syphilis were strongly reflected in the fact that 38,000 persons with syphilitic insanity were in mental hospitals in Sept. 1955 because their infections were not discovered and treated early. While the rate of first admissions to mental hospitals because of syphilis had declined, the cost of maintenance of patients hospitalized because of syphilitic blindness in 1951 was more than \$12,000,000. The estimated loss of income by males hospitalized with syphilitic psychoses in 1952 was more than \$98,000,000.

Venereal disease diagnostic and treatment services were provided in 20 prevention and control centres operated and staffed by local health departments in 7 states and the District of Columbia. In addition to these centres 2,113 venereal disease clinics in 48 states and 4 territories were maintained. Of the 1,858,000 persons examined in these clinics in 1955, 297,000 (16%) were admitted for treatment. Staff members of health departments interviewed 170,000 patients for their sex contacts. Finding these contacts of civilians plus contacts of military personnel, as well as other suspects, resulted in a total of 380,000 investigations. More than 70%, or 266,000 persons, were brought to examination which resulted in 104,500 persons with a venereal disease being brought or returned to treatment.

The changing prevalence of syphilis made acute the need for a more specific serologic test for syphilis, simple enough to be performed in the average serologic laboratory. The public health service's Venereal Disease Experimental laboratory at Chapel Hill, N.C., developed such a test. It was named the *Treponema pallidum* Complement Fixation (TPCF) test. Chemical fractionation of pathogenic *T. pallidum* produced a proteinlike antigen, which, when used in the usual complement fixation test procedures, appeared to be specific for treponemal infections. The results were highly reproducible and easily read. Commercial manufacture of the antigen appeared feasible and was being undertaken by two companies. (See also EPIDEMIOLOGY.)

(C. A. S.)

Venezuela. The republic of Venezuela, with an area of 352,142 sq.mi., had an estimated population of 5,774,000 (1955), not including indigenous tribes living outside of cities. The capital, Caracas, had 611,048 inhabitants (1953 est.). Other cities of importance were Maracaibo with 304,313, Barquisimeto 132,123, Valencia 105,315, Maracay 77,049, San Cristóbal 64,970, Cumaná 56,604, Ciudad Bolívar 36,278, Puerto la Cruz 36,000 and Puerto Cabello 35,000. President in 1955 was Marcos Pérez Jiménez.

History.—Venezuelan relations with other American states continued to be amicable during 1955. New commercial agreements with France and Great Britain were discussed; one was concluded with Switzerland. The president made a state visit to Peru in June, and received a return visit from the president of Peru in August. A number of new roads and other public works were completed during the winter of 1954-55, but no new projects in the field of public works were undertaken. The stability of the budget was maintained so that the fiscal year could close with no deficit. The Agrarian institute began in Táchira a new agricultural colony, similar to that opened at Turén in 1953. When completed in 1960, it would cover an area of 50,000 ac, no holding being less than 25 ac. The estimated cost was \$12,000,000. Plans for other colonies were being prepared by the institute. The government's project of petrochemical plants which would provide fertilizer and like products was given effect in 1955 with the letting of contracts for one

plant near Puerto Cabello. Other new industries were begun, with both foreign and domestic capital.

At the end of February a meeting of the oil division of the International Labour office was interrupted by the expulsion from Venezuela of a foreign delegate who had engaged in sweeping criticism of Venezuela's labour policy. As the government refused to permit his return unless he were to retract his allegations, the ILO in Geneva, Switz., suspended the meeting, whereupon Venezuela immediately withdrew from the International Labour office.

Petroleum production and exportation continued at the high levels of 1954, despite recurrent rumours and threats of legislative restrictions upon the importation into the United States of foreign oil. The production of sugar, coffee and dairy products continued to meet the requirements of a rapidly growing population. Some emphasis upon agricultural workers was placed by the immigration authorities in 1955, and the effort was being made by the immigration agencies in Europe to select entire families versed in agricultural specialties.

Railroad construction continued, and the shipping company was thoroughly reorganized. In August Col. Llovera Páez, in charge of special economic development studies since the beginning of the administration, became also minister of communications. This was considered to be the first step in the regrouping of ministries announced in the presidential message of April 1954.

The dredging of the Maracaibo bar was vigorously pushed during 1955 in order that Lake Maracaibo might be entered by ships of deeper draft somewhat earlier than the projected terminal date (1958).

Unemployment continued to be insignificant, but the net addition to population from immigration fell off from the levels of recent years because of some slight repatriation. (See also FOREIGN INVESTMENTS.) (C. E. Mc.)

Education.—At the end of 1954 there were 7,014 primary schools, public and private, with 608,976 pupils and 16,944 teachers, and 197 secondary and special schools with 33,481 students. University education was available at three public and two private universities with total attendance of 7,645 in 1954. Education was allotted 6.4% of the 1955-56 budget.

Finance.—The monetary unit is the bolivar, valued at 29.85 cents U.S. currency during 1955. The 1955-56 budget (July 1-June 30) was balanced initially at 2,555,000,000 bolivares. Actual revenue in 1954-55 was 2,829,531,543 bolivares; expenditure, 2,549,440,251 bolivares. There was no external debt; the total government and government-guaranteed debt was 496,532,000 bolivares on Dec. 31, 1954. Currency in circulation (July 31, 1955) totalled 920,000,000 bolivares; demand deposits, 1,287,000,000 bolivares. The U.S. department of commerce estimated U.S. direct investments in 1954 at \$1,399,000,000, of which petroleum investments accounted for \$1,038,000,000. The cost-of-living index (Caracas) stood at 123 in June 1955 (1948=100). National income in 1953 was estimated at 9,893,000,000 bolivares.

Trade and Communications.—Exports in 1954 totalled 5,660,989,648 bolivares; imports, 2,745,803,659 bolivares. Chief exports were crude petroleum and petroleum products (94%), iron ore (2%), coffee (2%) and cacao (1%); leading imports, machinery and apparatus (35%), metals and manufactures (18%), foodstuffs (12%) and textiles (6%). Leading suppliers were the U.S. (62%), the U.K. (8%), Germany (7%), Canada (4%) and France (4%). The Netherlands Antilles and the U.S. were the principal customers.

Railways (Dec. 1950) totalled 759 mi., including 128 mi. of industrial trackage; highways (1953), 10,243 mi. of all-weather roads. On June 30, 1954, there were 112,048 automobiles, 75,921 trucks and 5,260 buses. According to *Lloyd's Register of Shipping*, the merchant marine had 103 vessels (100 tons and more) aggregating 211,983 gross tons on June 30, 1954. Telephones (Jan. 1, 1954) numbered 92,420, 93.7% of which were automatic and 69% of which were located in the federal district.

Agriculture.—Production estimates for the 1954-55 crop year (preliminary figures) included coffee 580,000 bags of 132 lb. each; cacao 37,037,000 lb.; maize 326,000 metric tons. In 1954, 93,669 metric tons of sugar, 30,895 tons of rice (milled), 642 tons of cotton and 14,991,000 lb. of tobacco were produced and 431,000 bags of coffee were exported. The 1950 census showed 5,631,986 cattle and 1,467,178 pigs.

Manufactures.—Production in 1954 included cement 1,212,021 metric tons; soap 16,376 tons; cigarettes 2,995,130,000 units; tires 372,045 units; beer 138,757,000 l.; cotton cloth 14,210,860 metres; electricity 979,257,000 kw.hr.

Minerals.—Production of crude petroleum in 1954 totalled 691,788,000 bbl.; natural gas, 764,015,000 cu.ft. Crude petroleum exports totalled 528,634,000 bbl. in 1954; refinery throughput 161,853,000 bbl.; exports of refined products 126,250,000 bbl. At the end of 1954 proven reserves totalled 10,919,000,000 bbl. and maximum refining capacity was 483,-



MARCOS PÉREZ JIMÉNEZ (right), president of Venezuela, receiving his sword July 5, 1955, marking his promotion to the rank of brigadier general. Jiménez thus became the first general in the army of Venezuela since 1945. Minister of defense Col. Oscar M. Carta is presenting the sword

595 bbl. per day; oil pipelines totalled 2,116 mi. in length. Production of other minerals in 1954 included iron ore 5,388,638 metric tons; gold 56,100 troy ounces; diamonds 96,983 carats; coal 32,047 tons; lead 900 tons; asbestos 674 tons. (J. W. Mw.)

Vermont. A north Atlantic state of the United States of America, the only one of the New England states without a seacoast, Vermont is popularly known as the "Green Mountain state"; it was admitted to the union in 1791. Area: 9,609 sq.mi., of which 331 sq.mi. are water. Population (1950) 377,747 (including 240,135 rural, 137,612 urban; 348,435 native white, 443 Negro, 28,753 foreign born). The U.S. bureau of the census estimated the population of the state to be 377,000 on July 1, 1955. The chief cities are Montpelier (cap., pop., 1950 census) 8,599, Burlington 33,155 and Rutland 17,659.

History.—The general assembly met in 1955 from Jan. 5 to June 11, the longest session on record. Legislation enacted or amended included acts authorizing the state of Vermont to enter into a compact with other states in New England to establish the New England Board of Higher Education, making the University of Vermont and State Agricultural college, Burlington, a state institution, approving bonding for the construction of highways instead of the former pay-as-you-go plan, enabling the construction of limited access highways, authorizing purchase and administration of Salk polio vaccine and authorizing and empowering the public service commission with approval of the governor to enter into contracts for purchase and transmission of electrical energy from the place of purchase to a point or points within the state and resell such energy to electric distribution companies on a nonprofit basis.

The Chester A. Arthur State park in Fairfield was dedicated Aug. 25, 1954. The park, a shrine to the Vermont-born president of the United States, commemorates his birthplace.

Chief officers of the state during 1955 were Joseph B. Johnson, governor; Mrs. Consuelo Northrop Bailey, lieutenant governor; George H. Amidon, state treasurer; Howard E. Armstrong, secretary of state; David V. Anderson, auditor of accounts; Robert T. Stafford, attorney general. Mrs. Bailey was the first woman to hold the office of lieutenant governor of Vermont.

Education.—The number of elementary schools in the state on June 30, 1955, was 614. The elementary school enrolment 1954-55 was 51,320 and the teaching staff 2,023. There were 81 public high schools in the state in 1954-55, with an enrolment of 18,022 and teaching staff of 837. Total current expenditures for education, exclusive of capital outlay, were \$15,531,235.81, of which \$3,471,963.25 (about 22%) was paid by the state to the local school districts for general state aid. Aid approved by the 1953 general assembly to local school districts for the construction and alteration of buildings, and paid in 1953-54, for construction started since July 1, 1947, amounted to \$1,430,927, and aid for construction for

the year ended June 30, 1955, was \$841,505.54. The state superintendent of schools was the commissioner of education A. John Holden.

Social Insurance and Assistance, Public Welfare and Related Programs.—Relief in general was administered by the overseer of the poor in each town. An average number of 6,858 persons a month received old-age assistance from state funds amounting to \$3,745,119.76 during the year ended June 30, 1955. Aid to dependent children was distributed to an average number of 1,132 recipients monthly, from funds amounting to \$812,409. Blind assistance funds amounting to \$94,461 were distributed to about 162 persons a month. Aid to the disabled was paid to about 447 persons a month, and amounted to \$243,059.

Unemployment compensation payments made under the Vermont law numbered 174,335, and amounted to \$3,875,683 for the year ended June 30, 1955. The three state correctional institutions during the year ended June 30, 1955, had an average of 444 inmates; their total expenses were \$774,791.

Communications.—The total mileage of the public highway system (state, state-aid and town highways) as of June 30, 1955, was 13,678 of which 1,852 mi. were in the state system and 2,777 mi. in the state-aid system. Total expenditures during the fiscal year ended June 30, 1955, amounted to \$15,633,136.42. There were 853.3 mi. of railways in the state in the year ended Dec. 31, 1954; telephone subscribers were estimated at 81,750. Airports numbered 20, seaplane landing area 1 and airways 4, with a total mileage of about 300 during the year ended June 30, 1955 (official CAA figure of 250 mi., to which was added 50 mi. for the airway established between Montpelier and Newport in 1955).

Banking and Finance.—The number of state and national banks as of June 30, 1955, was 73 of which 37 were state banks with total deposits of \$244,863,468.17. The seven state co-operative building, savings and loan associations had assets of \$5,596,692.40.

Total receipts of the state as of June 30, 1955, were \$48,193,467; total disbursements \$51,954,308.94; there was no unappropriated surplus, but rather a deficit of \$569,038.44; total debt outstanding was \$7,531,000.

Agriculture.—Vermont cash receipts from farm marketing for the year 1954 according to the agricultural marketing service of the U.S. department of agriculture totalled \$106,200,000 compared with \$110,200,000 in 1953. In the fall of 1954 the state had 15,981 farms, a drop of 3,062 farms in five years, but the total land in the state's farms declined only three tenths of 1%.

Honey produced in Vermont in 1954 amounted to 506,000 lb. compared with 260,000 lb. in 1953. Production of maple syrup in 1955 according to the agricultural marketing service of the U.S. department of agriculture was very uneven throughout the state. The apple crop was the largest in more than 20 years.

There were 479,000 head of cattle on Vermont farms Jan. 1, 1955, of which 320,000 were cows and heifers kept for milk production, compared with 484,000 head in 1954, of which 317,000 were kept for milk production. There were 115,000 turkeys raised on Vermont farms in 1955, compared with 128,000 in 1954.

Table I.—Principal Crops of Vermont

Crop	Indicated 1955	1954	Average, 1944-53
Corn, bu.	3,060,000	2,856,000	2,602,000
Hay, tons	1,441,000	1,343,000	1,340,000
Apples, commercial, bu.	1,230,000	880,000	770,000
Oats, bu.	980,000	840,000	1,219,000
Potatoes, bu.	731,000	720,000	1,146,000
Maple syrup, gal.	665,000	721,000	690,000

Source: U.S. Department of Agriculture.

Table II.—Principal Industries of Vermont

Industry	All employees 1953	Salaries and wages 1953 (in 000s)	Value added by manu- facture 1953 (in 000s)	Value added by manu- facture 1952 (in 000s)
Textile mill products	*	\$	\$	\$16,024
Paper and allied products	1,832	7,552	12,939	12,566
Stone, clay and glass products	3,720	13,357	21,926	*
Machinery (except electrical)	9,952	46,430	84,946	84,919

*Withheld because the estimate did not meet publication standards, either on the basis of the associated standard error of estimate or on the basis of a consistency review.

Source: U.S. Department of Commerce, Annual Survey of Manufactures, 1953.

Manufacturing.—The Vermont unemployment compensation commission reported for the year ended June 30, 1955, an average of 35,769 persons a month in manufacturing industries covered by the state unemployment

Table III.—Mineral Production of Vermont

Mineral	Quantity 1953 (in short tons)	Value 1953	Quantity 1952	Value 1952
Lime	?	\$?	\$
Sand and gravel	1,114,000	690,000	1,264,000	750,000
Stone	527,000	8,660,000	404,000	6,017,000
Talc	80,000	241,000	71,000	927,000
Other minerals . . . . .	...	10,511,000	...	10,197,000
Total		\$20,302,000		\$17,891,000

*Value included with other minerals.

compensation law (all industries 62,814); wages paid to such workers in manufacturing industries \$122,767,858 (all industries \$205,318,699). (C. E. FE.)

Mineral Production.—Table III shows the tonnage and value of those mineral commodities produced in Vermont in 1952 and 1953 (preliminary) whose value exceeded \$100,000. In 1953 Vermont was first among the states in the production of asbestos, second in slate, third in ilmenite, fourth in talc and fifth in pyrite; and ranked 40th in the value of its mineral output, with 0.14% of the U.S. total.

Veterans Administration (U.S.)

The nation's population of veterans reached 22,000,000 in Oct. 1955. Of these, 80%, or 15,400,000, served in World War II; 4,000,000 were in uniform during the period between the start of the Korean conflict, June 27, 1950, and Jan. 31, 1955, and the rest served in other wars and during time of peace. Benefits for veterans and their families are administered by the Veterans administration, an independent agency of the United States government.

Korean G.I. Bill.—Perhaps the most far-reaching of all benefits for Korea veterans was the G.I. bill, enacted in 1952, containing five programs designed to help those young veterans readjust to civilian life.

One of the programs is government aid for G.I. education and training. A veteran may receive one and one-half days of G.I. training for each day spent in service during the Korean conflict period. The maximum is 36 months.

While training, he receives an allowance each month to cover part of his expenses and living costs. Rates for veterans in school full time are \$110 if they have no dependents; \$135 if they have one dependent; and \$160 with more than one dependent. Rates for part-time training—as well as for on-the-job and on-the-farm training—are lower.

By Sept. 1, 1955, more than 1,000,000 Korea veterans—or one out of every four who served during the Korean conflict period—had taken some form of Korean G.I. bill training. More than 50% had gone to college; another 34% trained in schools below the college level; 12% had taken on-the-job training; and 4% trained on the farm.

Another Korean G.I. bill program permits veterans to obtain government-guaranteed or insured loans on the same basis as veterans of World War II. Loans for homes may be guaranteed for up to 60% with a maximum guarantee of \$7,500. Other real-estate loans are guaranteed for up to 50% with a \$4,000 maximum. Nonreal-estate loans also may be guaranteed for 50%, but with a \$2,000 maximum.

As of Sept. 1, nearly 200,000 veterans had obtained loans under the Korean G.I. bill. About 90% purchased homes. The loans totalled nearly \$2,000,000,000, of which VA had guaranteed \$1,100,000,000.

VA administers both the G.I. training and G.I. loan programs. The remaining benefits of the Korean G.I. bill are handled by other agencies. The unemployment compensation program—payments of \$26 a week for up to 26 weeks—is administered by the U.S. department of labour. The armed forces handle a mustering-out program, which provides payments ranging from \$100 to \$300 for persons coming out of service. The U.S. employment service is charged with providing job-finding assistance to Korea veterans.

Vocational Training for the Disabled.—Rehabilitation training is available to disabled World War II and Korea veterans who have service-connected disabilities and need training to overcome the handicap of their disabilities. While in training, and for two months afterward, they may receive a subsistence allowance from the government, in addition to all training costs which the government pays directly to their schools.

By Sept. 1, 1955, a total of 609,000 disabled World War II veterans and 30,000 disabled Korea veterans had received training.

A survey, released by VA in 1955, disclosed that rehabilitated disabled veterans had made an outstanding adjustment to the workaday world. At the time of the survey, 95% of the veterans were employed; nearly all were using skills learned in training; 99% stated they liked the kind of work they were doing; and they had doubled their prewar incomes to the point where they were earning \$400 a year above the national average.

World War II G.I. Bill.—Of the three major benefits of the G.I. bill for World War II veterans, one still was in full force during 1955, one had passed its cutoff point and would end for most veterans in 1956 and the third had long since expired.

The G.I. loan program—in full operation until 1957—had provided loans to more than 4,000,000 World War II veterans, 90% of whom purchased or built homes. In July 1955 moderate credit restrictions were placed on all G.I. loans, calling for a down payment of at least 2% and a maximum repayment period of 25 years. The reason was to help protect prospective veteran home buyers against increased prices and overextension of credit.

Under the G.I. education and training program, a total of 7,800,000 World War II veterans had received training. This figure represents more than half of all who served during World War II. The program would end for most veterans on July 25, 1956.

The third benefit, readjustment allowances for unemployment, ended for most veterans in 1949. Nearly 9,000,000 veterans had received allowances, although most had found jobs after having been on the rolls for only a few weeks.

Medical and Hospital Benefits.—As of Sept. 1, 1955, VA was operating a network of 173 hospitals for the treatment of ill and disabled veterans. It also was utilizing some beds in civil, state and other federal hospitals on a contract basis. At that time, a total of 110,000 veterans were receiving VA hospital care. More than half were being treated for mental illnesses.

War veterans, including those with service since the war in Korea, are entitled to VA hospitalization under the following priority system, authorized by law: first, those suffering from injuries incurred in or aggravated by wartime service; and sec-

ond, those who state under oath that they are unable to pay for private treatment for nonservice-connected ailments. Veterans in the latter group must submit a financial statement listing their assets and liabilities and must wait until beds are available for them.

During 1955 VA stepped up its many-sided attack on the growing problem of providing aging veterans with the type of medical care that would enable them to lead useful lives in spite of age and disability. While only 600,000 veterans were then 65 years old or more, the number was expected to rise tenfold over the next half-century. Among the steps had been research in the use of drugs such as nicotinic acid that might overcome a common mental malady of the aged; conducting psychological studies on the characteristics and needs of the aged; and planning individual "programs of living" for veterans in domiciliary homes to add new dignity and meaning to their lives.

Compensation and Pensions.—Veterans with service-connected disabilities resulting either from wartime or peacetime service may qualify for monthly compensation payments from VA. Monthly rates range from \$17 to \$181 for wartime service; peacetime veterans receive 80% of the wartime scale. Additional statutory awards are payable to veterans with certain severe disabilities such as blindness and amputations.

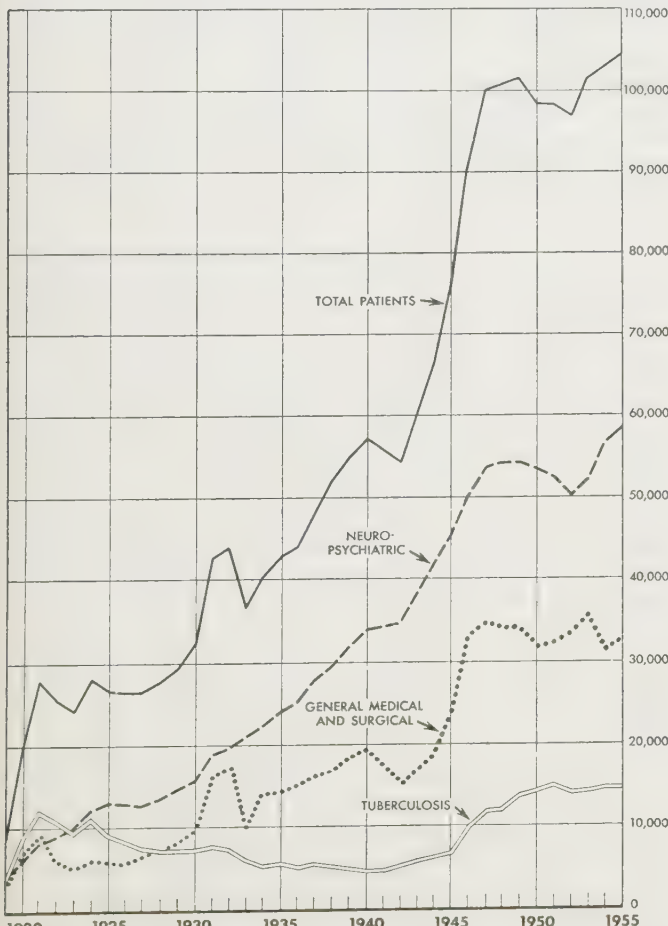
Pensions may go to veterans of either World War I or II, as well as the Korean conflict period, who are totally and permanently disabled for reasons not connected with their service and whose annual incomes do not exceed \$1,400 if single or \$2,700 if married or with a minor child. Rates are \$66.15 a month, increased to \$78.75 after ten years or when the veteran reaches age 65. Those who need constant aid and attendance may get \$135.45 a month.

On Sept. 1, 1955, more than 2,600,000 veterans were receiving disability compensation and pensions. Included were 155,000 veterans disabled since Korea.

Insurance.—VA administers three systems of insurance: U.S. Government Life insurance for World War I veterans, National Service Life insurance for World War II veterans and the Indemnity and Insurance acts of 1951 for Korea veterans.

On Sept. 1, 1955, nearly 5,700,000 World War II veterans held G.I. insurance policies having a total value of \$37,700,000,000; 400,000 World War I veterans had policies valued at nearly \$5,000,000,000 and 339,000 Korea veterans had Korean G.I. term insurance totalling \$3,000,000,000.

Other Benefits.—VA administers a number of other benefits for veterans and their dependents. Among these are programs providing cars for the seriously disabled, "wheelchair housing" grants for other disabled veterans, a guardianship service and still others. (See also BUDGET, NATIONAL.) (H. V. H.)



NUMBER OF PATIENTS remaining in VA and non-VA hospitals on Dec. 31 from 1919 through 1955 by type of disability, as compiled by the Veterans administration

Veterans' Organizations, U.S. Membership in major veterans' organizations in the United States remained static in 1955 with the total figure for leading groups reported at 4,800,000, or somewhat less than the previous year.

American Legion.—The American Legion reported at the beginning of the year a membership of 2,797,000. Its 37th annual convention, held in Miami, Fla., in October, was attended by 3,164 accredited delegates and about 40,000 others. J. Addington Wagner of Battle Creek, Mich., was elected national commander. The convention gained much newspaper attention and editorial criticism when it passed a resolution calling for a congressional investigation of UNESCO.

The Legion continued its primary emphasis on veterans' benefits, and pressed on with its "New Glory for Old Glory" campaign, dedicated to increased display of the U.S. flag as the symbol of liberty, and its "Back to God" program, designed to

help reaffirm traditional moral and spiritual values. Concern for national defense and for the dangers of subversion continued, in 1955, to be among the Legion's major interests. The organization's national headquarters are in Indianapolis, Ind.

Veterans of Foreign Wars.—Timothy J. Murphy of Boston, Mass., was elected commander in chief of the V.F.W. at its 56th national encampment held in Boston in Aug. 1955. Membership was reported at about the same as the previous year, or 1,200,000. The objectives of the V.F.W. remained the same: to expand Veterans administration hospital and medical programs; to strengthen veteran preference in federal employment; to use vigilance in combatting communist infiltration and subversion in all areas of American life; to adopt universal military training; to concern itself with construction of highways, schools, hospitals and other projects in the public interest.

Disabled American Veterans.—The D.A.V. is devoted exclusively to the care of the war disabled, whether or not they are members of the organization. In 1955 it had a life membership of 70,000 and a total membership of 200,000—the highest in its history. Its new national commander was “the blind general,” Maj. Gen. Melvin J. Mass, U.S.M.C. Its 1955 convention was held in Des Moines, Ia., in August. Convention delegates reaffirmed the D.A.V.'s traditional national program of “advancing the interests of America's war disabled and their dependents.”

American Veterans of World War II (Amvets).—Membership in the Amvets continued at about 125,000 in 1955. At its national convention, held in Philadelphia, Pa., in August, Rudy Pesata of Berwyn, Ill., was elected national commander. Among resolutions passed at the 1955 meeting were those in support of the United Nations, in recommendation that court-martial board hearings be augmented by qualified psychiatrists and former prisoners of war to help in decisions and opposing a system of payment of benefits based solely upon a soldier's rank.

American Veterans Committee.—A.V.C. reported that its membership increased in 1955 to 28,000. Bill Mauldin, cartoonist and author, remained its chairman for a second year and its ninth annual convention was held in Atlantic City, N.J. A.V.C.'s slogan is “Citizens First, Veterans Second,” and its major themes include active concern for civil liberties and civil rights in the United States and for international co-operation. During the year it took a positive stand on many issues of human rights.

Other Organizations.—There were at least 25 other veterans' or veteran-related organizations operating in the U.S. in 1955, most of them regional or parochial in interest. Among the largest was the Catholic War Veterans of the United States with a membership of more than 250,000. The Jewish War Veterans of the U.S.A., one of the oldest active veterans' organizations in the country, had a membership of more than 100,000.

The World Veterans federation continued its growth in 1955. It had a total of 18,500,000 members representing 125 organizations in 31 countries. United States groups associated with the World Veterans federation were the Amvets, the American Veterans committee, the Blinded Veterans association, the Disabled American Veterans, the Military Order of the Purple Heart and the Paralyzed Veterans association. The W.V.F.'s 1955 convention was held in Copenhagen, Den. Among the major resolutions: the great powers of the world were urged to create a pattern of international co-operation in the use of nuclear energy; the four leading powers were urged to abstain from violent means in settling disputes; Asian representation should be included in the United Nations Security council; UN technical assistance to underdeveloped countries should be continued and extended; the W.V.F. should continue its unalterable opposition to discrimination on grounds of race, religion and national origin.

(Mo. Pr.)

Veterinary Medicine. During 1955 few diseases of animals made news. However, two foreign virus diseases of sheep which had first been diagnosed in the United States in 1952 were still a problem. Bluetongue, which is spread by insects and which is difficult to eradicate, was again reported from several southwestern states. It was being controlled with the aid of a new vaccine. Scrapie, the slow-developing but fatal nerve disease, was found in Iowa and again in Indiana. All of the affected and exposed sheep were immediately slaughtered. Scrapie had now appeared in 12 states from coast to coast. Signs of the disease sometimes do not appear for two or more years after exposure, so authorities were closely watching hundreds of flocks which had sheep purchased from other flocks later found to be infected.

Mucosal Diseases of Cattle.—This group, which apparently consists of two or more serious diseases that are probably caused by closely related strains of virus, were being intensively studied. They affect young cattle chiefly, producing high fever and variable lesions throughout most of the respiratory and digestive tracts. These new diseases until recently had been studied independently as “virus diarrhoea” in New York and Indiana, as “mucosal disease” in Iowa, as “upper respiratory disease” in California and as “red nose” or “necrotic rhinotracheitis” in Colorado. Some form of this disease complex had been found in at least 20 states. In some forms only a few animals in a herd may be affected, most of which die; with other forms many are affected but only a few die, although recovery may take weeks. This group presented a serious problem, not only because of the economic loss, since they show little response to treatment, but because their symptoms resemble those of the dreaded foreign cattle disease, rinderpest. Thus if rinderpest were to appear in the United States it might get quite a foothold before being positively differentiated from these diseases. There was a vaccine for rinderpest but none for the mucosal diseases.

Swine Erysipelas.—This disease, which may be either a quick killer or merely acrippler (chronic arthritis or heart valve disease), had caused serious losses to the swine industry in an increased number of states in recent years. It probably could not be eradicated since it is caused by a germ which can live in the soil or in the tonsils and other tissues of apparently normal or chronically affected animals. However, it had been fairly well controlled by vaccination for many years, using a living culture (outlawed in some states) with serum. Two new types of vaccine, a killed bacterin and a nonvirulent living vaccine, were recently introduced but their comparative value had not been determined. Erysipelas is prevalent in turkeys and also may affect man (erysipeloid) and other species.

Parakeratosis.—This chronic disease of young swine in which the skin becomes dry, wrinkled and scaly was found to be caused by a zinc deficiency. It can be prevented or corrected by increasing the zinc or reducing the calcium in the ration, or by doing both. An excess of calcium seems to interfere with the body's assimilation of zinc.

Mycoses or Fungus Diseases.—In several species of animals these were receiving increased attention. In some cases the fungus growth had been encouraged by the increased use of antibiotics which kill germs that oppose the growth of fungi. The udders of some cows had been permanently ruined by fungus infection which probably was introduced during the careless injection of antibiotics into the mammary gland.

Haemorrhagic Disease of Young Chickens.—Marked by haemorrhages in various tissues and often fatal, this disease was believed by many to be associated with the addition of various drugs to the feed in attempts to control coccidiosis or other diseases. A similar condition had been produced experimentally

by continuous feeding of certain sulfa drugs, and it had been prevented by giving vitamin K, which reduces haemorrhages by speeding up blood coagulation. However, the disease thus produced differed from the field disease, especially since vitamin K seemed to have no effect on field cases.

Psittacosis.—This virus disease of psittacine birds (parakeets, parrots) had caused a greatly increased number of respiratory infections in man in recent years. The causative agent belongs to the small group of viruses (a large type) which are susceptible to certain antibiotics. Antibiotics, therefore, were successfully used not only in the treatment of human cases but in controlling the disease in breeding colonies of birds. A similar if not identical disease in turkeys, pigeons and other nonpsittacine birds is called ornithosis. Many persons working with such birds were reported to be infected in 1954, but few if any in 1955. To prevent such infection, authorities recommended the inspection and blood testing of large commercial flocks, plus antibiotic treatment to eliminate the infection when it is found.

Feline Infectious Anaemia.—This newly recognized but widespread disease of cats is caused by a tiny organism which invades the red blood cells causing gradual weakness, loss of appetite and often a fatal anaemia. The organism (a *Bartonella*) is related to those which cause similar diseases in a few other species, such as icterohaemia or eperythrozoonosis in swine. The cat disease does not spread readily and, if treated in time, responds to blood transfusions and certain arsenical therapy.

Hepatitis X.—This noninfectious but usually fatal disease of dogs, which had been reported in several southeastern states since 1952, was found to be a chronic food poisoning. It could probably be eliminated, therefore, just as two cattle diseases were; namely X disease or hyperkeratosis and soybean-meal poisoning. In both of these, changes in feed-processing methods removed the toxic agent.

In 1955 there were 900 students graduated from the 19 schools of veterinary medicine in the United States and Canada. Freshmen in the 17 U.S. schools are required to have two years of preprofessional college training, but usually more than 25% have advanced degrees. (See also AGRICULTURAL RESEARCH SERVICE.) (W. A. A.)

Vietnam. A country forming the easternmost part of the Indochinese peninsula. Until World War II it was divided in two French colonies and the French Protectorate of Annam. After an eight-year war, civil, local and international at the same time, on July 21, 1954, Vietnam was *de facto* divided in two independent republics. Areas and populations are:

	Area (sq. mi.)		Population	
	1948	1955 (est.)	1948 (est.)	1955 (est.)
Democratic Republic of Vietnam •	126,600	63,000	22,663,000	13,000,000
National Republic of Vietnam • •		63,600		10,000,000

Three-quarters of the total population live on the coastal plain; *i.e.*, on 10% of the total territory, the Red river delta (north Vietnam) and the Mekong delta (south Vietnam) being among the world's most densely populated areas. Language: mainly Vietnamese. Religion: mainly Confucian, with three sects (Cao-Dai, Hoa-Hao and Bin-Xuyen) and a Roman Catholic minority.

Democratic Republic of Vietnam.—This comprises the former French colony of Tongking and the northern part of the empire of Annam. It is bounded on the north by China, on the west by Laos, on the south by the National Republic of Vietnam and on the east by the South China sea. Chief towns (pop., 1953 est.): Hanoi (cap.) 297,900; Haiphong (chief port) 188,600. President of the republic in 1955, Ho Chi-minh; chairman of the council of ministers, Pham Van-dong; first secretary of the Vietnamese Communist party, Truong Chin.

National Republic of Vietnam.—A member of the French

Union, it comprises the former French colony of Cochinchina and the southern part of the empire of Annam with its old capital Hué. It is bounded on the north by the Democratic Republic of Vietnam, on the west by Laos, Cambodia and the Gulf of Siam, and on the southeast and east by the South China sea. Chief towns (pop. 1953 est.): Saigon-Cholon (cap.) 1,614,200; Dalat 25,041. President of the republic and premier in 1955, Ngo Dinh Diem.

History.—By May 13, 1955 the evacuation of French forces from Haiphong was completed; troops of the Democratic Republic of Vietnam then marched in. Compensation was paid by the republic for the Tongking coal-working installations. France was represented in northern Vietnam by a high commissioner (Jean Sainteny) and still maintained the Institut Pasteur, The École Française d'Extrême-Orient and a lycée there. Of the 810,000 people who left northern Vietnam for the south, 300,000 were members of the armed forces, 10,000 French civilians, 470,000 Vietnamese civilians and the remaining 30,000 Chinese or Indian civilians. A Thai-Meo autonomous region was created. The Vietnamese railway system was linked with the Chinese by a line through Langson. Ho Chi-minh spent June and July in Peking and in Moscow, securing a promise of help in the form of money, equipment and foodstuffs to save his country from famine. China agreed to an 800,000,000 yuan (\$338,000,000) economic aid, while the U.S.S.R. made a gift of 400,000,000 roubles (\$100,000,000).

In September Pham Van-dong became prime minister and Ngo Nguyen-giap deputy prime minister, Ho Chi-minh remaining president of the republic.

Southern Vietnam was still distracted by the rivalry between the prime minister Ngo Dinh Diem, the religious sects and the emperor Bao Dai, who was still wielding his influence from his residence in France. In March the ministers representing the sects left the government, and fighting broke out in Saigon between Diem's troops and the Bin-Xuyen. In May, Diem convened a general assembly, which split into two sections, while a committee of the forces of revolution demanded the deposition of Bao Dai. On May 7 the Bin-Xuyen evacuated Saigon; but military operations against them and against the Hoa-Hao still went on in the rural areas. The third sect, that of the Cao-Dai, was divided into two factions; and in October a general of the sect deposed the "pope." Though still receiving some economic aid from France, Diem seemed to rely more and more on U.S. support. During the fiscal year 1955-56 U.S. aid amounted to \$320,000,000, of which 73% went to military, 18% for refugees and 9% for technical and economic assistance.

Diem proclaimed his intention of avoiding the referendum that the Geneva conference of the heads of the Big Four Powers had declared to be due in 1956. In October he recalled his delegation from Paris. When Bao Dai "dismissed" him (on the grounds that he had made himself dictator and rejected the unification of Vietnam), Diem retorted by organizing a referendum that deposed Bao Dai. (HU. DE.)

Education.—*Cambodia.* Schools: primary (1952) 2,170, teachers 4,770, pupils 174,444; secondary, including teachers' training schools (1954) 8, pupils 2,945, teachers 140; vocational (1952) 2, teachers 11, pupils 108. Institutions of higher education 4, including the National Institute of Law and Economics with 81 students in 1950. *Laos.* Schools (1953-54): primary 558, pupils 33,577 (excluding 185 schools closed in areas affected by the war); secondary (including 1 teachers' training) 7, pupils 1,142. *Vietnam.* Schools (1954): primary 3,138, pupils 58,121, teachers 11,063; secondary (including technical) 182, pupils 53,842, teachers 1,597; 1 teachers' training school, students 53. Institutions of higher education 5, including 1 university with 2,260 students and 67 teachers.

Finance.—Under the Paris agreements of Dec. 24, 1954, the piastre (called *real* in Cambodia and *jip* in Laos) was to remain provisionally equal to 10 metropolitan francs until Dec. 31, 1955, when its parity was to be decided unilaterally. (U.S. \$1=350 francs.)

Budgets. *Cambodia* (1953 est.) balanced at 114,000,000 piastres. *Laos* (1954), balanced at 632,212,520 piastres. *Vietnam* (1954): revenue 15,092,000,000 piastres; expenditure 50,372,000,000 piastres.

Foreign Trade.—(1954) Imports 121,950,000,000 fr., including 42,000,-



RESIDENTS OF HAIPHONG, Vietnam, holding banners as they awaited the arrival of pro-communist Vietminh occupation troops in May 1955

000,000 fr. from France; exports 33,780,000,000 fr., including 6,000,000,000 fr. to France, 4,000,000,000 fr. to rest of French Union, 8,000,000,000 fr. to the United States, 3,000,000,000 fr. to Japan.

Production.—(Metric tons, 1954): sugar 1,000; rice (*Cambodia*) 815,000, (*Vietnam*) 2,562,000 (*Laos*, 1952) 500,000; rubber (*Cambodia* and *Vietnam*) 79,320, (*Cambodia* 24,400); coal (*Vietnam*) 996,000; cement (*Vietnam*) 254,400; (1953): tin concentrates (Sn content, *Laos* and *Vietnam*) 268,000; sawn softwood (*Vietnam*) 27,000 cu.m.; sawn hardwood (*Cambodia* and *Vietnam*) 258,000 cu.m.; (1952, metric tons), tobacco (*Cambodia*) 4,500, (*Laos*) 1,000, (*Vietnam*, 1953) 7,400; maize (excluding *Laos*) 97,000.

Virginia. One of the 13 original states of the United States, Virginia was admitted to the union June 26, 1788; it is known as the "Old Dominion" and as the "Mother of Presidents." Southernmost among the middle Atlantic states, Virginia has an area of 40,815 sq.mi., including 922 sq.mi. of water. Pop.: (July 1, 1955, est.) 3,421,000; (1950 census) 3,318,680. Principal urban areas include the capital, Richmond, pop. (1950) 230,310, Norfolk 213,513, Arlington county 135,449, Roanoke 91,921 and Portsmouth 80,039. Once a predominantly agricultural state, Virginia is becoming steadily more urban; in 1940 farm population was 983,746 or 36.7%; by 1950, this had dropped to 732,000 or 22.2%.

History.—The year 1955 was an off year for the general assembly, which meets in regular biennial session in even-numbered years.

The governor's Commission on Public Education, consisting of 32 legislators, which had been set up to search for a policy the state could follow to meet the United States supreme court's ban on racial segregation in public schools, issued its report in November. It called for a wide degree of local option in dealing with the segregation problem. Under its proposals, localities would classify pupils by a variety of standards other than race or colour if they chose to continue public-school operation. Such schools would function as desegregated institutions.

For localities unwilling to operate desegregated public schools, the commission recommended a tuition grant program for individual school-age children, white and Negro. Those eligible for the grants would be expected to use them for studies in any private, accredited school of their choice. Constitutional changes were proposed to permit those grants to be made.

Gov. Thomas B. Stanley issued a call for a special session of the legislature to convene on Nov. 30 for the specific purpose of setting in motion the convening of a constitutional convention. The convention, in turn, would be limited to amending the constitution to permit the appropriation of public funds for private educational tuition grants.

Two important study groups were at work on proposed legislation. One, composed of legislators and private business executives, recommended that the state appropriate \$109,000,000 during the next six fiscal years for capital projects, with \$43,000,000 of this sum to be allotted to the improvement of mental hospitals, \$36,000,000 to expansion of institutions of higher learning, \$9,800,000 to construction and reconstruction of penal institutions, \$9,000,000 to enlargement of two state medical schools and lesser sums to other state agencies. The Capital Outlay Study commission proposed that this building program be financed out of expected revenues from existing taxes, coupled with an accelerated payment plan that would put income taxpayers on a more nearly current basis and permit Virginia initially to collect taxes for two years in a single 12-month period.

Principal officers of the government, all of whose terms were to expire in Jan. 1958, were: Thomas Bahnson Stanley, governor; A. E. S. Stephens, lieutenant governor; and J. Lindsay Almond, Jr., attorney general.

Education.—In 1954-55 elementary school enrolment was 540,537, including 402,199 white pupils and 138,338 Negro pupils. Secondary enrolment was 183,938, made up of 143,046 whites and 40,892 Negroes. The elementary-school teaching staff included 15,607 positions, the secondary and vocational staff 8,649 positions. In addition, there were 2,409 principals, head teachers and supervisors. Dowell J. Howard was state superintendent of public instruction.

Social Insurance and Assistance, Public Welfare and Related Programs.—For the year ended June 30, 1955, general relief payments went to 10,857 persons and totalled \$1,137,145; 20,832 persons received \$6,167,343 in old-age assistance payments; 12,852 families with 38,359 dependent children received \$6,848,098; 6,965 children under the foster care program got \$1,769,330; 6,085 totally and permanently disabled persons were paid \$2,091,986; and 1,522 blind persons got \$558,101. For the first ten months of 1955, 482,000 weekly payments were made for unemployment compensation, totalling \$8,851,765. Average daily population of six penal institutions for adults was 5,990 and of four industrial schools for juveniles was 784 at the close of the fiscal year ended June 30, 1955.

Communications.—As of June 30, 1955, Virginia had 7,984.66 mi. of primary highways and 40,638.13 mi. of secondary roads. During the June 30, 1955, fiscal year the state spent \$90,216,792 for construction, maintenance and operation of its highway systems, compared with \$88,098,208 for this purpose in the preceding 12-month period. Total railroad mileage in the state on Jan. 1, 1955, was 4,109.88. Virginia had 925,000 telephones in use as of Sept. 30, 1955.

Banking and Finance.—On June 30, 1955, Virginia had 185 state banks with 92 branches and 132 national banks with 73 branches. As of this date, deposits in national banks were \$1,420,830,000 and assets totalled \$1,551,662,000. At the same time, deposits in state banks amounted to \$1,065,534,000 and assets came to \$1,171,429,000. Resources on Dec. 31, 1954, of 20 industrial loan associations were \$31,600,000; of 45 building and loan associations were \$118,160,000; and of 73 credit unions were \$5,652,000.

For the fiscal year ended June 30, 1955, the state treasurer received revenues of \$415,285,633, compared with \$403,915,301 for the year before. Expenditures of the treasurer were \$411,240,662. The gross debt on June 30, 1955, was \$10,824,352; a sinking fund of \$4,429,705 left a net debt of \$6,394,646. The fiscal year ended with cash in the general fund amounting to \$44,408,967, along with investments valued at \$1,754,800.

Agriculture.—Unusual weather conditions throughout the 1955 growing season constituted generally unsettling factors for Virginia farmers. Unseasonably early frosts in the spring killed the blossoms in apple and peach orchards in many sections, forecasting drastic reductions in yield before the fruit could form. Generally good rainfall later in the year

Table I.—Principal Crops of Virginia

Crop	Indicated 1955	1954	Average, 1944-53
Corn, bu.	34,827,000	30,063,000	37,806,000
Wheat, bu.	6,171,000	6,936,000	7,851,000
Oats, bu.	6,992,000	7,070,000	4,217,000
Rye, bu.	374,000	408,000	343,000
Barley, bu.	3,990,000	3,978,000	2,535,000
Tobacco, lb.	177,564,000	166,458,000	158,699,000
Peanuts, lb.	209,050,000	174,900,000	207,413,000
Hay, all, tons	1,868,000	1,472,000	1,612,000
Apples, bu.	5,500,000	12,900,000	9,025,000
Peaches, bu.	315,000	1,200,000	1,533,000
Cotton, bales	12,000	10,200	18,300
Irish potatoes, bu.	6,369,000	4,789,000	7,775,000
Sweet potatoes, bu.	3,045,000	2,800,000	2,560,000
Soybeans, bu.	3,354,000	2,898,000	2,078,000

Source: U.S. Department of Agriculture.

ended three consecutive drought periods and helped raise the quantity and quality of tobacco, peanuts, corn, soybeans and potatoes brought to market. Hurricanes in late summer and early fall brought much-needed moisture to many areas, although wind damage and floods somewhat dimmed prospects for corn, tobacco and orchard yields in other sections. The total value of crops for 1954 was calculated by the Virginia department of agriculture at \$541,815,000, with livestock accounting for \$311,551,000 of this sum and general farm crops making up the remainder.

Manufacturing.—The value of products manufactured in Virginia in 1954 totalled \$4,347,220,000, according to estimates of the state department of labour and industry on the basis of reports from 2,000 manufacturing plants out of the 4,500 establishments in the state. The reporting firms accounted for 85% of the estimated total manufacturing employment in the state. The value reported represented a decline from the \$4,490,773,000 reported by the department for 1953. The number of persons engaged in manufacturing activities in 1954 was placed at 242,000; they were paid \$780,074,000; \$595,718,000 went to 206,600 production workers and \$184,356,000 went to 35,400 salaried and supervisory employees.

(W. B. F.)

Table II.—Principal Industries of Virginia

	All employees (in 000's)	Salaries and wages (in 000's)	Value added By manu- facture 1954 (in 000's)	Value added by manu- facture 1953 (in 000's)
All manufacturing	242.0	\$780,074	\$1,646,114	\$1,663,385
Food and kindred products	25.1	70,382	155,049	69,482
Tobacco manufactures	15.3	45,658	186,178	44,564
Textile mill products	38.2	110,093	156,288	125,873
Apparel and related products	19.2	39,748	49,044	56,936
Lumber and products (except furniture)	25.7	55,089	87,595	87,259
Furniture and fixtures	13.5	39,480	58,559	75,177
Paper and allied products	10.6	41,197	79,321	70,802
Chemicals and allied products	36.2	153,941	485,972	530,921
Leather and leather products	5.3	12,585	16,427	18,093
Stone, clay, and glass products	6.8	20,132	44,569	44,204
Primary metal industries	3.6	15,265	19,440	22,440
Fabricated metal products	7.4	30,783	57,408	49,158
All other manufacturing industries*	22.6	100,087	174,223	161,394

*Includes rubber products, products of petroleum and coal, transportation equipment and miscellaneous manufacturing industries.

Sources: Virginia Department of Labour and Industry; data obtained in preliminary annual survey of Virginia manufacturers for 1954 and final survey for 1953.

Table III.—Mineral Production of Virginia

Mineral	1953 (In short tons)		1952	
	Quantity	Value	Quantity	Value
Clays	952,000	\$ 928,000	940,000	\$ 896,000
Coal	19,119,000	102,022,000	21,579,000	114,861,000
Coke*	188,000	2,551,000	202,000	3,068,000
Feldspar	?	?	?	?
Lead	2,000	528,000	4,000	1,221,000
Lime	477,000	4,947,000	443,000	4,449,000
Sand and gravel	5,276,000	5,161,000	7,136,000	5,557,000
Stone	9,092,000	16,259,000	9,671,000	16,970,000
Zinc	17,000	3,835,000	13,000	4,452,000
Other minerals . . . . .	...	19,097,000	...	16,173,000
Total		\$152,777,000		\$164,679,000

*Values for processed materials are not included in the totals.

Mineral Production.—Table III shows the tonnage and value of those mineral commodities produced in Virginia in 1952 and 1953 (preliminary) whose value exceeded \$100,000. In 1953 Virginia was second among the states in output of kyanite and pyrite and third in ilmenite and manganese; and ranked 21st in the value of its mineral output with 1.06% of the U.S. total.

Virgin Islands. The Virgin Islands have the status of an organized but unincorporated territory of the United States, located 1,400 mi. southeast of New York city and 40 mi. east of Puerto Rico. The three largest islands, with a total area of 133 sq.mi., are St. Croix (pop. 12,103, census of 1950), St. Thomas (13,813) and St. John (749). The chief cities are Charlotte Amalie, the capital (11,469), on St. Thomas, and Christiansted (4,112) and Frederiksted (1,961) on St. Croix. On July 1, 1954, the U.S. census bureau estimated the total population at 22,000.

History.—On Aug. 10, 1955, Gov. Archibald A. Alexander resigned, and on Aug. 19 Pres. Dwight D. Eisenhower appointed Walter A. Gordon of Berkeley, Calif., to succeed him. Other ranking officials in 1955 were: government secretary, Charles K. Claunch, a native of Chicago, Ill.; administrative assistant to the governor, George W. Hamilton; U.S. attorney, Leon Miller; and judge of the district court, Herman E. Moore.

With the passage of public law 517 in 1954, the pattern of government financing in the Virgin Islands was changed. The government of the Virgin Islands is now financed jointly by the local revenues collected and by federal matching funds. The matching funds are taxes imposed by and collected under the

provisions of the internal revenue laws of the United States on articles produced in the Virgin Islands and transported to the United States. These matching funds are paid over to the government of the Virgin Islands during the fiscal year, as certified by the comptroller of the Virgin Islands. In addition, a separate amount is paid over to the Virgin Islands to be obligated and expended for emergency purposes and essential public projects only.

Education.—Education is compulsory for all children between the ages of 5½ and 15. In the three islands there were 32 public schools in 1955, consisting of 7 kindergartens, 15 rural schools, 7 city elementary schools, 1 junior high school and 2 junior-senior high schools. Total enrolment in public schools was 5,639. The school budget for the year was \$716,381. The per capita cost of \$217 represented an increase of \$32 more than the preceding year.

Banking and Finance.—Total revenue for the fiscal year ending June 30, 1955, from real property taxes, income taxes, matching funds and grant-in-aid funds, amounted to \$6,678,196. There are two banks in the Virgin Islands. The Virgin Islands National bank had assets of \$10,649,578.13 as of June 30, 1955, and on the same date the West Indies Bank and Trust company had assets of \$3,301,648.48.

Trade and Communications.—For the 11-month period July 1954 through May 1955, the value of exports was \$3,713,886; imports were \$11,786,060. During the year ended June 30, 1955, income from tourists was estimated at \$6,000,000. In 1955 there were in St. Thomas and St. John: highways, 90 mi.; motor vehicles, 1,738; airports, 1; air lines, 3; telephones, 1,360. In St. Croix there were: highways, 150 mi.; motor vehicles, 1,309; airports, 1; air lines, 2; telephones, 627. There were four newspapers in the Virgin Islands.

There was daily air mail and passenger service between St. Thomas and St. Croix and daily boat mail and passenger service between St. Thomas and St. John, and cable offices in St. Thomas and St. Croix.

Social Services.—Total public assistance payments for the fiscal year 1954-55 amounted to \$254,701. This included old-age assistance \$136,564.37; aid to dependent children \$65,325.17; aid to the blind \$7,193.32; aid to the disabled \$19,968.38; general assistance \$16,968.38; trust funds monthly grants \$990; emergency and special aid \$8,089.14. The average monthly payments per recipient were: for old-age assistance \$18.56; aid to the blind \$18.36; aid to the disabled \$19.27; general assistance \$18.37; aid to dependent children \$9.36 per person, in families with children.

Three homes were maintained for the aged and indigent, and (since 1954) one school for delinquent boys.

(G. W. H.)

Virgin Islands, British: see LEEWARD ISLANDS.

Viruses: see MEDICINE; POLIOMYELITIS; RESPIRATORY DISEASES.

Visual Education: see MOTION PICTURES.

Vital Statistics: see BIRTH STATISTICS; CENSUS DATA, U.S.; DEATH STATISTICS; INFANT MORTALITY; MARRIAGE AND DIVORCE; SUICIDE STATISTICS.

Vitamins and Nutrition. Vitamin Supplementation and Physical Performance.

—Human emotions and behaviour as well as physical status are influenced by poor nutrition. However, the possibility that beneficial effects may be derived by the administration of exceedingly large amounts of vitamins to subjects on diets adequate enough to prevent the development of clinical or subclinical deficiency states is subject to question. The relation of nutrition and of vitamin supplementation to physical performance is of special interest to the armed forces. R. Ryer *et al.* reported in 1954 on studies designed to determine whether the functional abilities of the soldier in a cold environment might be improved by supplements of ascorbic acid and of B-complex vitamins. Eighty-six military personnel volunteered as test subjects. The experiments were carried out during the winter season at an elevation of 8,300 ft. above sea level. The subjects were randomly divided into two groups. The control group (42 men) received a capsule containing 6 mg. of ascorbic acid four times a day. The supplemented group (44 men) received four times a day a capsule which contained thiamine (10 mg.), riboflavin (10 mg.), niacinamide (100 mg.), calcium pantothenate (80 mg.), pyridoxine (40 mg.), folic acid (2.5 mg.), ascorbic acid (300 mg.) and vitamin B-12 (4 micrograms). After a control period to allow the subjects to adjust to the prescribed conditions of diet, physical activity and clothing, and to the cold and the altitude, weekly measurements of physical performance

were made. During the first six weeks of the experiment the caloric intake averaged 3,500 cal. daily. The calories were restricted to 2,250 cal. daily during the last three weeks of the study. The clothing worn for outdoor activities was restricted to less than the amount required for comfort when inactive under the prevailing conditions.

There was no significant difference between the two experimental groups with regard to results of the physical performance tests. The relative caloric deficit of the last three weeks did not lead to detectable impairment of physical performance. The supplemented group showed a lesser (but statistically significant) fall in rectal temperature during exposure to the cold while at rest than did the controls. No differences were revealed between the two groups in six psychological tests and in biochemical measurements of urinary nitrogen excretion, blood glucose, haemoglobin, creatinine excretion and 17-ketosteroid excretion. The supplemented group demonstrated the expected increases in blood and urine levels of ascorbic acid, and both groups excreted increased amounts of oxidized ascorbic acid during exposure to cold. These experiments failed to demonstrate any improvement in physical or mental performance in soldiers undergoing physical activity in the cold by the addition of large doses of B-vitamins and of ascorbic acid to a ration adequate enough to maintain level of performance and to prevent clinical nutritional deficiency states. Vitamin supplementation appears to be ineffective in increasing the efficiency of an adequate diet consisting of natural foodstuffs which takes into account the total energy requirement of an individual in assuring maximal physical performance.

Vitamin B-12.—Most vitamins are readily absorbed from the intestine of man. However, vitamin B-12 absorption is a much more difficult process, requiring the presence of a special component of gastric juice (intrinsic factor). Even in the presence of normal amounts of intrinsic factor the intestinal absorption of vitamin B-12 may be surprisingly limited. B. J. Jerzy Glass and associates studied the effect of the size of the dose of vitamin B-12 (labelled with radioactive cobalt) on the degree of intestinal absorption. Using 20 normal individuals or patients with "irrelevant" disorders, the amount of radioactivity accumulated by the liver following oral administration of increasing doses of vitamin B-12 was compared with that which took place after similar doses of the vitamin given intramuscularly. With increasing oral doses of vitamin B-12 there was a rapid and progressive fall in absorption. The liver uptake following an oral dose of 0.5 micrograms of vitamin B-12 was 90.5% of that which occurred following the intramuscular injection, while only 3% as much liver accumulation took place with oral as compared with intramuscular administration with doses of 50 micrograms. An increase in the oral dose of vitamin B-12 from 0.5 to 50 micrograms only resulted in an increase in liver accumulation from an estimated 0.45 to 1.5 micrograms daily.

The authors interpreted their results as indicating that a partial mucosal block exists for the absorption of B-12. Unpublished data were cited which indicate that the failure to absorb greater amounts of vitamin B-12 cannot be corrected by the administration of additional intrinsic factor. Present information suggests that the absorption of vitamin B-12 by the human intestine is a complicated process involving the presence of a facilitating substance (intrinsic factor) and possibly an intestinal acceptor substance.

Vitamin A and Carotene in the Aging.—Although there had been a number of longitudinal nutritional studies of children and young adults, there were relatively few which encompassed older people. One such study attempted to correlate health over a period of time with nutrient intake and included

as subjects more than 500 supposedly healthy men and women over 50 years of age living in San Mateo county, Calif. One phase of the study concerned with correlations which might exist between dietary vitamin A and carotene intake and status as indicated by circulating blood levels and the presence or absence of the stigmata of deficiency or excess was discussed by H. L. Gillum and coworkers. Of the 514 subjects who participated in this study all were living in their own homes except 44 men over 60 years of age who were living in the county home. A small decline in both vitamin A and carotene serum levels occurred with age in both men and women. No significant sex differences were found. The probable vitamin A equivalent of the dietary intakes was determined and amounted to 33 micrograms per kilogram of body weight for the men living in their own homes, 27 for the women and 21 for the men in the county home. About 11% of the men and 20% of the women took vitamin A supplements more or less regularly. A slight positive correlation was established between total vitamin A intake and serum vitamin A level for both men and women. The correlation between serum carotene and carotene intake was more pronounced. Thickening of the bulbar conjunctiva which occurred in 94% of the subjects and other changes in the conjunctiva and skin were not more marked in subjects with low serum levels of vitamin A than in those with high levels. The relationship of age to the distribution of these signs was more marked than to vitamin A levels or intakes. In spite of a generous intake of vitamin A maintained by the majority of the older subjects, the findings of the study showed a trend toward a lowering of these levels with age.

Riboflavin and Stress.—Clear-cut physiologic response (the so-called stress response) occurs in animals following a variety of stimuli such as exposure to cold, heat or high altitude in the presence of a functioning adrenal cortex. An increased rate of gluconeogenesis (glucose formation) is one of the biochemical manifestations of the stress response. The importance of riboflavin to this response was clearly demonstrated in a report of B. R. Forker and A. F. Morgan. Weanling Long-Evans rats were exposed to low oxygen tension (anoxia) as the stress factor and the increase of liver glycogen (which reflects gluconeogenesis) in the fasted animal was used as the criterion of response. The animals were given a purified diet with and without riboflavin. Animals subjected to anoxia were fasted for 24 hours in a specially designed chamber with oxygen tension to simulate 20,000 ft. altitude. Their livers were then analyzed for glycogen and compared with the glycogen levels of rats which were fasted at sea-level oxygen tensions. The purpose of the preliminary experiment was to study the effect of time on the riboflavin-deficient diet on the response to anoxia. After approximately three weeks of feeding the animals receiving the deficient diet gave essentially no gluconeogenic response to anoxia while animals receiving riboflavin demonstrated approximately a tenfold increase in liver glycogen in response to anoxia.

The effect of the adrenal hormones and of a single injection of riboflavin on the response to anoxia was studied in a second experiment. The deficient animals again failed to respond; however, the injection of 0.1 mg. of riboflavin into the deficient animals immediately before the test resulted in restoration of the gluconeogenic response to the stress. A similar effect followed the administration of adrenal cortical extract or cortisone to the riboflavin-deficient animals. Desoxycorticosterone was without effect. Likewise adrenalectomized rats receiving the complete diet failed to respond to the anoxia.

These experiments demonstrated that the adrenal glands or their hormones were necessary for the gluconeogenic response to anoxia since adrenalectomized animals failed to respond even though fed a complete diet. The riboflavin effect was not the

result of a failure of the target tissues to respond to the hormones since the riboflavin-deficient animals responded to cortisone or complete cortical extract.

It may be concluded that riboflavin is required either for synthesis of the adrenal hormones or else it functions in the mechanism concerned with their elaboration. The vitamin may function in a direct way since riboflavin was effective when injected into the deficient animals immediately before the test. (See also NUTRITION, EXPERIMENTAL.)

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Wages and Hours. Reversing the previous year's tendency, real wages in the U.S. in 1955 rose from 5.6% to 8.2% for corresponding months in 1954. The high index in 1955 of 166.5 was 3.1% above the 1954 high of 161.5, based on 1939 averages (see Table I).

The general improvement in the level of business operations in 1955 caused an increase of 6.6% in manufacturing employment over 1954 (July figures). During the same period, manufacturing payrolls increased 14.9%. Total wage and salary payments moved from the \$16,241,000,000 level in June 1954 to \$17,250,000,000 in June 1955, which was an increase of 6.2%.

Average weekly earnings for all manufacturing industries increased 7.7%, while the cost of living (consumer's price index) moved from a 1954 high of 193.8 to a 1955 high of 193.0, which represented a drop of 0.41%. Earnings in nonmanufacturing industries increased in all but anthracite coal mining, where the decline was 5.9%.

The greatest increase in weekly take-home pay was in bituminous coal mining, where the average went up by 17.6% over 1954. The next highest increase, 14.7%, was in iron and steel, followed by a 12.3% increase in rubber products. Smallest increases in average weekly earnings were in general merchandise stores (0.6%) and leather and leather products (1.3%).

An upsurge in investment in capital goods resulted in an 8.4% increase in average weekly earnings in the durable goods industries, while earnings in nondurables increased 4.9%.

Earnings exceeded \$90 per week in six industries, compared with only three industries in 1954. Ten industries paid average weekly earnings exceeding \$80 and six industries less than \$60 in 1955.

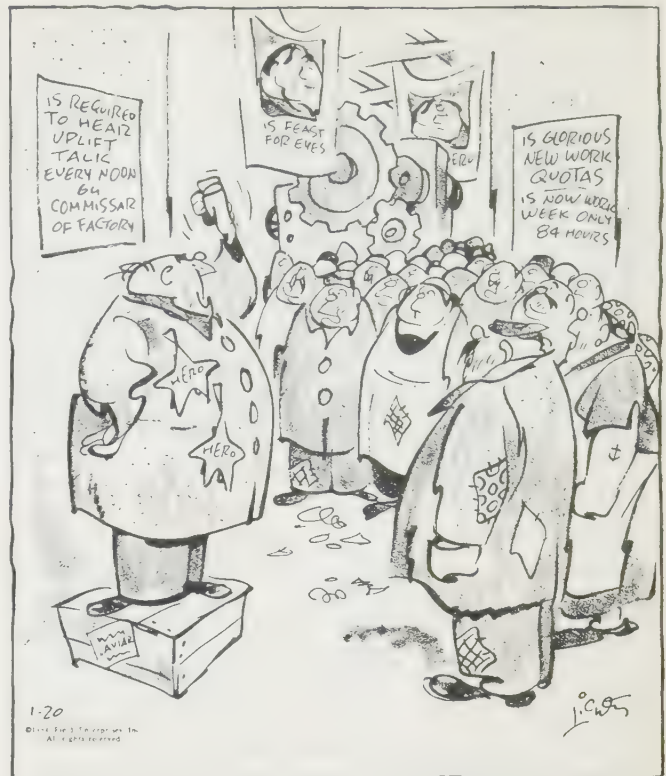
The length of the average work week dropped in six industries in 1955, but in three of these the decline was less than 1%.

Table I.—U.S. Real Wage Indexes

(1939=100)

Months	Consumers' price index		Index of average weekly manufacturing wages		Index of real wages	
	1955	1954	1955	1954	1955	1954
Jan.	192.3	193.8	310.0	297.2	161.2	151.0
Feb.	192.3	193.5	313.2	298.7	162.9	154.3
March.	192.3	193.1	314.8	296.4	163.7	153.5
April	192.1	192.8	314.2	294.2	163.6	152.6
May	192.1	193.5	319.8	298.1	166.5	154.1
June	192.5	193.6	319.0	300.4	165.7	155.2
July	193.0	193.8	320.0	297.2	165.8	153.3
Aug.	—	193.5	323.2	297.8	—	153.9
Sept.	—	193.0	—	301.2	—	156.1
Oct.	—	192.6	—	302.7	—	157.2
Nov.	—	192.8	—	308.3	—	159.9
Dec.	—	192.3	—	310.6	—	161.5

Source: Survey of Current Business, United States Department of Commerce.



"IS LUCKY YOU ARE WORKING HERE, COMRADE WORKERS . . . Capitalist slave workers in U.S. work only 40 hour week . . . HERE is no such unemployment . . ." a 1955 cartoon by Lichty of the Chicago Sun-Times Syndicate

In the previous year, average weekly hours dropped in all but three industries. The longest work week in 1955 was in street railways and buses. The general pattern of increases in average weekly hours meant more overtime pay, which contributed to the rises in weekly earnings in several industries. Workers in 19 industries worked more than 40 hours per week.

Anthracite coal mining had the shortest work-week average (34.5 hours), followed by general merchandise stores (35.2 hours) and apparel manufacturing (36 hours).

Highest average hourly earnings were paid in the building construction industry (\$2.64), followed by \$2.53 in bituminous coal mining and \$2.33 in iron and steel. Fourteen industries paid average hourly earnings of more than \$2, compared with 11 industries in the preceding year.

Hourly rates of pay increased in all industries in 1955 except two. These were anthracite coal mining (which showed a decline of one cent, or 0.4%) and apparel (which also declined one cent, or 0.7%). The greatest proportionate gains in hourly rates were in lumber and wood products (10.3%), furniture and fixtures (10.2%), rubber products (7.7%) and stone, clay and glass (5.6%). The lowest monetary rate paid was 99 cents in hotels (not including tips, board, room or uniforms), but this was 4 cents higher than in 1954. For manufacturing as a whole, the increase in hourly rates was 5.0% compared with 1.7% in 1954 and 6.6% in 1953.

Table III shows a five-year climb of 29.9% in hourly earnings for all manufacturing industries. The greatest improvement over the five-year span was one of 46.3% in iron and steel. The industry showing the weakest increase over the five-year period was textile products (12.3%), followed by automobiles and lumber and allied products, both of which increased 24.5% from 1950 to 1955.

Common labour in road building in July 1955 received an average hourly rate of \$1.72, compared with \$1.51 in 1950. This represented an increase of 13.9%. Farm wages were up one cent

Table II.—Average U.S. Weekly Earnings, Average Weekly Hours, and Average Earnings Per Hour In Major Industries

Industry	Average weekly earnings		Average weekly hours		Average hourly earnings	
	1955	1954	1955	1954	1955	1954
ALL MANUFACTURING	\$76.36	\$70.92	40.4	39.4	\$1.89	\$1.80
Durable goods	82.21	75.83	40.9	39.7	2.01	1.91
Nondurable goods	67.89	64.74	39.7	39.0	1.71	1.66
Iron and steel	96.46*	84.10*	41.4*	38.4*	2.33*	2.20
Electrical machinery	73.87	71.16	39.5	39.1	1.87	1.82
Nonelectrical machinery	86.53	80.60	41.6	40.1	2.08	2.01
Transportation equipment	93.63	84.38	41.8	39.8	2.24	2.12
Automobiles	89.02*	84.89*	40.1*	39.3*	2.22*	2.16
Nonferrous metals	82.82*	79.19*	40.6*	40.2*	2.04*	1.97
Lumber and wood products	70.00	63.34	40.2	40.6	1.72	1.56
Furniture and fixtures	65.53	62.02	40.7	39.5	1.73*	1.57
Stone, clay and glass	76.86	71.51	41.1	40.4	1.87	1.77
Textile mill products	54.25	51.27	39.6	37.7	1.37	1.36
Apparel, etc.	47.88	47.17	36.0	35.2	1.33	1.34
Leather and leather products	52.03	51.38	37.7	37.5	1.38	1.37
Food and food products	71.90	69.72	41.8	41.5	1.72	1.68
Tobacco manufactures	54.29	51.79	38.5	37.8	1.41	1.37
Paper and allied products	79.30	74.20	43.1	42.4	1.84	1.75
Printing and publishing	90.95	86.78	38.7	38.4	2.35	2.26
Chemicals and allied products	83.64	78.94	41.2	40.9	2.03	1.93
Products of coal and petroleum	99.29	94.12	41.2	41.1	2.41	2.29
Rubber products	86.52	77.03	41.2	39.5	2.10	1.95
Miscellaneous manufacturing industries	66.40	62.56	40.0	39.1	1.66	1.60
NONMANUFACTURING						
Coal mining	86.25*	91.36*	34.5*	36.4*	2.50*	2.51*
Anthracite	98.42*	83.66*	38.9*	33.6*	2.53*	2.49*
Bituminous	88.33*	83.44*	42.1*	40.7*	2.11*	2.05*
Metalliciferous mining	81.28*	78.92*	43.7*	43.6*	1.86*	1.81*
Street railways and buses	70.74*	67.16*	39.3*	38.6*	1.80*	1.74*
Telephone	79.52*	77.15*	42.3*	41.7*	1.88*	1.85*
Telegraph	85.28*	82.40*	41.0*	41.2*	2.08*	2.00*
Gas and electric utilities	77.33*	74.12*	40.7*	40.5*	1.90*	1.83*
Wholesale trade	41.89*	41.65*	35.2*	35.6*	1.19*	1.17*
General merchandise stores	40.99*	39.81*	41.4*	41.9*	.99*	.95*
Hotels	97.15*	95.46*	36.8*	37.0*	2.64*	2.58*
Building construction						

*June.

Source: Survey of Current Business, United States Department of Commerce.

per hour to 88 cents, which was halfway between the 1953 and 1954 rate. Farm wages do not include a monetary evaluation of room and board, which normally are furnished in addition to cash payment.

Table III.—Rise in Hourly U.S. Earnings Rates

Industry	1950					Index, 1955	
	(August rates)					(1941 = 100)	
ALL MANUFACTURING	\$1.464	\$1.597	\$1.663	\$1.77	\$1.80	\$1.89	253.7
Durable goods	1.539	1.683	1.758	1.88	1.91	2.01	242.2
Nondurable goods	1.374	1.482	1.544	1.61	1.66	1.71	259.9
Iron and steel	1.593	1.877	1.946	2.20	2.20	2.33†	267.5
Machinery (nonelectrical)	1.603	1.764	1.846	1.96	2.01	2.08	248.8
Automobiles	1.783	1.937	1.968*	2.16	2.16	2.22†	210.0
Lumber and allied products	1.382	1.474	1.558	1.65	1.56	1.72†	292.5
Textile products	1.220	1.311	1.349	1.36	1.36	1.37	257.0
Food and food processing	1.343	1.457	1.541	1.60	1.68	1.72	261.4
Tobacco products	1.097	1.144	1.169	1.28	1.37	1.41	271.2
Rubber products	1.587	1.704	1.850	1.95	1.95	2.10	243.9
NONMANUFACTURING							
Coal mining	1.976	2.225	2.224	2.46	2.51†	2.50†	252.8
Anthracite	2.001	2.216	2.256	2.47	2.49†	2.53†	244.9
Bituminous	1.485	1.583	1.672	1.78	1.83†	1.90†	238.1
Building construction	2.025	2.207	2.282	2.47	2.58†	2.64†	263.7

*July figures.

†June figures.

Source: Survey of Current Business, United States Department of Commerce.

In summary, 1955 wage payments reflected the fillip experienced in general business activity. This also was true in manufacturing employment as well as in average hourly and weekly earnings. (See also AGRICULTURE; BUILDING AND CONSTRUCTION INDUSTRY; BUSINESS REVIEW; LABOUR UNIONS; LAW; PRICES.)

(D. J. H.)

Wales: see GREAT BRITAIN & NORTHERN IRELAND, UNITED KINGDOM OF.

Walnuts: see NUTS.

War, Law of: see INTERNATIONAL LAW.

Warren, Earl (1891—), U.S. jurist, was born on March 19 at Los Angeles, Calif. He was graduated from the University of California, Berkeley, in 1912, and received his law degree in 1914. During World War I he served in the army, and from 1925 to 1938 he was district attorney of Alameda county in California. In the latter year he was elected attorney general of California. He won a reputation as a "racket buster" and in 1942 was elected governor of California. In 1946

he shattered precedent in the state by winning both the Republican and Democratic nominations in the June primaries, making his re-election assured. He ran as vice-presidential candidate on the G.O.P. ticket with Thomas E. Dewey in 1948, but lost in the unexpected Democratic national victory.

Warren was elected to his third term as governor of California and took office in Jan. 1951. At the Republican national convention in Chicago, Ill., July 11, 1952, Warren received 81 votes on the first and only ballot, which nominated Dwight D. Eisenhower.

On Sept. 30, 1953, President Eisenhower selected Warren as the 14th chief justice of the United States, succeeding Fred M. Vinson. He was confirmed by the U.S. senate on March 1, 1954 (having been sworn in the previous Oct. 5 while the senate was not in session).

In May 1954 Chief Justice Warren read the decisions, which he had written himself, and which reflected the unanimous opinion of the court, that public school racial-segregation laws in the United States were unconstitutional. On May 31, 1955, however, the court in a decision written by Warren set no specific deadline for the end of segregation, except that it should be accomplished "with all deliberate speed."

Warren on April 15, 1955, declared that he had left politics permanently to serve on the supreme court bench and would decline any nomination to the presidency.

Washington. A state in the extreme northwestern United States, popularly known as the "Evergreen state," Washington was admitted to the union Nov. 11, 1889. Total area: 68,192 sq.mi., of which 66,786 sq.mi. is land. Pop. (1950) 2,378,963; native white 2,125,495, foreign-born white 191,001, Negro 30,691 and other races 31,776. According to the U.S. bureau of the census estimate, the state's total population on July 1, 1955, was 2,497,000. In 1950 the urban population was 1,503,166 or 63.2% of the total population. The population of five largest cities, according to April 1, 1955, estimates (1950 figures in parentheses) were respectively: Seattle 555,000 (467,591); Spokane 182,000 (161,721); Tacoma 156,000 (143,673); Yakima 43,000 (38,486); Vancouver 41,950 (41,664). State capital, Olympia 17,200 (15,819).

History.—The state legislature met in its 34th regular session from Jan. 10 to March 10, 1955. For the third successive legislative year, the governor called the legislature to reconvene in extraordinary session which deliberated from March 11 to March 24. The department of public institutions was divided into the department of general administration and department of institutions. Ratification and approval was given the Western Regional Higher Education compact, whereby the 11 western states should co-operate in pooling facilities for graduate and professional education. A new law relating to subversive activities was passed, but its operation at the University of Washington, Seattle, was suspended when it was challenged in the courts by two professors.

At the special session, concerned chiefly with the budget and revenue bills, the retail sales tax was increased from 3% to 3½%, and special provisions in the form of use and transfer taxes were made to check circumvention. The governor, employing the item veto, eliminated the appropriation for kindergartens on the ground that public opinion did not favour state support and that the amount provided was inadequate and of no help to poorer districts. In response to the urgent suggestion of the governor, the state building program and its financing were placed under the administration of a state building financing authority consisting of the governor, state treasurer and the director of general administration. The authority of the Washington-Oregon Boundary commission, created in 1937 to secure

data necessary to determine a definite boundary between the two states in the lower Columbia river valley, was extended.

The state supreme court upheld the constitutionality of three laws. One, a fisherman's license law of 1953, forbids the sale and disposal of chinook or silver salmon caught in off-shore waters during closed season. Another, the slash responsibility law of 1951, charges the cost of fighting fires caused by slash burning to the owners of timber or persons responsible for the fire hazard. Also held valid was the law of 1951 which requires that in cities of more than 5,000, justices of the peace must be attorneys.

On Nov. 4 the state supreme court by a vote of 7 to 2 held unconstitutional the act creating the state building authority. This held in suspension a \$12,000,000 building program authorized by the legislature.

The chief state officers for 1955 were: governor, Arthur B. Langlie; lieutenant governor, Emmett T. Anderson; secretary of state, Earl S. Coe; treasurer, Charles R. Maybury; auditor, Cliff Yelle; attorney general, Don Eastvold; state superintendent of public instruction, Pearl A. Wanamaker (elected on non-partisan basis); commissioner of public lands, Otto A. Case; state insurance commissioner, William A. Sullivan; and chief justice of the state supreme court, Frederick G. Hamley.

Education.—On Oct. 1, 1954, the enrolment in public elementary schools was 309,067, in secondary schools 98,362, and in junior high schools 60,699, and the average daily attendance during the school year 1954-55 in these schools was 309,399, 88,457 and 59,033 respectively. The total number of teachers was 20,295 and the average salary of all certified personnel was \$4,422.47. Total current expenditures were \$134,683,450.13 and the cost per pupil in attendance was \$292.03. Institutions of higher education included the University of Washington, the State College of Washington, three state colleges of education, nine junior colleges, integrated with the secondary school program but operated with state funds, and 13 privately endowed universities and colleges in the state.

Social Insurance and Assistance, Public Welfare and Related Programs.—During the period Sept. 1, 1954, to Aug. 31, 1955, inclusive, public assistance in the state, including federal expenditures and state aid, cost \$78,227,956.08. An average of 122,771 persons received assistance to a total amount of \$71,335,681.01. An average of 20,550 received a total of \$7,901,220.56 in general assistance. An average of 62,204 old persons received a total of \$44,358,742.36. An average of 30,192 dependent children received a total of \$11,393,501.04. A total of \$2,211,492.84 was provided for the foster care of an average of 3,529 children. An average of 844 blind persons received a total of \$729,129.68. A total of \$4,740,314.50 in disability payments was paid to an average of 5,886 persons. A total amount of \$651,126.21 was provided for public assistance service, of which \$98,698.82 was extended to the blind and \$535,373.49 was provided for burials. Administration of the entire program cost \$6,239,813.50.

On June 30, 1955, 10 state charitable institutions had a total population of 11,477 and 5 correctional institutions had a total of 2,755. The total expenditures of both programs, excluding Cedar Creek Youth Forestry camp, for the fiscal biennium ending March 31, 1955, were \$27,492,233.28.

Communications.—Railroads in the state during 1954 carried freight to a total of 7,746,802,997 ton miles, and passengers to a total of 317,967,295 passenger miles. There were 5.895 mi. of track.

On Jan. 1, 1955, the total mileage of highways in Washington was 45,712 of which 10,640 mi. were federal aid highways. Total state expenditures for state highways during the period Feb. 1, 1954, to Jan. 31, 1955, were \$56,318,144. There were 880,422 telephone instruments in service Dec. 31, 1954.

Banking and Finance.—In 1955 the state board of equalization placed the value of real and personal property at \$6,295,076,322 and equalized it for purposes of taxation at \$3,142,538,161. The bonded indebtedness was \$52,363,000 and outstanding warrants amounted to \$22,852,049.67. For the year ending June 30, 1955, receipts, including cash and warrant transfers, were \$660,612,797.09 and disbursements, including cash and warrant transfers, were \$701,513,348.05. The treasurer's cash balance was \$74,233,409.96 on June 30, 1955.

On that day there were 113 banks, including four mutual savings banks, reporting a total capital of \$51,005,000; capital surpluses, undi-

vided profits, and reserves of \$190,000,000; deposits \$2,582,114,000; and total assets of \$2,797,045,000.

Agriculture.—According to the preliminary census figures of 1954 (1955 figures in parenthesis) the number of farms in the state, 65,175 (69,820), decreased since 1950, but the total area of farm land, 17,641,429 ac. (17,369,245 ac.), increased as did the average size, 270.7 ac. (248.6 ac.), as well as the average value, including buildings, \$29,006 (\$20,744). In 1955, the total value of farm land and buildings was placed at \$1,510,006,000 and the average value per acre at \$86.93. Crop land harvested in 1954 was reported as 4,342,833 ac. In that year the total value of farm production was \$631,443,000, of which \$274,594,000 represented field crops, \$193,396,000 livestock and products, \$113,782,000 fruit, nut and berry crops, \$28,340,000 specialty crops, and \$21,331,000 vegetable crops. Receipts from marketings amounted to a total of \$563,816,000, of which \$385,717,000 was from crops and \$178,099,000 from livestock and products. Government payments were \$4,459,000.

Manufacturing and Trade.—In 1953 the value added by manufacture was \$1,482,007,000, the total number of employees in manufacturing throughout the year was 190,214 and their total salaries and wages amounted to \$823,147,000. The average annual labour force during 1954 was 991,100, of which an average of 927,300 were employed. Domestic workers numbered 17,100; agricultural workers 85,200; and nonagricultural workers

Table II.—Principal Industries of Washington

	All em- ployees 1953	Salaries and wages 1953 (in 000s)	Value added by manufac- ture 1953 (in 000s)	Value added by manufac- ture 1952 (in 000s)
Lumber and products (except furniture)	58,394	\$238,855	\$394,691	\$416,104
Transportation equipment	40,899	187,691	252,815	244,412
Paper and allied products	15,460	69,287	200,718	195,279
Food and kindred products	20,203	78,162	172,441	*
Primary metals industries	12,514	56,941	148,210	121,339
Chemicals and allied products	11,533	60,915	100,418	*
Machinery (except electrical)	*	*	*	34,715
Printing and publishing industries	*	*	*	54,563
Fabricated metal products	5,760	25,888	41,956	44,055
Stone, clay and glass products	*	*	*	22,800

Source: U.S. Department of Commerce, *Annual Survey of Manufactures*, 1953.

*Withheld because the estimate did not meet publication standards, either on the basis of the associated standard error of estimate or on the basis of a consistency review.

842,100. Manufacturing establishments employed 188,900, the wholesale and retail trade 164,200, the service industries 81,900, the transportation companies and utilities 62,900 and government 146,200.

The output of lumber in 1954 was 3,374,000,000 bd.ft. (estimated); pulp production 2,377,000 tons; and plywood production for the Pacific northwest was 3,824,000,000 sq.ft.

The salmon pack for the Puget sound and Columbia river districts was 922,000 cases in 1954 as compared with 962,000 in 1953.

For the year 1954 the Washington customs district reported total exports of \$257,994,141 and total exports for consumption of \$234,233,226. (H. J. De.)

Table III.—Mineral Production of Washington
(In short tons, except as noted)

Mineral	1952		1953	
	Quantity	Value	Quantity	Value
Aluminum*	272,000	\$98,561,000	399,000	\$158,507,000
Clays	291,000	353,000	259,000	312,000
Coal	844,000	5,986,000	690,000	5,048,000
Copper	4,000	2,109,000	4,000	2,147,000
Gold (oz.)	55,000	1,917,000	63,000	2,190,000
Lead	12,000	3,782,000	11,000	2,899,000
Sand and gravel	13,322,000	9,422,000	11,182,000	9,318,000
Silver (oz.)	316,000	286,000	321,000	291,000
Stone	4,523,000	5,492,000	4,438,000	5,891,000
Zinc	20,000	6,674,000	33,000	7,541,000
Other minerals . . . . .	...	20,118,000	...	18,940,000
Total . . . . .	...	\$56,139,000	...	\$54,577,000

*Values for processed materials are not included in the totals.

Mineral Production.—Table III shows the tonnage and value of those mineral commodities produced in Washington in 1952 and 1953 (preliminary) whose value exceeded \$100,000. In 1953, Washington ranked first among the states in output of magnesite, and fourth in diatomite; and ranked 31st in the value of mineral output, with 0.38% of the U.S. total.

Washington, DISTRICT OF COLUMBIA, the capital of the United States, is administered by a commission of three appointed by the president, and, under the constitution, all legislation is passed by congress. Since the 1950 census the population of the district had grown rapidly and in 1955 reached 840,000, while the metropolitan area had a population of 1,827,200, an increase of 34.8% since 1950.

A proposed revision of the zoning laws was being prepared during 1955 by Harold M. Lewis of New York, who had called attention to the avoidable congestion in the downtown district which could be mitigated by zoning limitations of bulk and height of buildings.

At a meeting early in the year, Harland Bartholomew, chairman of the National Capital Planning commission, described

Table I.—Leading Field and Fruit Crops of Washington

Crop	Estimated 1955	1954	Average, 1944-53
Wheat, bu.	55,561,000	72,444,000	71,692,000
Apples, bu.	31,300,000	23,160,000	28,367,000
Hay, all, tons	1,517,000	1,545,000	1,564,000
Barley, bu.	16,950,000	20,520,000	4,396,000
Potatoes, bu.	16,005,000	13,200,000	10,595,000
Pears, bu.	7,280,000	5,620,000	6,853,000
Hops, lb.	20,670,000	23,074,000	22,057,000
Sugar beets, short tons	675,000	761,000	375,000
Peas, dry, 100-lb. bags	1,590,000	1,862,000	2,434,000
Strawberries, crates	1,177,000	1,338,000	990,000

Source: U.S. Department of Agriculture.

progress on realization of the comprehensive plan of 1950. He outlined the locations of the inner and outer circumferential routes. The commission had approved a street revision which promised to eliminate one third of the heavy traffic in the congested Union Station plaza. The commission of fine arts, under the chairmanship of David Finley, had co-operated with the planning commission to protect the mall and its axis bridge from the Lincoln memorial to Arlington cemetery against encroachments of a proposed central area mixed traffic bridge across the Potomac river. A recent recommendation would clear the Great Plaza in the triangle of federal buildings of hundreds of parked cars in order to develop the gardens planned by the McMillan commission. During the year the Washington-Baltimore parkway came into operation and the East Capitol bridge over the Anacostia river was opened for traffic in November. An aroused citizenry came to the rescue of Rock Creek park when it was proposed to route a through highway from the west down its entire length. Late in 1954 a supreme court decision written by Justice William O. Douglas upheld the powers of the District of Columbia Redevelopment Land agency and declared aesthetic provisions a legitimate part of sound redevelopment.

(H. Js.)

Water Supply and Conservation: *see* DAMS; GEOLOGICAL SURVEY, U.S.; IRRIGATION; MUNICIPAL GOVERNMENT; PUBLIC HEALTH ENGINEERING; SOIL CONSERVATION; TUNNELS.

Wealth and Income, Distribution of. The 1955 *Survey of Consumer Finances* in the United States, published by the board of governors of the federal reserve system, supplied information on the distribution of income for 1954 and liquid assets in early 1955. Previous surveys had made information available for the period 1945-53. The surveys were based on small field canvasses of consumer spending units, defined as all persons living in the same dwelling and related by blood, marriage or adoption who pooled their incomes for their major items of expense.

Survey data on the percentage distribution of spending units according to size of holdings of liquid assets—U.S. government securities, deposits in savings and checking accounts at banks, and shares in savings and loan associations—are provided in Table I. From 1954 to 1955 the percentage of spending units

Table I.—Distribution of Spending Units by Size of Liquid Asset Holdings

Amounts of liquid assets held*	1946	1950	1953	1954	1955
None	24%	31%	29%	26%	29%
\$1-\$199	15	16	16	15	17
\$200-\$499	14	11	12	13	12
\$500-\$999	14	10	11	13	10
\$1,000-\$1,999	14	10	12	11	10
\$2,000-\$4,999	13	13	11	13	12
\$5,000-\$9,999	4	6	5	5	6
\$10,000 and over	2	3	4	4	4
All units	100%	100%	100%	100%	100%
Median holdings of all units	\$400	\$250	\$300	\$350	\$250
Median holdings of those with assets	\$750	\$810	\$790	\$770	\$760

*Includes all types of U.S. government bonds, checking accounts and savings accounts in banks, postal savings and shares in savings and loan associations and credit unions. Excludes currency holdings.

Source: Board of Governors of the Federal Reserve System.

owning liquid assets declined from 74 to 71, as compared with the high of 76 reached in early 1946. The median holding of all spending units declined from \$350 in early 1954 to \$250 in early 1955, but the median holding of those that held some liquid assets was virtually unchanged.

Table II summarizes data provided by the surveys on the distribution of spending units and total money income (before taxes) according to size of income. There was little change in the distribution of income from 1953 to 1954. Previously there had been a general upward movement in the post-World War II distribution. The expansion of total money income in the post-war years resulted in a shifting of many consumers to higher

income levels. This shifting pervaded the income distribution. When the nation's spending units were ranked into tenths by size of income, it was found that the proportionate shares of

Table II.—Distribution of Spending Units and Money Income Received, by Income Groups

Annual income (money income before taxes)	1946 Spending units	1946 Total money income	1950 Spending units	1950 Total money income	1953 Spending units	1953 Total money income	1954 Spending units	1954 Total money income
Under \$1,000	17%	3%	13%	2%	10%	1%	10%	1%
\$1,000-\$1,999	23	12	17	7	13	4	13	5
\$2,000-\$2,999	25	21	19	13	14	8	14	8
\$3,000-\$3,999	17	20	19	18	16	12	17	13
\$4,000-\$4,999	8	13	12	16	16	15	14	14
\$5,000-\$7,499	6	11	14	23	20	27	21	28
\$7,500 and over	4	20	6	21	11	33	11	31
All units	100%	100%	100%	100%	100%	100%	100%	100%

Source: Board of Governors of the Federal Reserve System.

total money income received by all but the highest tenth in 1954 were quite similar to those in 1946. The share accounted for by the highest tenth declined from 32% to 29% over the period.

A longer-term comparison of changes in the distribution of income is afforded by Table III. This shows for selected years

Table III.—Percentage of Family Personal Income Received by Each Fifth of Consumer Units*

Consumer units ranked from lowest to highest income	1935-36	1941	1944	1950	1953
Lowest fifth	4.1%	4.1%	4.9%	4.8%	5.0%
Second fifth	9.2	9.5	10.9	10.9	11.3
Third fifth	14.1	15.3	16.2	16.1	16.5
Fourth fifth	20.9	22.3	22.2	22.1	22.3
Highest fifth	51.7	48.8	45.8	46.1	44.9
All groups	100.0%	100.0%	100.0%	100.0%	100.0%
Top 5%	26.5%	24.0%	20.7%	21.4%	20.7%

*Family personal income represents the current income (before income taxes) received by the civilian noninstitutional population. It includes income in kind as well as money income.

Source: Data for 1935-36 and 1941: Selma Goldsmith, George Jaszi, Hyman Kaitz and Maurice Liebenberg, "Size Distribution of Income Since the Mid-thirties," *The Review of Economics and Statistics* (Feb. 1954); data for later years: Selma Goldsmith, "Income Distribution in the United States, 1950-53," *Survey of Current Business*, U.S. Department of Commerce (March 1955).

of the period from 1935-36 to 1953 the percentage of all income going to each fifth of the total number of consumer units (families and unattached individuals), ranging from those with the lowest incomes to those with the highest.

The data indicate a distinct reduction in relative income differences. From 1935-36 to 1953, the share of total income received by the highest bracket declined from 52% to 45%, whereas all four of the other brackets improved their relative positions. The loss of the highest quintile affected mainly the top 5% and was heaviest for the top 1%.

State Distribution of Income.—The flow of individual incomes was relatively stable throughout the United States in 1954, the latest year for which department of commerce estimates were available in 1955. For the continental United States as a whole, personal income totalled \$285,000,000,000—about \$2,000,000,000, or just under 1%, higher than in 1953.

By regions, aggregate income in 1954 was about the same or slightly higher as compared with the previous record year 1953. (See Table IV.) In 34 states and the District of Columbia personal income in 1954 was within 2% of the 1953 total. In most of the remaining states the income change was 4% or less.

On a nation-wide basis, per capita personal income (total personal income divided by total population) was \$1,770 in 1954. Among states, per capita incomes ranged from \$873 in Mississippi to \$2,414 in Nevada. Others in the top rank—with average incomes of more than \$2,000 in 1954—were Delaware, Connecticut, District of Columbia, New Jersey, New York, California, Illinois and Michigan.

Table IV reveals clearly the relatively high income levels of the northern and far western parts of the country. Despite the substantial progress they had made over the past quarter of a century, the 11 southeastern states in 1954 had a composite per

Table IV.—U.S. Personal Income, by States and Regions*

State and region	Total personal income				Per cent change		Per capita personal income, 1954	
	Amount (in millions of dollars)				1953 to 1954		Per cent of national average	
	1929	1950	1953	1954	1953 to 1954	1954	Amount (doll.)	Per cent of average
Continental United States . . .	85,661	225,464	283,388	285,368	1	233	1,770	100
New England . . .	7,125	15,172	18,716	18,893	1	165	1,935	109
Connecticut . . .	1,641	3,848	5,145	5,159	0	214	2,361	133
Maine . . .	479	1,088	1,316	1,328	1	177	1,492	84
Massachusetts . . .	3,862	7,800	9,335	9,466	1	145	1,922	109
New Hampshire . . .	322	704	850	883	4	174	1,605	91
Rhode Island . . .	596	1,287	1,538	1,526	-1	156	1,823	103
Vermont . . .	225	445	532	531	0	136	1,408	80
Middle East . . .	28,259	61,616	75,311	75,863	1	168	2,000	113
Delaware . . .	240	688	869	880	1	267	2,372	134
District of Columbia . . .	615	1,768	1,896	1,885	-1	207	2,220	125
Maryland . . .	1,260	3,756	5,008	5,045	1	300	1,940	110
New Jersey . . .	3,714	8,738	11,585	11,769	2	217	2,219	125
New York . . .	14,105	28,002	33,325	34,228	3	143	2,163	122
Pennsylvania . . .	7,531	16,457	20,066	19,604	-2	160	1,785	101
West Virginia . . .	794	2,207	2,562	2,452	-4	209	1,232	70
Southeast . . .	9,196	32,001	40,839	40,819	0	344	1,233	70
Alabama . . .	856	2,660	3,381	3,274	-3	282	1,091	62
Arkansas . . .	564	1,532	1,792	1,760	-2	212	979	55
Florida . . .	753	3,641	5,035	5,313	6	606	1,610	91
Georgia . . .	1,015	3,510	4,528	4,460	-2	339	1,237	70
Kentucky . . .	1,020	2,839	3,656	3,620	-1	255	1,216	69
Louisiana . . .	866	2,937	3,741	3,751	0	333	1,302	74
Mississippi . . .	570	1,588	1,894	1,856	-2	226	873	49
North Carolina . . .	1,046	4,114	4,955	5,028	1	381	1,190	67
South Carolina . . .	470	1,859	2,527	2,414	-4	414	1,063	60
Tennessee . . .	982	3,291	4,072	4,074	0	315	1,212	68
Virginia . . .	1,054	4,030	5,258	5,269	0	400	1,480	84
Southwest . . .	4,254	14,668	18,722	19,084	2	349	1,544	87
Arizona . . .	254	978	1,428	1,468	3	478	1,582	89
New Mexico . . .	171	797	1,058	1,079	2	531	1,387	78
Oklahoma . . .	1,077	2,517	3,165	3,187	1	196	1,466	83
Texas . . .	2,752	10,376	13,071	13,550	2	385	1,574	89
Central . . .	25,468	64,402	81,844	81,947	0	222	1,920	108
Illinois . . .	7,280	15,982	19,595	19,812	1	172	2,155	122
Indiana . . .	1,973	6,007	8,081	7,769	-4	294	1,834	104
Iowa . . .	1,419	3,788	4,099	4,443	8	213	1,667	94
Michigan . . .	3,803	10,811	14,497	14,172	-2	273	2,017	114
Minnesota . . .	1,539	4,170	4,992	5,148	3	235	1,644	93
Missouri . . .	2,275	5,713	7,038	7,122	1	213	1,747	99
Ohio . . .	5,178	12,895	17,346	17,293	0	234	1,983	112
Wisconsin . . .	2,001	5,036	6,196	6,188	0	209	1,706	96
Northwest . . .	3,965	11,181	13,129	13,414	2	238	1,583	89
Colorado . . .	642	1,935	2,515	2,528	1	294	1,686	95
Idaho . . .	225	755	876	857	-2	281	1,433	81
Kansas . . .	999	2,650	3,275	3,417	4	242	1,689	95
Montana . . .	312	955	1,084	1,070	-1	243	1,729	98
Nebraska . . .	811	1,949	2,103	2,234	6	175	1,635	92
North Dakota . . .	253	777	742	753	1	198	1,186	67
South Dakota . . .	288	798	868	895	3	211	1,332	75
Utah . . .	284	890	1,126	1,130	0	298	1,483	84
Wyoming . . .	151	472	540	530	-2	251	1,779	101
Far West . . .	7,394	26,424	34,827	35,348	1	378	2,094	118
California . . .	5,502	19,650	26,592	27,026	2	391	2,162	122
Nevada . . .	79	314	466	507	9	542	2,414	136
Oregon . . .	647	2,456	2,906	2,881	-1	345	1,757	99
Washington . . .	1,166	4,004	4,863	4,934	1	323	1,949	110
Territory of Hawaii . . .	—	689	889	886	0	—	1,704	96

*The estimates of "state personal income" shown in this table differ in definition in one respect from the personal income data presented in Table IV of the article, *Income and Product, U.S.* This pertains to the exclusion from the state estimates of income disbursed by the federal government to its civilian and military personnel stationed outside the continental United States.

Source: United States Department of Commerce, Office of Business Economics.

capita income 35% below the average for all other states.

From 1929 to 1954, a period of tremendous economic growth, there was a pronounced relative shift of total income from the New England and middle east regions to the south and far west. As shown in Table IV, the rates of income expansion in the far west, southeast and southwest substantially exceeded the nationwide rise of 233%, whereas the gains in New England and middle east fell far short of it. The combined proportionate share of the nation's total income received by the south and far west increased 37% from 1929 to 1954, while that of the northeastern area (New England and middle east) declined 20%. However, aggregate income in the populous northeast in 1954 still accounted for one-third of the national total. (See also *INCOME AND PRODUCT, U.S.*) (C. F. Sz.)

United Kingdom.—Total personal income reached a record height of £14,544,000,000 in 1954, having risen by 6% over 1953—the same rate of increase as in the previous year. About

one-tenth of the total consisted of public or private pensions and similar benefits. Taxes on income and national insurance contributions took 12.5% of total personal income, slightly more than in 1953. On the other hand payments of indirect taxes (partly offset by subsidies) fell slightly to 12% of total income.

The distribution of personal income in 1954, shown in Table V, indicated a further upward shift in incomes resulting chiefly

Table V.—Distribution of Personal Income in the United Kingdom, 1954*

Range of income (in £)	Number of incomes† (in thousands)	Amount of income before tax (in million £)	Amount of income after income tax and surtax (in million £)
Under 250	8,540	1,440	1,432
250—500	8,690	3,280	3,158
500—750	5,900	3,575	3,364
750—1,000	1,750	1,475	1,335
1,000—1,500	700	840	699
1,500—2,000	210	360	274
2,000—5,000	257	748	484
5,000—10,000	41	275	124
10,000 and over	12	197	50
Total	26,100	12,190	10,920

*No account is taken of £2,354,000,000 accruing to persons which, for lack of information, could not be allocated to particular ranges of income.

†A married couple is for this purpose counted as a single income recipient.

Source: Central Statistical Office, *National Income and Expenditure 1955* (H.M.S.O., London, 1955).

in an increase of 1,300,000 in incomes over £500 compared with 1953. Since 1949 the number of incomes between £500 and £1,000 rose from 2,690,000 to 7,650,000, those between £1,000 and £2,000 from 550,000 to 910,000, and those above £2,000; i.e., incomes liable to surtax, from 230,000 to 310,000.

Personal incomes after income tax and surtax were more evenly distributed in 1954 than in 1949, and especially more evenly than in 1938. The major difference appeared in the share of the upper 1% of income recipients which was halved over the period. In 1938 about 50,000 had incomes, after tax, of more than £2,400, to which a net income of £6,000 corresponded in 1954 when only 190 persons had incomes exceeding this figure. (See also *BUDGET, NATIONAL*.) (T. BAR)

Weapons: see MUNITIONS.

Weather: see METEOROLOGY.

Weeks, Sinclair (1893—), U.S. cabinet member, was born at West Newton, Mass., on June 15. His father was John W. Weeks, secretary of war under Pres. Warren G. Harding. After graduating from Harvard university, Cambridge, Mass., in 1914, he worked for the First National bank of Boston, Mass., until 1923, except for a period during World War I when he served overseas as a captain with the first field artillery. He later became a successful manufacturer, was president of Reed and Barton, silversmith company of Taunton, Mass., and director of a number of large corporations.

Long active in Republican politics, he became a national committeeman for Massachusetts in 1940. He was treasurer of the Republican national committee from 1941 to 1944, and in the latter year served some months in the U.S. senate, on appointment to fill a vacancy.

In 1949 Weeks was chosen national finance committee chairman of the Republican party. On Jan. 21, 1953, he was sworn into office as secretary of commerce in Pres. Dwight D. Eisenhower's cabinet. The following March 31 he declared his opposition to price or wage controls of any kind. On July 29, 1954, Weeks announced record highway, airport and shipbuilding programs, sponsored and partly financed by the federal government.

Weeks was involved in a dispute with the U.S. house of representatives' judiciary subcommittee in the summer of 1955 over his refusal to divulge records of the department of commerce's business advisory council.

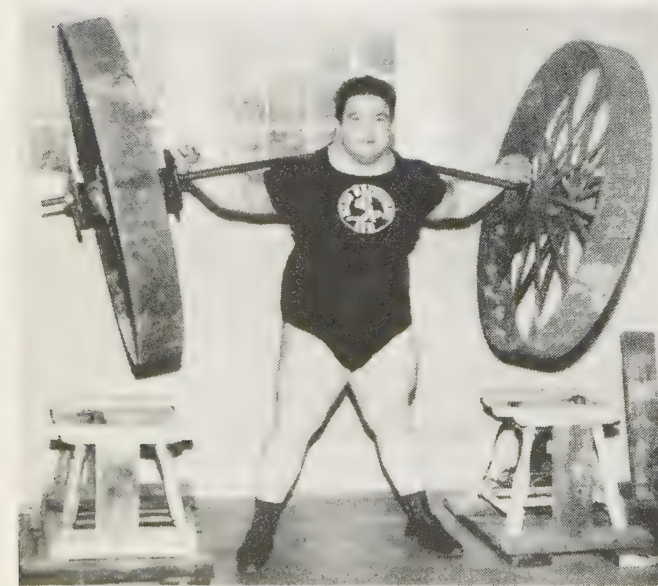
Weight Lifting. The visit of a United States squad to Moscow, U.S.S.R., and the rise of Americans in the sport of strong men sparked interest in this pastime in 1955. The first dual athletic competition between the United States and the Soviet Union since World War II was held on June 15 and resulted in a tie. Paul Anderson, young American who was to become a sensation during the year, lifted 402.34 lb. in the press and 425.48 lb. in the clean and jerk for new world records. His total in three events was 1,163½ lb., an all-time high. Nikolai Kostylev, Soviet lightweight, with a snatch of 270.06 lb., also established a universal mark.

Anderson, who hails from Toccoa, Ga., had become the first man to clean and press 400 lb. when he lifted 402 on April 16 in the All-South Amateur Athletic union championships. The 22-year-old star had gained undisputed acclaim as the world's strongest man in the national A.A.U. title meet at Cleveland, O., on June 5, when he bettered all recognized world standards. The Georgian pressed 390 lb., went to 435 lb. in the clean and jerk and added a 320 snatch for a total of 1,145 lb. to surpass the universal record.

Tommy Kono, Sacramento, Calif., in winning his fourth straight national title in the 181-lb. class, lifted 940 lb. for a new American mark. Four other U.S. standards were set in the meet, one being the 300-lb. snatch by Dave Sheppard in the 198-lb. division. Anderson climaxed a campaign of sensational feats by winning the heavyweight laurels in the world amateur championships at Munich, Ger., in October. He lifted a record 1,130 lb. for the Olympic triathlon, which consists of the three standard lifts—press, snatch and clean and jerk. He opened the heavyweight competition with a new world record by pressing 410 lb. to better his own mark by 7, then he elevated 320 lb. in the snatch and 400 lb. in the clean and jerk.

Among the major winners of 1955, with total pounds lifted, were the following:

U.S.—Soviet Team Match		
Bantamweight—Vladimir Stogov, U.S.S.R.	699½	
*Featherweight—Rafael Crimishkyan, U.S.S.R.	749	
Lightweight—Nikolai Kostylev, U.S.S.R.	826½	
Middleweight—Tom Kono, U.S.	901½	
Light-heavyweight—Trofin Lomakin, U.S.S.R.	931½	
Middle-heavyweight—Dave Sheppard, U.S.	1,008½	
Heavyweight—Paul Anderson, U.S.	1,163½†	



HEAVYWEIGHT CHAMPION Paul Anderson of Georgia demonstrating his strength with an 800-lb. pair of wheels. Anderson's performances were outstanding during a 1955 weight lifting tournament between the U.S. and the U.S.S.R. in Moscow

World Amateur Championships	
Bantamweight—Vladimir Stogov	737†
*Featherweight—Rafael Crimishkyan	770
Lightweight—Nikolai Kostylev	841½†
Middleweight—Pete George, Akron, O.	957
Light-heavyweight—Tom Kono, Sacramento, Calif.	1,004
Middle-heavyweight—Arkadii Vorobiev, U.S.S.R.	1,130
Heavyweight—Paul Anderson, Toccoa, Ga.	1,130

National Senior A.A.U. Championships	
123-lb. class—Charles Vinci, Jr., Cleveland, O.	690‡
132 lb.—Isaac Berger, New York	705‡
148 lb.—Joe Pitman, Vero Beach, Fla.	765
165 lb.—Richard Giller, American College of Weightlifting	810
181 lb.—Tom Kono	940‡
198 lb.—Dave Sheppard, Astoria, N.Y.	965
Heavyweight—Paul Anderson	1,145‡

*No American entries in class. †World record. ‡American record.
(T. V. H.)

West Africa, British: see BRITISH WEST AFRICA.
Western European Union: see EUROPEAN UNITY.
Western Samoa: see NEW ZEALAND; TRUST TERRITORIES.
West Indies, British: see BAHAMA ISLANDS; BARBADOS; BRITISH WEST INDIES; JAMAICA; LEEWARD ISLANDS; TRINIDAD AND TOBAGO; WINDWARD ISLANDS.

West Virginia. West Virginia was admitted to conditional statehood on Dec. 31, 1862, and proclaimed a state on April 20, 1863. It has an area of 24,282.45 sq.mi., of which about 150 sq.mi. are water surface. Pop.: (July 1, 1955, est.) 2,001,000; (1950 census) 2,005,552. In 1950 the urban population was 34.8% of the total. There were 113,735 Negroes and 33,640 foreign-born whites. Charleston, the state capital, had a population of 73,501. Other cities with 10,000 or more inhabitants in 1950 were: Huntington, 86,353; Wheeling, 58,891; Clarksburg, 32,014; Parkersburg, 29,684; Fairmont, 29,346; Morgantown, 25,525; Weirton, 24,005; Bluefield, 21,506; Beckley, 19,397; South Charleston, 16,686; Martinsburg, 15,621; and Moundsville, 14,772. Unincorporated South Parkersburg had a population of 10,808.

History.—The state officers in 1955 were: governor, William C. Marland; secretary of state, D. Pitt O'Brien; treasurer, William H. Ansel, Jr.; auditor, Edgar B. Sims; attorney general, John G. Fox; state superintendent of free schools, William W. Trent; and commissioner of agriculture, J. Blaine McLaughlin, all Democrats. During the first part of 1955 public interest centred in the proceedings of the first session of the 52nd legislature as they affected proposed increases in the salaries of public-school teachers, proposals for increased revenues for roads and the recommendations of a legislature interim committee for the reorganization of the administrative machinery of the state road system. For each of these objectives the governor had his program as did also each branch of the legislature. Resulting stalemates continued to the end of the session, leaving the schools without additional state funds, but those for roads were increased by increasing the tax on gasoline from five to six cents a gallon. The governor vetoed a bill vesting control of the state road system in a commission of ten executive-appointed members, thus leaving it in the control of a single executive-appointed commissioner functioning as the executive officer of a state road commission of five members. A five-day (May 9-13) extra session failed to provide additional state funds for teachers' salaries.

In compliance with the opinion of the U.S. supreme court of May 17, 1954, West Virginia was one of the first states to take action to effect the desegregation of the races in the public schools and state-supported institutions of higher learning. In an effort to accelerate desegregation, legal action was taken against three county school boards in Sept. 1955. The two teachers' associations were merged on Oct. 15, 1954, and desegregation was effected, in 1954-55, without friction or notable incidents in all the institutions of higher learning, both private and denominational and state supported.

Education.—The total pupil enrolment in the 3,234 elementary schools in 1954-55 was 298,148. In the 383 secondary schools (junior and senior) it was 159,600. Total receipts for the public-school program were \$79,084,036.26, of which \$47,435,828 were regular state aid; \$1,671,701.40 were federal aid; and \$28,679,100.33 were local collections.

There were nine state-supported institutions of higher learning under control of a state board of education, which, in 1954-55 had a total enrolment of 7,361, including 1,803 part-time students, and a total teaching staff of 481. The state also supported the board of governors-controlled university at Morgantown and Potomac State college at Keyser. There were also nine senior and junior private and denominational colleges with a total enrolment of 3,390, including 1,945 part-time students.

Social Insurance and Assistance, Public Welfare and Related Programs.—In the year ending June 30, 1955, the state department of health supervised the expenditure of \$2,065,167, of which \$476,761 were federal grants; \$776,870 were state funds; \$784,872 were local funds; and \$26,664 came from private agencies. Public assistance departmental expenditures for the year totalled \$34,458,834 or \$1,317,979 more than for 1953-54. Items for 1954-55 were: aid to dependent children, \$16,784,275; old-age assistance, \$8,741,909; aid to permanently and totally disabled, \$3,175,192; personal service, \$1,434,690; general medical and hospitalization, \$1,322,678; general assistance, \$954,927; boarding care, \$860,134; aid to the blind, \$484,417; aid to crippled children, \$412,598; current expenses, \$360,806; child welfare, \$75,626; prevention of blindness, \$32,393; and equipment, \$9,187.

Transportation and Communication.—As of Jan. 1, 1954, there were 31,291 mi. of state road, of which 4,931 were primary and 26,360 were secondary. There were 4,599 mi. not in the state system; 1,682 rural, 514 national forest roads and 2,403 city streets. There were 393,997 passenger cars. There were eight interstate airways communication stations. There were about 30 operating radio stations and 5 functioning television stations. As of Jan. 1, 1955, there were 364,565 Bell telephones handling an average of 1,952,479 calls daily.

Banking and Finance.—Total state receipts, including a cash balance of \$51,908,951.90 as of June 30, 1954, were \$415,046,318.28, and total disbursements, including transfers, were \$370,605,795.57, leaving a cash balance, as of June 30, 1955, of \$44,440,522.71. The chief sources of state income were: gross sales tax, \$36,511,720; federal aid, \$34,817,413; and the consumers sales tax, \$26,225,212. The largest state expenditures were \$66,887,654, or 38.7%, for schools; \$49,145,903, or 26.2%, for roads; and \$43,831,215, or 23.4%, for health and welfare. As of June 30, 1955, the total bonded indebtedness of the state was \$140,861,000, of which \$59,100,000 was for veterans and \$81,761,000 was for roads.

As of June 30, 1955, the total resources of 75 national banks were \$642,533,000; of 107 state banks and trust companies, \$554,603,262.04. The respective resources of 21 federal savings and loan companies, 16 state building and loan associations and 26 industrial savings and loan companies were \$90,558,290, \$22,701,523.33 and \$20,387,320.84, respectively. There were 168 small loan companies with total resources of \$34,863,919.42 and 29 state chartered credit unions with total resources of \$1,720,952.15.

Agriculture.—The total cash farm income for 1954 was \$122,813,000 or \$2,377,000 less than for 1953, but \$81,980,000 more than for 1940. Of the total cash income for 1954, \$1,332,000 was government payments; \$94,030,000 was for livestock and livestock products; and \$28,783,000 was for crops. The value of products consumed on the farms where produced was \$43,096,000, making a total gross farm income of \$167,241,000, or \$4,027,000 less than for 1953.

The number of cattle on farms, 611,000 as of Jan. 1, 1955, was 6,000 less than for the corresponding date of 1954. The 165,000 hogs were

Table I.—Principal Agricultural Products of West Virginia

Crop	Indicated 1955	1954	Average, 1944-53
Corn, bu.	8,041,000	9,045,000	9,925,000
Wheat, bu.	920,000	1,152,000	1,388,000
Oats, bu.	2,052,000	1,898,000	1,693,000
Hay (all), tons	1,092,000	1,082,000	997,000
Apples (commercial), bu.	3,700,000	5,600,000	3,642,000
Potatoes, bu.	1,690,000	1,680,000	2,086,000
Barley, bu.	490,000	585,000	323,000
Tobacco, lb.	4,160,000	4,960,000	3,912,000
Peaches, bu.	566,000	682,000	546,000

Source: U. S. Department of Agriculture.

about 11% more; the 311,000 sheep about 2% less; the 65,000 horses and mules about 6% less; and the cash receipts for poultry and eggs for 1954 were \$39,812,000, or 6% less than for 1953. This decline was, however, the result of lower prices rather than of decreased production.

Manufacturing.—The value of the manufactures (\$1,744,000,000) produced in 1954 was \$109,000,000 less than in 1953 and \$131,000,000 less than the peak year, 1951. The decline was the result of lower prices

Table II.—Principal Industries of West Virginia

	All em- ployees 1953	Salaries and wages (in 000s) 1953	Value added by manu- facture (in 000s) 1953	Value added by manu- facture (in 000s) 1952
Textile mill products	2,969	\$ 8,329	\$ 15,016	\$ 12,460
Paper and allied products	*	*	*	7,663
Chemicals and allied products	22,942	111,935	352,696	343,066
Petroleum and coal products	*	*	*	35,042
Stone, clay and glass products	23,726	88,402	147,144	146,390
Primary metal industries	24,068	115,704	251,220	200,448
Fabricated metal products	9,194	32,556	56,826	56,082
Electrical machinery	5,255	20,159	54,679	45,688

*Withheld because the estimate did not meet publication standards, either on the basis of the associated standard error of estimate or on the basis of a consistency review.

Source: U.S. Department of Commerce, Annual Survey of Manufactures, 1953.

rather than of decreased production, and the value of the manufactured product was 226% greater in 1954 than in 1940. The number of employees was, however, only 38% greater. Employment in manufacturing plants declined to a five-year low in 1954, being 13,175 below the average monthly record established in 1948, but there was a substantial increase in the 12-month period ending in June 1955. The 36,616 employees in the chemical and related industries were 1,383 less than in 1954, and their total annual wage, \$153,350,337, was \$2,732,375 less. Although there was a marked recovery in the coal-mining industry, the 68,727 employees was the smallest average monthly number since 1933, and their total annual wage, \$309,448,793, was the smallest since 1946. Respective data for other industries were: iron and steel, 36,520 and \$169,179,734; glass, pottery, brick and tile, 26,943 and \$96,749,237; oil and gas, 11,805 and \$40,444,206; and lumber, 8,900 and \$19,226,618. (C. H. A.)

Mineral Production.—Table III shows the tonnage and value of those mineral commodities produced in West Virginia in 1952 and 1953 (prelim-

Table III.—Mineral Production of West Virginia

Mineral	1953 (In short tons, except as noted)		1952	
	Quantity	Value	Quantity	Value
Clays	969,000	\$ 2,489,000	982,000	\$ 2,422,000
Coal	134,105,000	693,594,000	141,713,000	741,421,000
Coke*	4,477,000	53,487,000	4,082,000	48,655,000
Natural gas (000 cu.ft.)	186,477,000	44,009,000	180,995,000	35,475,000
Natural gasoline (000 gal.)	44,000	3,245,000	43,000	3,069,000
Petroleum (bbl.)	3,038,000	11,570,000	2,602,000	9,780,000
Petroleum gases (000 gal.)	153,000	6,743,000	200,000	6,187,000
Salt	420,000	1,491,000	393,000	1,438,000
Sand and gravel	3,163,000	6,071,000	4,120,000	7,275,000
Stone	5,501,000	8,924,000	4,869,000	6,826,000
Other minerals . . . . .	...	11,974,000	...	11,840,000
Total		\$790,110,000		\$825,733,000

*Values for processed materials are not included in the totals.

inary) whose value exceeded \$100,000. In 1953 West Virginia was first among the states in output of coal and fourth in bromine and ranked fifth in the value of its mineral output, with 5.49% of the U.S. total.

Wheat. The U.S. crop of all wheats in 1955 was 915,528,000 bu., 6% smaller than in 1954 and 21% smaller than the 1944-53 average of 1,154,073,000 bu. The yield of 19.3 bu. per acre was higher than the 18.1 bu. per acre of 1954 or the 1944-53 average of 17.1 bu. per acre. Though an estimated 57,463,000 ac. were sown, drought induced substantial abandonment and only 47,376,000 ac. were harvested as compared with 53,712,000 ac. in 1954 and an average of 67,656,000 ac. for the previous decade.

The fall sown winter wheat crop, planted on 43,585,000 ac., produced 689,403,000 bu. as compared with 790,737,000 bu. in 1954 and an average 867,390,000 bu. in 1944-53. The yield was 20.3 bu. per acre as compared with 20.5 bu. per acre in 1954 and 18.0 bu. per acre average for 1944-53.

The 1955 U.S. crop of spring sown wheats was 226,125,000 bu. as compared with only 179,044,000 bu. in 1954 and an average of 286,683,000 bu. for 1944-53. The average yield was 16.8 bu. per acre as compared with 11.9 bu. per acre in 1954 and 14.6 bu. per acre average for 1944-53.

Production of durum spring wheat was indicated at 14,379,000 bu. as compared with the near-failure crop of only 5,557,000 bu. in 1954. However, the 1955 crop was less than half as large as the 33,432,000-bu. average of 1944-53 and the 1,074,000 ac. for harvest were 19% below 1954 and far below the average 2,564,000 ac. of the previous decade.

Table I.—U.S. Wheat Production by Leading States

State	Indicated 1955	1954	Average, 1944-53
Kansas	132,864	176,208	204,022
North Dakota	109,866	69,896	131,707
Montana	87,615	76,557	80,013
Nebraska	79,090	61,623	77,578
Washington	55,561	72,444	71,692
Illinois	46,840	44,921	34,004
Ohio	45,008	48,510	52,018
Missouri	43,488	40,114	25,825
Idaho	34,773	35,343	37,657
Indiana	33,988	39,711	34,092
Michigan	28,365	30,000	31,516
South Dakota	28,325	27,008	43,157
Oklahoma	27,928	70,770	79,304
Oregon	21,878	25,023	26,559
Pennsylvania	16,172	19,796	19,875
Colorado	14,375	16,500	42,400
Texas	14,212	30,894	55,404
Minnesota	11,975	9,828	19,548
New York	10,048	10,065	10,352

Table II.—World Production of Wheat for Selected Areas

Country	(in 000,000 of bu.)				
	Est. 1955	1954	1953	Average, 1945-49	Average, 1935-39
United States	917	970	1,169	1,202	759
Canada	501	299	614	366	312
Mexico	30	30	25	16	14
Free Europe	1,330	1,330	1,305	947	1,136
Other Europe	410	390	420	318	464
Great Britain	87	104	99	78	62
Union of South Africa . . . . .	...	20	21	15	16
Asia	1,780	1,790	1,790	1,585	1,558
India	319	294	276	212	262
Turkey	225	180	294	125	136
Pakistan	118	138	105	129	117
Australia . . . . .	...	283	228	194	222
U.S.S.R.	200	167	198	178	170
World total	7,315	6,930	7,380	5,900	6,085

Wheat production by class in 1955 showed the usual dominance of hard red winter wheat of the southern plains with about 398,000,000 bu. Hard red spring wheat from the northern plains was second with about 186,000,000 bu. and soft red winter wheat, grown mostly in the midwest and east, was 183,585,000 bu. The 1955 crop of white wheat, grown mostly in the Pacific northwest, was about 129,095,000 bu. Durum, the macaroni wheat, was only 14,379,000 bu.

In the U.S. the average support price for wheat under acreage allotment and marketing quota was reduced from \$2.24 on the 1954 crop to \$2.08 on the 1955 crop to a minimum of \$1.81 (76% of parity) on the 1956 crop. The average price received by producers for wheat in October was \$1.94 per bushel as compared with \$2.08 a year earlier and a 1947-49 average of \$2.14 per bushel. Growers in the 36 commercial wheat states voted approval of marketing quotas on the 1956 crop at the reduced support level by 77.5% as compared with the two-thirds required and only 73.3% approval on the 1955 crop.

U.S. wheat exports in 1954-55 were about 274,000,000 bu. as compared with 217,000,000 bu. in the previous year and as much as 475,000,000 bu. as recently as 1951-52. Exports of wheat and flour (in wheat equivalent) during the first quarter of the 1955-56 marketing year were 70,000,000 bu. as compared with only 54,000,000 bu. for the same period a year earlier.

In spite of the much reduced acreage and smaller 1955 crop carry-over, stocks continued to accumulate to a record level of 1,021,000,000 bu. on July 1, as compared with 902,000,000 bu. a year earlier. By some calculations it appeared that stocks plus the new crop, a total of about 1,940,000,000 bu., would supply prospective use of 485,000,000 bu. for food, 63,000,000 bu. for seed, 75,000,000 bu. for feed and 275,000,000 bu. for export, and still result in somewhat increased year-end stocks of about 1,040,000,000 bu.

About 1,000,000,000 bu. of the carry-over on July 1, 1955, was owned or controlled by the CCC.

A near-record world wheat crop of 7,315,000,000 bu. was estimated for 1955 as compared with 6,930,000,000 bu. in 1954, a record 7,380,000,000 bu. in 1953 and a prewar average of 6,085,000,000 bu. Acreage was expanded to 473,470,000 as compared with 464,630,000 ac. in 1954 and a prewar average of 424,900,000 ac.

Canada produced a good but not bumper crop of 500,587,000 bu. as compared with 298,909,000 bu. in 1954 and an average 312,399,000 bu. prewar. The new crop plus a large carry-over of 522,000,000 bu. and exports of only 253,000,000 bu. in 1954-55, as compared with 392,000,000 bu. two years earlier, gave rise to storage, transport and financing problems. The government advanced \$1.40 per bushel on grain delivered, but deliveries were restricted and farm incomes declined in some areas to three-fifths of what they were in 1953. In November it was announced that government-guaranteed bank loans up to \$1,500 would be made against farm-held grain. The price was twice lowered in the early autumn to about \$1.70 per bushel for

no. 1 northern to meet export competition.

Indications from both Europe and Asia were favourable, with quality in western Europe significantly improved. The French crop was again large; France, now a major exporter, became concerned about outlets and prices. Turkey's harvest was substantially improved over the poor 1954 crop. Both eastern Europe and the important Ukraine and Caucasus areas of the U.S.S.R. were reported as harvesting good crops. It was indicated that about 90% of the world's wheat crop was produced and marketed under price supports of one type or another, most of which resulted in increased production. World trade in wheat in 1954-55 was 943,000,000 bu., 7% above the 879,000,000 bu. of the previous year, but well below the 1,066,000,000 bu. of 1951-52. Carry-over stocks of the U.S., Canada, Australia and Argentina of 1,868,000,000 bu. were approximately enough for two years of world trade.

About 290,450,000 bu. moved under the International Wheat agreement in 1954-55 as compared with 225,200,000 bu. in the previous year. The U.S. supplied 139,486,000 bu., Canada 109,343,000 bu., Australia 41,245,000 bu. and France a small amount. The total was substantially below guaranteed quantities of 393,047,000 bu., but the price was not reduced to the minimum, so importing countries were not called upon to take up their guaranteed purchases. During the first quarter of 1955-56, 54,049,000 bu. were sold under the agreement against a quota for the full year of 394,958,000 bu. The U.S. sold 22,420,000 bu., Canada 23,812,000 bu.

Flour.—Preliminary indications were that U.S. consumption of wheat in the form of flour would be 121 lb. per capita in 1955, 3 lb., or 2%, less than in 1954, 90% as much as the average for the early postwar period but only 77% as much as the 157 lb. of prewar. Wheat prices declined modestly, but rising processing and distribution costs resulted in slightly higher flour prices, and bread prices increased about 2%. In 1954-55, 46,287,000 bu. of wheat were exported as flour as compared with 33,212,000 bu. in 1953-54. Flour buying during much of the early part of the year was hand to mouth, anticipating apparently some price decline because of sheer weight of wheat supplies. However, flour buying was very heavy for winter wheat in mid-July and for spring wheat after mid-August. Mill prices in November were mostly more than \$6.75 per hundredweight; under the provisions of public law 311 all-purpose wheat flour was distributed to needy families through state welfare agencies.

(J. K. R.)

Wildlife Conservation.

Recognition of ever-mounting needs of people and increased competition in land use were cited by the U.S. fish and wildlife service as resulting in governmental emphasis on the importance of attaining a working partnership among federal, state and local governments, and with private interests, in the management and development of wildlife resources. The service recorded definite progress during 1955 in bringing its programs closer to state and local communities through obtaining an increased understanding of its purposes and enlisting co-operative participation in them.

Wildlife refuges were still being established despite little in the way of direct appropriations since 1940. The expansion was largely through the use of suitable areas acquired by other government agencies for other public purposes. The Stillwater National Wildlife Management area of more than 200,000 ac. was established on lands of the Truckee-Carson irrigation district, Nevada, and the Loxahatchee, of 114,000 ac., on lands of the south Florida flood-control district. Among others established during the year was the Kirwin Management area, 10,800 ac. on a bureau of reclamation impoundment in western Kansas, the first federal refuge in that state. A smaller refuge (112 ac.),

where prices prohibited acquisition by purchase, was donated on the eastern end of Long Island.

Encroachments of waterfowl habitat, in public and private ownership, constituted a serious menace to conservation. Destruction of habitat had occurred faster than conservation agencies had been able to restore it. One effective method of combatting such loss was to increase the use of suitable refuge lands for intensive production of crops to feed ducks and geese. Another was to eradicate pest plants, including cattail, salt cedar and noxious weeds.

Fire reached disastrous proportions in 1955 on the 329,000-ac. Okefenokee National Wildlife refuge in Georgia.

The serious threat of the military to encroach upon public lands dedicated to conservation use was dramatized by the army's insistence on acquiring an important area of the Wichita Mountains National Wildlife refuge in Oklahoma. Although the army and its supporters prevailed temporarily over conservation interests and obtained congressional approval for taking about 10,700 ac. of this 59,000-ac. refuge as an addition to the Fort Sill artillery practice ranges, Secretary of the Interior Douglas McKay later declared that he was "unalterably opposed" to the transfer, and the threat was still being held off at the end of the year.

During 1955 about 80,000 ac. were added to the existing 3,269,549 ac. in wildlife refuges. Eight refuges brought the total under jurisdiction of the fish and wildlife service to 264 in 42 states, Alaska, Hawaii and Puerto Rico. Three others were in process of establishment. In addition the service maintained 89 fish hatcheries in 42 states.

More than 15,000,000 hunting licences were issued by the several states during 1955, and more than 2,000,000 duck stamps were sold, the latter being required by the federal government of every migratory-bird hunter 16 years of age or older. The problem of meeting the needs of both hunter and hunted continued. State and local viewpoints are ascertained by the fish and wildlife service before annual regulations governing the hunting of migratory birds under federal protection are determined. Of late the states had organized their waterfowl programs along the flyway line, the flyway being the unit of management for migratory birds. Waterfowl surveys throughout North America were accomplished by combining the efforts of the fish and wildlife service, the Canadian wildlife service, provincial and state game boards and private organizations. In addition, surveys were made in 25 states and Alaska by service biologists and state conservation agencies.

To trace bird migration routes and map the flyways, 17 states (compared with 11 in 1954) co-operated in an enlarged waterfowl banding program in Canada. For the first time a sizeable banding program was initiated in the maritime areas. In the whole banding program, about 176,000 birds were banded during the year, with special attention to the migration of mallards and mourning doves.

Co-operative wildlife research units, which are operated by the fish and wildlife service, the Wildlife Management institute, land-grant colleges and conservation departments of 16 states and Alaska, continued their programs of research, training and conservation education. During the school year 1953-54, 202 wildlife students, including 71 with advanced degrees, were graduated. Part of the results of completed projects by the co-operative units were summarized during the year in 129 publications of wide distribution, providing facts useful both to wildlife technicians and to the public.

Teamwork between state and federal agencies and other organizations responsible for the nation's wildlife and fishery resources was strengthened during the year. Three federal-aid laws promoted co-operative undertakings, and closer relations

between nation and state were achieved in the administration of the migratory bird laws enacted to carry out treaties with neighbouring countries, north and south, and to provide funds for refuge acquisition from the sale of migratory-bird hunting stamps—the so-called duck stamps.

Two federal-aid laws, known as the Pittman-Robertson and the Dingell-Johnson laws, provide for co-operative programs for improving living conditions for game birds and fish. These programs are supported by state funds augmenting federal funds derived respectively from the excise taxes on sporting arms and ammunition and on sport fishing gear. A third federal-aid law is the Saltonstall-Kennedy act of 1954, under the terms of which the federal government through the fish and wildlife service embarked on a research program designed to help the fishery industry expand production and develop new markets for fishery products. (See also NATIONAL PARKS AND MONUMENTS.)

(H. Z.)

International.—As part of the work of its survival service, the International Union for the Protection of Nature sent Lee Talbot, U.S. ecologist, to study the status and preservation of rare animals in North Africa and Asia. The International Committee for Bird Preservation arranged with the British authorities that live bombs should not be dropped on the bombing range at Knechtsand, Ger., during the months that the area was used by the vast numbers of moulting and therefore flightless shelduck. The work of the Wildfowl trust (Great Britain) for the preservation of the Hawaiian goose was encouraged by the finding in Hawaii of a hitherto unknown flock of 22 birds. This brought the world total of this species to at least 70 birds, including those in captivity.

Great Britain.—The Nature conservancy declared 15 new nature reserves and the Humber Wildfowl refuge. Among these the island reserve of Ynys Llandwyn was formed to try to re-establish one of the most important colonies of terns and other sea birds in Wales, which had dwindled seriously. Tring Reservoirs reserve was formed to protect its water birds—there had been the first recorded nesting site, in England, of the little ringed plover. Hermaness and Noss in the Shetland Islands were made into reserves because of their value as bird sanctuaries; great skuas, red-throated divers and eider ducks breed there. The Humber Wildfowl refuge, the first such refuge to be established in England, extended over 20 sq.mi. of tidal flats and water and protected a main roosting area of the pink-footed goose.

Commonwealth.—In India the government of Madhya Pradesh established the Kanha National park in the famous Banja Valley reserve, thereby giving added security to the swamp deer and many other Indian animals including tiger, sambar, gaur and black buck. Under the special care of the Indian Board of Wildlife, the great Indian rhinoceros increased in numbers and it was estimated that its world population had reached 440.

In Central Africa the government of the Federation of Rhodesia and Nyasaland set up an independent commission to advise the Southern Rhodesian government on its tsetse fly problems—probably no official action against wildlife had so disgusted world opinion as the annual destruction of 40,000 animals in tsetse fly control in Southern Rhodesia. In Northern Rhodesia the Game Preservation and Hunting association emphasized the necessity of preserving the red lechwe on the Kafue flats, almost its last remaining habitat, where its numbers had declined from 250,000 in 1934 to 25,000 in 1955. The work of the Fauna Preservation Society of Nyasaland in guarding the Mijeti hill area and improving it as a wildlife sanctuary by increasing the water supply was rewarded when in March the Mijeti was declared an official game reserve. The society was

also informed that the road which had been planned to pass through the Lengwe game reserve had been realigned. This road would have threatened one of the few remaining haunts of the nyala, a beautiful and rare antelope for which the Lengwe reserve had been specially created.

In Tanganyika the game department report gave details of fencing experiments against wild animals. Such experiments are of universal importance, for the time seemed to be approaching when large wild animals would no longer exist outside areas especially set aside for them, and when their existence even in reserves would only be tolerated if they could be strictly confined therein. The most important results of the experiments however were gained in electric fencing. When an electric fence of the type used by farmers to confine cattle was erected, damage by baboons, bush pig and bushbuck ceased at once, though monkeys either ran underneath the fence or jumped through it. A single electrified wire was at first broken by the larger animals, but many animals, elephants for example, seemed to learn by experience to avoid it. Altogether it was shown that electric fencing was a possible method of restricting the movement of game, its great advantage being cheapness.

Near False bay at the southernmost tip of Africa the Rondevlei bird sanctuary proved its value both as a wildlife reserve and a scientific ornithological observatory. In the early part of the year the duck population exceeded 3,000, of six species, and later a huge compact colony of many kinds of herons and egrets and a colony of African darters nested in the sedge beds.

(C. L. BE.)

Wilson, Charles Erwin (1890—), U.S. business executive and government official, was born on July 18 at Minerva, O. After graduating from the Carnegie Institute of Technology, Pittsburgh, Pa., in 1909, he went to work as an electrical engineer for the Westinghouse Electric and Manufacturing company, where he designed the first automobile self-starting motor produced by that company. He joined General Motors corporation in 1919 as an executive of one of the subsidiary companies; in 1929 he became a vice-president of the corporation and in 1941 president. Both during and after the war period he continuously pointed to the need for a permanent U.S. defense program that could be diverted speedily to war or peace production with a minimum of economic dislocation.

Wilson (sometimes confused with Charles Edward Wilson, president of General Electric company and director of defense mobilization from 1950 to 1952) was chosen for the post of secretary of defense by Pres. Dwight D. Eisenhower and was confirmed in that office by the U.S. senate in Jan. 1953 after he had agreed to sell his stock in General Motors Corp.

On Feb. 15, 1955, Wilson declared that the United States was leading the U.S.S.R. in production of nuclear weapons; and the following May 24 he said that the U.S. air force was superior to the Russian in both quality and quantity of equipment production. Commenting on the new "soft" foreign policy of the U.S.S.R. toward the western nations in 1955, Wilson said on Aug. 9 that it would not lead to any slowdown of U.S. defense efforts.

Windward Islands. The British colonies of Grenada, St. Vincent, St. Lucia and Dominica, forming the southern part of the Lesser Antilles in the Carib-

Colony	Area (sq.mi.)	Population (1946 census)	Population (1953 est.)	Capital (with pop., latest est.)
Grenada	133*	72,387	84,007	St. George's†
St. Vincent	150*	61,647	73,136	Kingstown
St. Lucia	233	70,113	84,812	Castries
Dominica	305	47,624	59,097	Roseau

*Including the Grenadines attached in part to Grenada and in part to St. Vincent.
†Seat of governor. ‡1950 estimate. §1946 census. ||1953 estimate, including suburbs. ¶1952 estimate.

Colony	Budget (1955 est.) Revenue*	Expenditure*	Foreign Trade (1954) Imports	Exports
Grenada	\$4,338,908	\$4,913,530	\$8,108,669	\$8,473,288
St. Vincent	2,325,254	2,966,523	5,456,000	4,253,400
St. Lucia	2,505,202	2,776,464	5,229,360	3,542,092
Dominica	1,818,420	2,284,923	5,000,000	4,588,566

*Excluding grants-in-aid and Colonial Development and Welfare expenditure. All amounts in British West Indian dollars.

bean, constitute the British Windward Islands. The colonies have in common governor and (with Leewards) supreme court, but separate legislatures. Pop.: (1954 est.) 297,000; 95% Negro; some Caribs on St. Vincent and Dominica. Language: English; on Dominica and St. Lucia also French patois. Religion: Christian. Governors in 1955: Sir Edward Beetham and (from May 14) C. M. Devereil. Administrators: (Grenada) W. Macmillan; (St. Vincent) A. F. Giles; (St. Lucia) J. K. R. Thorp; (Dominica) H. L. Lindo.

History.—As a preliminary step toward the introduction of a ministerial government, the Windward Islands governments embarked on the advisory committee system in 1955, with the three elected members of the executive council as chairmen of the committees.

During her visit to Grenada in February, Princess Margaret officially opened the Windward Islands broadcasting service. Later in the year, Dominica celebrated the 150th anniversary of uninterrupted British rule.

In all the islands there was a marked increase in the production of export crops in the earlier months of the year, and in some cases, e.g. for vanilla in Dominica, better prices were obtained. The tourist trade also showed signs of improvement but a substantial part of Soufrière, the second largest town of St. Lucia, was destroyed by fire; and in Grenada, almost wholesale destruction to cultivation, crops, buildings, etc., was wrought by hurricane "Janet."

(L. C-LA.)

Education.—Government and aided schools (excluding Dominica, 1953): primary 132, pupils 78,413; secondary 11, pupils 2,363. *Dominica* (1952): primary and intermediate 43, pupils 10,835; secondary 4, pupils 656; 1 teachers' training school, students 20.

Finance and Trade.—Monetary unit: British West Indian dollar, valued in 1955 at 58.33 cents U.S.

Main exports: arrowroot, bananas, citrus products, cocoa, copra, sea island cotton, mace and nutmeg, sugar, vanilla.

Wines. Total world wine production during 1955 amounted to 5,432,000,000 gal., according to official reports and estimates, compared with 5,645,100,000 gal. during 1954 (a more accurate figure), an approximate 4% decrease. Some figures, notably those from Soviet-influenced countries, were pure estimates.

France was the largest producer again in 1955. Heat and hailstorms combined to lower the over-all yield, but otherwise healthy conditions and good weather during the vintage produced fine-quality French wines.

In 1954 Burgundy produced 57,300,000 gal., of which 5,400,000 gal. white and 22,400,000 gal. red were famous growths (*appellation contrôlée*). The 1955 estimates indicated approximately 38,000,000 gal. of very-good-quality Burgundy. Alsace produced 21,500,000 gal. in 1954, of which 19,800,000 gal. were fine growths. The 1955 estimate was for 23,500,000 gal. of good-quality wine. Bordeaux produced a total of 105,200,000 gal. in 1954, of which 36,300,000 gal. were white and 21,900,000 gal. were red famous growths. The forecast for 1955 was 132,000,000 gal. of excellent wines including 68,600,000 gal. famous growths. Champagne was up from 11,600,000 gal. to 13,200,000 gal. of excellent quality in 1955.

Italy continued in second place with mediocre quality and a 5½% increase in quantity. In Spain the Jerez district produced 10,160,000 gal. of very-good-quality sherry, somewhat more than in 1954. Production of port wine, controlled to world demand, in Portugal was held to 5,844,000 gal. of very fine wines, com-

pared with 5,065,000 gal. in 1954; Madeira totalled 2,900,000 gal. of very good quality compared with 3,260,000 gal. the previous year.

World Production of Wine
(Millions of gallons)

Country	1955	1954	1950-1954 Average	1955 quality
Algeria	370.0	509.5	411.7	Satisfactory
Argentina	310.0	282.0	306.4	Fair
Australia	28.6	38.2	38.1	Below average
Austria	26.4	43.2	28.8	
Brazil	19.6*	19.6*		
Bulgaria	11.3*	11.3*		
Canada	5.6	6.0	5.5	Excellent
Chile	68.2	85.3	84.0	Good
Colombia	0.2*	0.2*		
Cyprus	3.3*	3.3		
Czechoslovakia	10.8*	10.8		
Egypt	0.8*	0.8*		
France	1,493.0	1,552.5	1,478.4	Excellent
Germany	66.0	80.3	75.9	Good-medium
Greece	117.0	120.1	107.6	
Hungary	118.7*	118.7		High
Iran	0.1	0.1		
Israel	1.9	2.1	1.7	Excellent
Italy	1,399.2	1,323.5	1,182.0	Average
Japan	1.7*	1.7*		
Lebanon	0.8*	0.8*		
Luxembourg	2.7*	2.7		
Malta	1.3*	1.3		
Mexico	0.3*	0.3*		
Morocco	50.3	50.3	27.3	
Netherlands	0.1	0.1		
New Zealand	0.6*	0.6		
Peru	3.0*	3.0	3.4	Good
Portugal	282.0	325.0	256.0	
Rumania	105.5	109.0		
South Africa	76.0	67.3	61.8	Poor
Spain	427.7	479.0	476.5	Very good
Switzerland	19.1	16.9	19.7	Fair
Syria	0.1	0.1		
Tunisia	27.8*	27.8	20.1	No variation
Turkey	6.4	6.3	4.9	
U.S.A.	117.1	130.3	136.6	No variation
Uruguay	25.6*	25.6		
U.S.S.R.	125.0*	125.0*		
Yugoslavia	108.2	64.5		Average
Total	5,432.0	5,645.1	5,345.0	

Countries like the United States, marked "No variation" in the above table, produce uniform wines from year to year because of stable climatic conditions and methods of production used.

*Provisional figure, same as previous year.

Germany, hit by frost during vintage, produced 18% less than the previous year. United States production for 1955 was estimated to be down 10%. (J. WE.)

Wisconsin. One of the north central states of the United States, Wisconsin, popularly called the "Badger state," entered the union as the 30th state in 1848. Area: 56,154 sq.mi., of which 1,449 sq.mi. is water. Pop.: (1950 census) 3,434,575; (July 1, 1955 est.) 3,691,000; of the 1950 population, 57.8% was defined as urban. Capital, Madison (1950 census), 96,056. Milwaukee, 637,392, is the largest city. Other large cities are Racine, 71,193; Kenosha, 54,368; Green Bay, 52,735; and La Crosse, 47,535.

History.—Wisconsin's bicameral legislature—Republican-controlled in both houses, considered a total of 1,435 bills during its regular session in 1955. Of these, 618 bills were enacted before recess (June) and 53 bills and one joint resolution were carried over for consideration in the recessed (October) session.

For the third consecutive session the legislature considered a number of plans for the integration of the state's institutions of higher education. Two separate boards of regents governed the state university and the state colleges. Until chapter 619 was passed by the fall session, they had operated without legal reference to one another. Though there had been consultation on such problems as budget formulation, the compromise integration bill, hammered out after sharp debate which split parties and regional factions, established a permanent joint co-ordinating committee over the existing regent boards to "make a continuing study of the state-supported institutions of higher education." This 15-member body (with university regent, college regent and private citizen representation) was given broad planning and budgetary powers. As one of its first duties it directed the university's Milwaukee extension centre to merge

with the existing state college in that city so that a single four-year institution of higher learning would be provided for the state's heavily populated southeastern section. The merged unit, which was to be established by Jan. 1, 1957, would be an integral part of the university, supervised by a resident provost who would report to the university's president.

The legislature also imposed a 20% surtax on personal incomes during 1955 and 1956 to help offset expected budget deficits; provided new authority for the state, the university, and the state colleges to construct and finance buildings through building corporations which could borrow money, and build and lease buildings for state use; prohibited political contributions by labour unions; changed the boundaries of the 4th and 5th congressional districts (two of three Wisconsin districts with Democratic incumbents).

The principal officers of the state during 1955 included: Walter J. Kohler, Jr., governor; Warren P. Knowles, lieutenant governor; Mrs. Glenn M. Wise, secretary of state; Warren R. Smith, state treasurer; Vernon W. Thomson, attorney general; George E. Watson, superintendent of public instruction. Mrs. Wise, appointed by the governor to serve the term of secretary-elect Fred R. Zimmerman, who died before inauguration, was the first feminine constitutional officer in the state's history.

Education.—In the school year 1953-54, there were 5,292 elementary schools, 445 secondary schools, and 23 country normal schools. Elementary school enrolment totalled 415,404; secondary schools 157,393; county normal schools 992. Elementary schools employed 15,813 teachers; secondary schools 7,422; county normal schools 106. By action of the 1955 legislature, the name county normal school was changed to county teachers college. State aids to education in 1953-54 amounted to \$25,135,294. Expenditures in the elementary and secondary schools totalled \$181,233,002. The 11 state colleges (two institutions formerly designated institutes were changed to state college status by the 1955 legislature) employed 705 faculty members to teach 9,641 college and 2,397 training school students.

Social Insurance and Assistance, Public Welfare and Related Programs.—The number of cases receiving public assistance as of June 30, 1955, with expenditures for the fiscal year ending on that date in parentheses, were as follows: general relief 8,188 (\$9,805,107); old-age assistance 43,095 (\$32,196,233); aid to the blind 1,139 (\$1,037,701); aid to the totally and permanently disabled 1,133 (\$1,207,927); aid to dependent children in their own or a relative's home 8,173 (\$13,286,854); aid to dependent children in foster homes 1,622 (\$1,004,344); a total of 63,350 households (\$19,349,560). Civilian unemployment benefits for the fiscal year 1954-55 were \$30,329,118; contributions collected amounted to \$19,349,560.

The cost of operating Wisconsin's 12 charitable, mental and correctional institutions for the year ending June 30, 1955, was \$18,507,071. The average daily population for June 1955 was 6,065.

Communications.—Public highways as of Jan. 1, 1955, totalled 95,425 mi. divided as follows: 85,775 (towns), 2,655 (villages), 6,995 (cities). Expenditures by the highway commission during the fiscal year 1954-55 amounted to \$88,728,396. Railway mileage (steam and electric) as of Dec. 31, 1954, was 6,427.8 with 63.36 mi. of trolley coach (trackless) route in Milwaukee. On Jan. 1, 1955, there were 1,149,802 telephones; on Oct. 1, 1955, there were 65 municipal airports and four seaplane bases.

Banking and Finance.—As of June 30, 1955, the 95 national banks had deposits of \$1,639,068,000 and assets of \$1,766,898,000. At the end of the calendar year 1954, the 463 state banks reported deposits of \$1,971,280,369. Assets amounted to \$2,126,992,508. Credit unions increased from 629 in 1953 to 680 in 1954. Assets were \$102,598,430, an increase of 19.6%. The 114 savings and loan associations listed assets of \$547,962,096.

State receipts for the fiscal year 1954-55 were \$255,750,094; disbursements totalled \$271,236,316. Taxes collected and returned to local subdivisions amounted to \$80,946,876; agency collections returned to counties were \$2,805,919; state aids amounted to \$81,481,284; moneys transferred from the general fund to other funds \$15,583,518.

Agriculture.—The total acreage harvested in 1954 was 10,248,000. Cash

Table I.—Principal Crops of Wisconsin

Crop	Indicated 1955	1954	Average, 1944-53
Corn (bu.)	139,650,000	154,445,000	120,618,000
Oats (bu.)	140,382,000	127,336,000	130,128,000
Tobacco (lb.)	20,522,000	22,680,000	30,178,000
Potatoes (bu.)	10,905,000	11,610,000	12,358,000
Barley (bu.)	2,236,000	2,844,000	5,497,000
Wheat (bu.)	1,236,000	1,433,000	2,106,000
Flaxseed (bu.)	62,000	62,000	146,000
Soybeans (bu.)	958,000	1,035,000	516,000
All hay (tons)	8,303,000	7,948,000	7,111,000
All clover and timothy (tons)	2,869,000	2,805,000	3,731,000
Alfalfa (tons)	5,142,000	4,850,000	2,987,000
Cherries (tons)	22,300	11,300	14,490
Cranberries (bbl.)	315,000	250,000	185,700
Apples (bu.)	1,300,000	1,000,000	1,040,000

Source: U.S. Department of Agriculture.

Table II.—Principal Industries of Wisconsin

	All employees 1953	Salaries and wages 1953 (in 000s)	Value added by manu- facture 1953 (in 000s)	Value added by manu- facture 1952 (in 000s)
Food and kindred products	59,116	\$222,422	\$519,249	\$530,734
Textile mill products	8,681	28,533	39,379	50,420
Apparel and related products	8,586	25,078	40,435	*
Lumber and products (except furniture)	22,429	65,349	105,220	86,010
Furniture and fixtures	11,286	41,619	65,314	78,118
Paper and allied products	32,719	138,504	301,273	265,227
Printing and publishing industries	18,841	82,192	136,120	*
Chemicals and allied products	*	*	*	87,769
Leather and leather products	18,972	63,280	94,599	87,712
Primary metal industries	26,998	131,876	205,454	187,250
Fabricated metal products	36,790	157,558	285,463	262,639
Machinery (except electrical)	92,554	432,925	764,869	757,947
Electrical machinery	40,894	176,726	309,387	300,300
Transportation equipment	36,380	159,583	317,084	237,742
Instruments and related products	6,547	25,010	41,042	31,439
Miscellaneous manufactures	28,003	114,993	215,417	91,402
Administrative and auxiliary	6,985	33,860	...	...

*Withheld because the estimate did not meet publication standards, either on the basis of the associated standard error of estimate or on the basis of a consistency review.
Source: U.S. Department of Commerce, Annual Survey of Manufactures, 1953.

receipts amounted to \$1,002,692,000, consisting of \$878,616,000 from livestock and livestock products and \$124,076,000 from crops. Farm commodity prices were at the lowest level since 1945.

Manufacturing.—The total value of manufactured products in Wisconsin increased from \$3,320,663,000 in 1952 to \$3,635,768,000 in 1953. Wisconsin ranked tenth among the states in value added by manufacture. In 1954 the estimated average number of wage earners in Wisconsin manufacturing establishments was 432,900 as compared with 472,500 in 1953 and 466,900 in 1952. The average weekly gross earnings per capita were \$74.79 in 1954 as against \$74.73 in 1953. (C. L. L.)

Table III.—Mineral Production of Wisconsin

Mineral	1952 (In short tons)		1953	
	Quantity	Value	Quantity	Value
Iron ore	1,664,000	*	1,854,000	*
Lead	2,000	\$ 644,000	2,000	\$ 549,000
Lime	108,000	1,369,000	124,000	1,566,000
Sand and gravel	24,896,000	16,938,000	23,656,000	16,173,000
Stone	8,579,000	16,755,000	7,450,000	16,039,000
Zinc	21,000	6,835,000	17,000	3,871,000
Other minerals . . . . .	...	13,169,000	...	17,073,000
Total . . . . .	...	\$55,710,000	...	\$55,271,000

*Value included with other minerals.

Mineral Production.—Table III shows the tonnage and value of those mineral commodities produced in Wisconsin in 1952 and 1953 (preliminary) whose value exceeded \$100,000. In 1953, Wisconsin was fourth among the states in the output of sand and gravel; and ranked 30th in the value of its mineral output, with 0.38% of the U.S. total.

Woman's Christian Temperance Union, National: see SOCIETIES AND ASSOCIATIONS, U.S.

Women's Clubs, General Federation of: see SOCIETIES AND ASSOCIATIONS, U.S.

Women's Fashions.

The year 1955 was a year of what might be termed "siren simplicity" in women's fashions. Clothes combined willowy sex appeal with fresh youthfulness and ease. Both the 1920s and the French empire had their reflections in the mode, but the blend was thoroughly contemporary. The year's favourite silhouette was a semifitted sheath which revealed the lines of the body without seeming to do so. The waistline was seldom marked by a belt, but its curve was apparent under a long, gently moulded bodice. The bosom line was high and round and the hipline was often accented. Many dresses, suits and coats had half-belts or sashes loosely placed low at the hipline or high, just under the bosom, but they were decorative touches, not meant to distort the normal proportions of the figure. Parisian designers Christian Dior and Balenciaga set the pace with their narrow tunics and semifitted coats and suits.

The influence of the orient, particularly of Japan, India and Turkey, was noted in all branches of fashion, affecting silhouettes, fabrics and colour combinations, and contributing a general mood of splendour. High-bosomed tunic coats derived from the men's coats of India, Persia or China were worn over straight tube dresses or a narrow skirt with a semifitted overblouse. These Asiatic coats were first noted in the American collections of Ben Zuckerman, Norman Norell and Charles

James, and later in such Paris collections as Christian Dior and Givenchy. By fall the "oriental look" was the accepted silhouette. Sari silks, Indian and Persian brocades woven with gold and rich colours, and heavy, loosely woven Indian wild silk were widely used, and the strange unexpected colour combinations of oriental costumes—pink and orange, green and peacock blue, lacquer red with black—were typical of the year's fashion. Dress styles emphasized harem touches. Ceil Chapman launched the Fatima silhouette with an elongated bodice, draped hipline and full "dancing girl" skirt, sometimes with a tucked-under harem hemline. Jewelled harem jackets and rich dolman evening wraps of satin were shown.

The ensemble costume, consisting of a matching coat and dress or two-piece suit with its own overblouse of satin or wool, was emphasized by most designers. The two or three parts of the costume were linked by interesting colour blends or an affinity of fabrics, woven in the same pattern or colour but of different weights.

Most designers found ways to widen the shoulder line without reviving padding. There were large spread collars, full puffed sleeves and elaborately bloused backs. Mainbocher in the United States and Dior in Paris introduced a rising shoulder line by giving tailored sleeves a small rounded hump at the top. This gave a pretty "lift" to the silhouette, like the effect created by harlequin eyeglasses.

Clothes for country living and easy-but-elegant at-home clothes occupied an important place in fashion, reflecting the trends toward suburban living and home entertaining. Both types of clothes combined elegance with ease—tweed suits had jewelled buttons or satin touches, and the favourite at-home costume consisted of sleek tapered trousers of satin, velvet or brocade with a sweater top or satin blouse.

The long evening dress came back into popular fashion. The stately ball dress cut straight or draped in narrow lines, the clinging *femme fatale* dress, and the elaborately bouffant ball dress supplanted the short evening dress among chic women. A new evening length which Chapman called "shorter than long, longer than short" and Pauline Trigere called "intermission length" also had great success. The Castle Walk dress, inspired by the pegtop, calf-length, wraparound dance dress of World War I, was the most popular short evening style. The long dinner dress, usually dark, narrow and often with long tight sleeves, high front and very low-cut back returned to high fashion, but was not an immediate popular success.

Fabrics in the grand manner were used for every purpose, bringing a luxurious, lady-of-quality air to all types of clothes. Daytime woollens, tweeds, worsteds and coatings stressed thistle-down weight and soft finish, and were woven in distinct patterns rather than the random textures of former years. Some deluxe woollens were woven with a mixture of the hair of precious furs, mink or sable, vicuna, angora or cashmere. Cocktail and evening dresses were made in sheer wool chiffon or wool jersey as thin as silk, sometimes mingled with gold.

Wide and boldly contrasting blazer stripes were seen in sports clothes, from cotton knit bathing suits to heavy winter coats. Clan plaid cottons and woollens were favoured in young fashions.

Fur returned as a favourite trimming. Mink and even sable edged evening coats and evening hemlines. Broadtail dyed red, blue or yellow was used to line tweed coats and jackets.

The evening coat and the evening wrap were very important in fashion through the year, bringing vivid colours in velvet, velveteen, corduroy and satin strongly into the coat sphere.

Brilliant colour was a pronounced keynote of the year's fashions, particularly in the unusual, off-beat blends combining the oriental with the modernistic. Red in all shades from Indian



EVENING DRESS of tucked beige *peau de soie* and re-embroidered matching lace, typical of the narrow, fitted look of 1955 formal wear



TWO-PIECE SUIT of black and white tweed, showing the longer, straight lines in the jacket and a wide-collared neckline



FITTED SUIT with funnel-shaped cuffs and beaver trimmed shawl, and worn with a large beaver hat. From the Fath collection, 1955



THE SHEATH, most popular summer style of 1955. The dress shown is black silk linen inset with bold white stripes

BUYERS AND FASHION REPORTERS at the 1955 Dior show at Paris, Fr.



pink to dark carnation, emerald green, sapphire blue and strong yellows were the favoured evening colours.

Brown in all tones from mushroom to dark walnut and green from moss to dark bottle green were heavily endorsed as basic colours, sharing the attention normally paid to gray and beige.

For the first time in several years, the hat became an essential of the smart costume, becoming larger, and being worn over the forehead to balance the thin delicate line of the body silhouette. Hair began to sweep up and backward, to complete the composition of the small elegant head. Fur hats and hats of fuzzy materials such as brushed velours and melusine were popular, and were frequently white above dark town suits or coats.

Shoes in vivid colours with picturesquely high, ultra thin heels, elaborate trimming and jewelled touches brought the focus of fashion to the feet. Fastidiously narrow and aristocratic, the daytime pump was often in coloured kid or calf with pipings of fabric. Evening slippers were fantasies of coloured satin and jewelled strips. Most shoes covered the toe only, leaving the instep and ankle bare without straps. (See also SHOE INDUSTRY.) (C. CN.)

Wood: see FORESTS; LUMBER.

Wool. Revision of world production figures for 1954 showed only slightly higher totals than had been anticipated. Total production during 1955 (the season of 1954-1955 for the southern hemisphere) would amount to about one half of one per cent more than in 1954, according to latest estimates. The most significant changes occurred in the estimated production of the four largest single producers in the world, with Australia showing an increase of approximately 2½%, New Zealand 2%, and South Africa 4%, while Argentina showed a 9% decline and Uruguay a 1½% drop. The United States and the combined minor-producing countries of the world showed little or no change in the over-all picture of production.

Estimated World Wool Production
(In greasy shorn pounds)

Country	1955	1954
Australia	1,280,000,000	1,246,000,000
New Zealand	434,000,000	425,000,000
Argentina	365,000,000	397,000,000
Uruguay	200,000,000	203,000,000
South Africa	295,000,000	282,000,000
United States	288,000,000	290,000,000
Total	2,862,000,000	2,843,000,000
Others	1,567,000,000	1,565,000,000
Grand total	4,429,000,000	4,408,000,000*

*Revised.
Source: Computed by the New York Wool Exchange from data released by the U.S. Department of Commerce and the International Wool Secretariat.

World consumption dropped during 1954, the indicated decline being about 10% from 1953, with the United States showing a drop of approximately 25% from the previous year as consumption was the lowest since 1938. However, commencing in Jan. 1955 a gradual improvement in consumption began, and although, in the aggregate, consumption had not reached the total of the post-World War II years, the first six months showed an approximate 3% gain over 1954. Greatest gains took place in the United States, Belgium, Canada and the German Federal Republic (western Germany).

With slightly improved consumption throughout the world as the year began, prices in the dominion auctions held steady from mid-November 1954 to the end of the auction season in June. As competition held prices steady, clearance of wools in the dominion wool markets was excellent despite postponements and delays occasioned by labour disputes. Meanwhile South American producers once again built up stocks as holders of wool were reluctant to accept world levels of prices. Argen-

tina's internal political struggles were also instrumental in holding down disposal of that country's stocks. The British Commonwealth continued to be the largest purchaser of dominion wools, taking slightly more wool in the 1954-1955 season than in the previous year, Japan, Germany and the United States increased their takings, while France and Italy declined slightly and the U.S.S.R. cut its direct purchases to nil.

The auctions opened in the dominion markets in late Aug. and early Sept. 1955 approximately 10%-15% under the levels of the closing sales in June. After a few weeks of easing prices, the markets took on a firmer tone with good competition bringing about clearances in all markets. Although consumption in the United States had improved, that country still was only a very light operator in world markets, as results of a proposed plan for disposal of government-owned wools were awaited. The world price for apparel wool in September was about \$1.40 per clean pound as compared with \$1.60 per clean pound a year previous and with \$1.70 per clean pound in 1953. (See also LIVESTOCK; TEXTILE INDUSTRY.) (H. D. W.)

Words and Meanings, New. English adds many new words to its vocabulary every year, some destined to live long, others to die soon. The words listed below, pertaining largely to 1954-55, are but a small residue of those collected by the committee preparing this article.

Attention may be called to several groups of the coinages below. As usual, scientific and technological advances were well represented among the new words and meanings: witness "aerosoloscope," "automated," "chlorpromazine," "gyrobus," "ICBM," "properdin," "pyrizinamide," and "spider." New terms such as "A-course," "Atlas," "blood chit," "brush fire war," "DEW line," "Red world," "summit," and "Texas Tower" reflected the international scene. The U.S. scene was represented by a number of interesting coinages in a variety of fields: for example, "active ease," "certified mail," "codetermination," "decompetition," "junk mail," "neo-Democrat," "oillonaire," "pedestrian window," "rock-and-roll," "toll television," and "urbiculture."

The words listed below became prominent or were seemingly used for the first time during 1954 and 1955. Dates within the parentheses following a word or definition indicate the first recorded use of the new word or meaning in the files of the committee.

A hyphen preceding the date means that the word or meaning is suspected of being older than the date given. If no date is given, the first record on file is 1955.

- accordionized, adj.** Compressed. (1954)
- A-course.** A course in the operation of nuclear reactors offered to the representatives of other nations by the U.S. as a part of Pres. Dwight D. Eisenhower's atoms-for-peace program.
- active ease.** A federal reserve policy for rather liberal granting of credit. (1954)
- activity area.** In current home architecture, the part of the house where some characteristic living activity is carried on.
- adventurama, n.** An adventure motion picture.
- aerosoloscope, n.** An instrument used to detect poison gas, etc.
- agonizing reappraisal.** A reappraisal necessitating unpleasant readjustments.
- air tractor.** An aeroplane for farm use.
- aldosterone, n.** An antirheumatism drug.
- A-line, n.** A 1955 feminine fashion featuring a flared skirt which tends to give the wearer the silhouette of an A. **A-look, n.**
- APC viruses.** Adenoidal-pharyngeal-conjunctival viruses.
- Archer cloth gown.** A gown, designed by Vincent W. Archer, made of spun glass, to protect radiologists from X-rays. (1954)
- Atlas, n.** An intercontinental ballistic missile. (1954)
- atom eye.** A device for measuring radio activity. (1954)
- atomic rain.** Radioactive fall-out from an atomic bomb blast. (1954)
- automated, adj.** Made automatic, through automation, or automatic control and instrumentation. (1952)
- beercasting, n.** Beer advertising on radio and TV. (1952)
- blood chit.** A guarantee of a reward payment in gold to anyone who helps a U.S. pilot, shot down in enemy territory, to escape. Also **blood chip.** (1944)
- boom bucket.** The ejection seat in a jet aeroplane.
- brainprint, n.** A photograph of brain waves. (1954)

- bricabracomania**, *n.* One who is excessively fond of bric-a-brac. (1954)
- Britonologist**, *n.* An archaeologist specializing in early British history. (1954)
- brush fire war**. A small but dangerous war. *Cf.* **proxy war**.
- certified mail**. Mail which, though uninsured, requires a signed receipt by the recipient. Put into practice June 3, 1955.
- cha-cha-cha**, *n.* A Cuban dance, to triple-beat time, popular in the U.S. (1954)
- chlorpromazine**, *n.* A drug for treating mental illness. (1954)
- church key**. *Slang*. A can or bottle opener, especially for beer.
- classic car**, *n.* An automobile manufactured during the period 1925-42.
- co-curriculum activities**. Activities during schooltime and under school supervision, not part of the course of study. (-1954)
- codetermination**, *n.* The management of a business by both management and labour.
- CONAD**, Continental Air Defense, with headquarters in Colorado Springs, Colo.
- cookfire**, *n.* A metal cooking stand for outdoor cooking. (1954)
- cue card**. A large card with key words or phrases used to prompt a person doing a telecast. (1954) Also called **idiot board** (1952). **idiot sheet**. (1953)
- cycloserine**, *n.* An antibiotic for the treatment of tuberculosis.
- DDVP**, Short for dimethyl dichloro vinyl phosphate, a new insecticide developed by the U.S. public health service, said to be more potent and less toxic than DDT.
- death-control**, *n.* Lengthening of human life by medical care. (1954)
- death jockey**. A reckless driver.
- decompetition**, *n.* The withdrawal of the U.S. government from fields in which it competes with private enterprise. **decompeting**, *n.*
- demolition derby**. A stock car bump-and-crash, elimination contest. (1953)
- DEW line**. Distant early warning radar line or fence (which see). (1953)
- dinitroamine**, *n.* A weed control spray.
- distant early warning line**. A line of radar stations in Canada and Alaska built to give warning of the approach of hostile aeroplanes. (1953)
- divider**, *n.* Short for **space divider** (which see). (1952)
- dream car**. An experimental automobile using many new devices and ideas. (1953)
- egobiography**, *n.* A highly subjective biography. (1954)
- electric yardmaster**. An electronic device for retarding railroad cars that have been "humped." (1954)
- Europeinize**, *v.t. Specif.* To put under the rule of a neutral commission; to neutralize and make part of all Europe. (1952)
- fish stick**. A frozen piece of fish all ready for cooking. (1953)
- floathouse**, *n.* A houseboat, but with emphasis on mobility.
- FLOGWINGS**, Fleet Logistics Air Wings.
- Flying Bedstead**. Nickname for a British vertical-take-off jet aeroplane, with four tubular legs, which rises by the vertical thrust of its engine against the ground. (1954)
- flying platform**. A circular platform which can rise vertically and hover, and is steered by the shifting of the pilot's weight. The U.S. navy's one-man helicopter.
- flying radar station**. Nickname for a Super Constellation that is radar-equipped for defense. (-1955)
- gadget bag**. A bag with a shoulder strap for carrying photographic supplies and equipment.
- GAW**, Guaranteed annual wage. (1954)
- glottocentric**, *adj.* Highly language conscious. (1954)
- gymnatorium**, *n.* A combination gymnasium and auditorium.
- gyrobus**, *n.* A bus powered by an electrically charged gyroscope.
- happy**, *n. Slang*. An off-beat jazz record.
- hard reader**. A person who specializes in reading difficult handwriting.
- heli-car**, *n.* A combination helicopter and car.
- helistop**, *n.* A landing field for helicopters.
- hinconstarch**, *n.* A drug effective against the tubercle bacillus.
- ICBM**, intercontinental ballistic missile. Formerly **IBM**.
- incomumerator**, *n.* A mechanical device for rapidly counting small articles.
- idiot board**, **idiot sheet**. *See* **cue card**.
- infiltrate**, *n.* One who has infiltrated. (1954)
- initiate**, *adj.* Descriptive of the quality of a genuine esoteric. (1954)
- junk mail**. Advertisements addressed simply to "occupant" or "boxholder." Discontinued in cities and villages March 21, 1955. (1953)
- lectern theatre**. A theatre in which a performance is read, not acted; a performance of this sort. (1954)
- LOGAIR**, All-cargo Logistics airline.
- logger**, *n.* An automatic recorder of conditions such as temperature and pressure.
- Lorac**, long-range accuracy. (1954)
- McGill Fence**. Mid-Canada line of robot radar stations for warning of approaching aeroplanes. (1954)
- metacortandracin**, *n.* A drug for the treatment of rheumatoid arthritis, more effective than cortisone. (1954)
- metacortandralone**, *n.* A drug more effective than cortisone in the treatment of rheumatoid arthritis. (1954)
- meteoriticist**, *n.* A student of meteorites.
- Mid-Canada line**. The **McGill Fence** (which see). (1954)
- mini-pig**, *n.* A small pig bred for medical research. (1954)
- morning-glory bandit**. Nickname for a robber who robs a bank just before opening time.
- neo-Democrat**, *n.* A person who has been a Democrat for only a short time. (1954)
- nontelevised**, *adj.* Not exposed to television shows. (1954)
- nursery weight**. The weight of a child.
- oillionaire**, *n.* A millionaire whose wealth is derived from oil. (1952)
- one-take**, *adj.* *Motion Picture*. Made with one photographing, without repetition. (1954)
- open occupancy**. State of being open to any race; "the subdivision is planned for open occupancy." (1954)
- OPSPA**. Nickname for an experimental drug (oxa-penta-methylene-diethyl-ene-thio-phosphoramidate) found to cure some cancers in animals.
- option**, *n.* *Football*. A play in which the quarterback (or other possessor of the ball) has an option of passing it or running with it. (1954)
- package book**. A book written to publisher's specifications. (1954)
- pedestrian window**. A teller's window placed on the outside of a bank so that depositors can do business without going inside.
- pediarchy**, *n.* Child dominance. (1954)
- pentolinum tartrate**. A drug for lowering blood pressure. (1954)
- perinatal**, *adj.* Related to birth (including such data as stillbirths and infant deaths).
- periodization**, *n.* Division into (historical) periods.
- piggy-back legislation**. A rider irrelevant to the purposes of the main bill.
- Pinetree Chain**. A chain of radar warning stations situated a short distance north of the U.S.-Canadian border. (1954)
- properdin**, *n.* A protein aiding immunity to disease. (1954)
- prosegregationist**, *n.* A person favouring continuation of "segregated" schools. (1954)
- prosopagnosia**, *n.* Loss of memory for faces.
- proxy war**. A small localized war. *Cf.* **brush fire war**.
- pyrizinamide**, *n.* An experimental antituberculosis drug.
- PZA**, short for pyrizinamide.
- rabbit**, *n.* A pacer in a running event in a track meet.
- radio sextant**. An instrument for navigating by radio waves.
- rawinsonder**, *n.* A person engaged in rawinsonde; *i.e.*, the collection of data concerning the upper atmosphere.
- Red world**. The communist-dominated countries considered as a unit.
- remediated**, *adj.* Subjected to remedial education. (1954)
- resegregate**, *v.t.* To return (a desegregated school) to its original state of segregation. (1954) **resegregation**, *n.* (1954)
- rock-and-roll**, *n.* A dance to music heavily accented on the second and fourth beats.
- runathon**, *n.* A high-scoring baseball game.
- scooter trailer**. A small trailer with sleeping accommodations.
- second banana**. *Slang*. A supporting comic actor or actress. (1953)
- shell house**. A house with an unfinished interior.
- sitting park**. A small park used primarily for sitting. (1954)
- skymobile**, *n.* A helicopter.
- smust**, *n.* A combination of smoke and dust. (1953)
- snook**, *n.* (*Cf.* **snook**, "An informer.") A collaborator with the enemy. (1954)
- soaperatic**, *adj.* Of or pertaining to soap opera. (1954)
- soap-sudder**, *n.* A writer and producer of TV shows.
- space divider**. A cabinet unit or partial wall used to divide different areas of a house. Also **divider**, *n.*
- spider**, *n.* Nickname for a radar device at Stanford university to study the smallest meteorites for information concerning radio communication, the weather, etc.
- squib kick**. *Football*. A short kick. (-1952) **squib**, *n.*
- summit**, *adj. Specif.* Top-level. Also *n.* (1953)
- surveillance-radar unit**. A device for locating aeroplanes in flight. (1954)
- topologist**, *n.* A sound-recording expert. (1954)
- Texas Tower**. One of a string of radar towers for warning of aircraft approach built along the continental shelf up to 100 mi. out into the Atlantic ocean. So called because it looks like an oil rig in the Gulf of Mexico. (1954)
- thermidity**, *n.* A formula for combining temperature and relative humidity in one figure.
- toll television**, **toll TV**, **toll video**. Television paid for by the viewer with a metering device.
- twi-night**, *adj.* Descriptive of two showings in one night. (1954)
- 2 x policy**. Massive retaliation.
- U-bomb**, *n.* A superweapon combining the principles of the A- and the H-bomb.
- UFO**, unidentified flying object. (1953)
- urbiculture**, *n.* Things pertaining to and of interest to city dwellers. (1954)
- water barrier**. A speed of about 200 m.p.h., considered very difficult for speedboats to attain or exceed.
- whoduniteer**, *n. Slang*. A mystery story writer. (1954) (I. W. R.)

World Assembly for Moral Re-Armament.

The chief assemblies for Moral Re-Armament in 1955 were held in Caux, Switz., at Mackinac Island, Mich., and at Washington, D.C. The assembly at Caux attracted 5,955 delegates from every continent, bringing the total since World War II to 84,000 from 121 countries.

From the Mackinac assembly, whose theme was "An Answer that Works," a world ideological mission travelled at the invitation of heads of state and leaders of government to 18 countries in Asia, Africa and the middle east. Among the 244 persons from 28 countries who participated in the mission were: Theodor Oberländer, minister in the Federal German cabinet; Eugene Claudius Petit, member of 10 post World War II French governments and minister of labour under Pierre Mendès-France; Mohammed Masmoudi, minister of national economy, Tunisia; Ole Bjorn Kraft, former Danish foreign minister, chairman of the North Atlantic Treaty organization (NATO), 1952-53; Joseph Scott of Los Angeles, Calif., leading Catholic layman and attorney; Jiro Hoshijima, senior member of the Japanese diet and supreme adviser to the Democrat party; and members of parliament from eight other countries.

Accompanying the mission was the ideological musical play

"The Vanishing Island," which was described by Lauritz Melchior as "a wonderful show. Its idea, music and lyrics will be a revelation to everyone, capturing the heart of every man and nation."

At the Caux assembly delegates from all parts of Africa, including 13 members of parliament from Nigeria, were present. A new play entitled "Freedom" was written and produced by an all-African cast in six days and presented in many of the capitals of Europe. In Bonn, Ger., Vice-Chancellor Franz Blücher welcomed the cast at an official reception on behalf of the German federal government.

Delegates from India and Pakistan spoke together of the growing force of Moral Re-Armament in their countries. Jaiendra Kumar, Hindi author of India and member of the executive of the National Academy of Letters, in presenting a special portrait of Mahatma Gandhi, said, "Gandhi belonged to the whole world. Moral Re-Armament also belongs to every nation."

The Washington assembly in January was attended by parliamentarians from nine countries. Fifteen members of the senate and house of representatives spoke in congress of its work.

Delegates from 11 Asian and African nations said in a report, "Moral Re-Armament has brought us unity born of change starting with ourselves, compelling enough to bridge every barrier. It is a new light of hope for Asia and Africa—and America too." (F. N. D. B.)

World Bank: *see* INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT.

World Council of Christian Education: *see* RELIGIOUS EDUCATION.

World Council of Churches: *see* CHRISTIAN UNITY; RELIGION; SOCIETIES AND ASSOCIATIONS, U.S.

World Health Organization. The World Health organization (WHO) became a specialized agency of the United Nations on Sept. 1, 1948, when 26 countries had ratified its constitution, and by 1955 comprised 81 full member states and 4 associate members.

As a result of the demonstrated fact that certain anopheles vector species of malaria had developed resistance against residual insecticides, the eighth World Health assembly decided that "WHO should take the initiative, provide technical advice and encourage research and co-ordination of resources in the implementation of a programme having as its ultimate objective the worldwide eradication of malaria." It was envisaged that if this program were fully implemented malaria eradication might be achieved in most parts of the world in about ten years' time. Also, WHO entered upon the field of the peaceful uses of atomic energy and participated in the conference on this subject held in Geneva, Switz., during Aug. 1955.

On the eve of the new malaria eradication plan, to implement which WHO was sending many internationally known malariologists to crucial areas, malaria control projects assisted by the organization were under way during the year in Burma, Cambodia, the Caribbean area, Central America, China (Formosa), Colombia, Dominican Republic, British East Africa, French Cameroun, Haiti, Indonesia, Iran, Iraq, Liberia, Mexico, Nepal, Nigeria, Sarawak, Saudi Arabia, Syria and among Arab refugees from Palestine. A further improvement was effected in the cost of controlling treponemal diseases, such as yaws, which fell during 1955 to approximately 75 cents per patient or contact treated with penicillin and about 10 cents per patient examined, including all national and international expenditures, in new campaigns launched in the Caribbean area, Fiji and Western Samoa and Netherlands New Guinea, as well as in campaigns continued from the previous year in Haiti, Indonesia, Laos, Liberia,

Malaya, Nigeria, Philippines and Thailand. By the end of 1955 more than 40,000,000 people had been examined and 10,000,000 treated in these and allied mass campaigns (including venereal disease control and endemic syphilis campaigns) assisted by WHO.

Following the development of a vaccine against poliomyelitis, WHO convened a study group toward the end of 1955 of leading experts from nine different countries to summarize the present stage of knowledge and to advise on the essential facts on which a policy regarding the future public health application of vaccination against poliomyelitis under different epidemiological conditions might be based.

In order to ameliorate the acute shortage of nursing staff, particularly in underdeveloped areas, WHO added 38 nurses and midwives to its international training staff, which reached a total of 158. Fifty-six of these were working with national nurses in providing basic training in 22 countries; 29 nurse midwives assisted in training in seven countries.

Closely linked with these, WHO staff assisted in maternal and child health demonstration and training programs in Afghanistan, Cambodia, Hong Kong, Iran, Iraq, Jordan, Libya, Pakistan, Turkey and Vietnam, while programs for the development of general public health services with special emphasis on maternal and child health were initiated (with the help of UNICEF) in Bolivia, Ethiopia, Honduras and Uruguay and were continued from the previous year in Guatemala, Colombia, Dominican Republic, Ecuador, Nicaragua, Panamá, Paraguay, Peru and Thailand.

In environmental sanitation, WHO's training program was further developed during the year with new projects started in India, Egypt, Afghanistan and Libya, while existing training courses for sanitary engineers and inspectors continued in Mexico, Brazil, Chile and Ethiopia.

World-wide Epidemiological Intelligence and Health Statistics services, which warn public health administrations everywhere by radio and weekly mailed bulletins of outbreaks of epidemic diseases, continued to be operated from headquarters in Geneva, and statistical reports and technical journals and monographs on specific health problems continued to be published.

The eighth World Health assembly took place in May 1955 at Mexico City and approved a budget of \$10,203,084 for the year 1956. A sum of \$309,000 was set aside from the 1956 regular budget to assist world-wide malaria eradication, while the assembly also established a special fund for this purpose open to voluntary contributions from governments and private sources. More than 300 major health programs were included in the program proposed by M. G. Candau, director-general, for 1956 and approved by the assembly. The Sudan was admitted as an associate member, while the Soviet Union announced during the course of the year that it would resume active participation in the work of WHO.

The ninth World Health assembly was to take place in Geneva during May 1956. (*See also* CHILD WELFARE.) (M. S. W.)

Wrestling. A small squad of seven grapplers from Japan captured the greatest attention in the national Amateur Athletic union championships held at the Amityville Memorial high school in Amityville, L.I., N.Y., March 31, April 2-3, 1955. Ineligible for the team award, the visitors took three titles in each of the free-style and Graeco-Roman divisions. Katsutoshi Yokoyama was a double victor at 114½ lb. William Kerslake of Cleveland, O., competing unattached, won unlimited class honours in both types of wrestling for the third straight year. The New York Athletic club took the free-style team trophy and the Ft. Campbell (Ky.) team triumphed in the Graeco-Roman competition.

Free-Style Champions

114.5 lb.—Katsutoshi Yokoyama, Japan.
 125.5 lb.—Etsuma Iwano, Japan.
 136.5 lb.—Motoichi Motohoshi, Japan.
 147.5 lb.—Joseph Scandura, New York A.C.
 160.5 lb.—Melvin Northrup, San Francisco, Calif.
 174 lb.—Wenzel Hubel, Ft. Campbell, Ky.
 191 lb.—Tim Woodin, Ithaca (N.Y.) Grapplers.
 Heavyweight—William Kerslake, Cleveland, O.

Graeco-Roman Champions

114.5 lb.—Katsutoshi Yokoyama, Japan.
 125.5 lb.—Shuhei Imada, Japan.
 136.5 lb.—Todashi Numajiri, Japan.
 147.5 lb.—Newton Copple, New York A.C.
 160.5 lb.—Henrik Hansen, McBurney Y.M.C.A.
 174 lb.—Jim Peckham, Boston (Mass.) Y.M.C.A.
 191 lb.—Bob Steckle, Kitchener (Toronto) Y.M.C.A.
 Heavyweight—William Kerslake, Cleveland, O.

The third national judo tourney of the A.A.U. was conducted under the auspices of the Nanka Judo Yudansha-Kai (Southern California Judo Black Belt association) at the Olympic auditorium at Los Angeles in May. A total of 278 contests were held in two days of competition. Individual winners were:

130 lb.—Ben Takahashi, Hollywood, Calif.
 150 lb.—Kenji Yamada, Seattle, Wash.
 180 lb.—John Osako, Chicago, Ill.
 Heavyweight—Eugene La Bell, Hollywood.

College Wrestling.—Oklahoma A. and M. college of Stillwater, Okla., won the National Collegiate Athletic association team title for the second successive campaign in the annual tournament held at Cornell university, Ithaca, N.Y., March 26–27. Individual victors follow:

115 lb.—Terrence McCann, Iowa.
 123 lb.—Ed Peery, Pittsburgh (Pa.).
 130 lb.—Myron Roderick, Oklahoma Aggies.
 137 lb.—Lawrence Fornicola, Penn State.
 147 lb.—Edward Eichelberger, Lehigh.
 157 lb.—Bill Weick, Iowa State Teachers.
 167 lb.—Fred Davis, Oklahoma Aggies.
 177 lb.—Dan Hodge, Oklahoma.
 191 lb.—Peter Blair, Navy.
 Heavyweight—William Oberly, Penn State.

(T. V. H.)

Wyoming.

A Rocky mountain state of the United States, 1890, as the 44th state. The name of the state, which means "the end of the plains," was derived from the Delaware Indian language and the Wyoming valley in Pennsylvania. It derived its motto "Equality state" because of its pioneer work in woman suffrage. It is also known as the "Sagebrush state" and the "Cowboy state." Wyoming ranks 8th in size and 47th in population among the states. The land area is 97,506 sq.mi.; water area, 408 sq.mi. The 1950 census, which gave a total population of 290,529, listed rural inhabitants at 145,911, or 50.2% of the population of the state, and urban at 144,618, or 49.8%. Of the total inhabitants, 270,719 were listed as native white, 2,557 as Negro, 13,290 as foreign born and 3,963 as nonwhite. The July 1, 1955, population estimate was 295,000. The capital is Cheyenne, with a population (1950 census) of 31,935. The other cities with populations of 10,000 or more were: Casper, 23,673; Laramie, 15,581; Sheridan, 11,500; and Rock Springs, 10,857.

History.—In the federal legislature, the state of Wyoming was represented in 1955 by a Democratic senator, Joseph C. O'Mahoney; a Republican senator, Frank A. Barrett; and a Republican representative, E. Keith Thomson. Elected in 1954 to state offices for the term of 1955–1959 were Milward L. Simpson, governor; Everett T. Copenhaver, secretary of state; Mrs. Minnie A. Mitchell, auditor; Charles B. Morgan, treasurer; and Miss Velma Linford, superintendent of public instruction. The state senate was composed of 19 Republicans and 8 Democrats, and the state house consisted of 33 Republicans and 23 Democrats for the period 1955–56.

Range feed in eastern Wyoming made a rapid comeback after the 1954 drought and feed supplies were generally good in this area. Drought conditions prevailed in parts of south central and central Wyoming again in 1955 and six counties were de-

clared disaster areas by the president. Cash receipts from farm and ranch marketings in 1955 were expected to equal or exceed 1954. Crops were good in dry-land areas and in most irrigated sections.

The first really important Wyoming deposit of lithium, used in the production of hydrogen bombs, was discovered in 1954. Selenium was discovered near Baggs, Wyo., in 1955. A strategic nonmetallic element, the deposit was believed to be the first commercial selenium mining deposit in the United States. Uranium production was rapidly expanding although exact production data was still classified. The first government uranium buying station went into operation at Riverton, Wyo., in 1955. Many coal mines in the southwestern part of the state which had been closed in 1954 were reopened in 1955.

Education.—In 1954–55 there were 555 elementary and rural schools in Wyoming, with 1,537 elementary teachers and 432 rural teachers and a total enrolment of 68,201. There were 87 accredited high schools with 1,059 teachers and an enrolment of 15,708. State operating expenditures for education in 1954–55 were approximately \$20,489,497. A total of 150 school administrators were employed in the state during this period.

Social Insurance and Assistance, Public Welfare, and Related Programs.—Funds spent on public welfare for the period Oct. 1, 1954, to Sept. 30, 1955, were spent as follows: old-age assistance \$2,828,128; aid to dependent children \$721,178; aid to the blind \$52,291; general welfare \$221,824; aid to the permanently and totally disabled \$326,556; general welfare health \$443,594. Unemployment insurance payments amounted to \$2,662,724 for the fiscal year ended June 30, 1955.

Correctional institutions had 409 inmates and appropriations (for the period July 1, 1955, to June, 1957) as follows: state penitentiary at Rawlins, 296 inmates, appropriation \$515,500, capital outlay \$25,000; penitentiary farm at Riverton, appropriation \$97,914, capital outlay \$25,000; girl's school at Sheridan, 58 inmates, appropriation \$225,800, capital outlay \$5,200; boy's school at Worland, 55 inmates, appropriation \$249,337, capital outlay \$104,600.

A home and hospital for the aged at Thermopolis, the only state-owned and state-operated home of this type in the United States, was granted an appropriation of \$239,500, capital outlay \$218,500.

Communications.—During the period July 1, 1953, to June 30, 1954, the Wyoming highway department let approximately 149 contracts for a total expenditure of \$10,644,640, of which 44 contracts amounting to \$1,599,630 were for state-county co-operative projects. The highway system in Wyoming consisted of 4,829.4 mi., of which 1,530.2 mi. were secondary routes. The maintenance budget for the period Jan. 1, 1954, to Dec. 31, 1954, was set at \$3,300,000. There were 7 railroads in the state in 1954 with main track mileage (within the state) of 2,385.56 mi. There were 42 commercial and municipal airports and airfields in the state in 1955, of which 2 were used jointly by the military, and 90 private strips. There were 95,084 telephones.

Banking and Finance.—On June 30, 1955, there were 28 state banks with deposits of \$83,113,657.87 and resources of \$91,363,648.45. There were 25 national banks with deposits of \$224,548,434.92 and resources of \$241,462,123.47. On Dec. 31, 1954, there were 10 savings and loan companies with resources of \$37,527,460. Total state receipts for the period of July 1, 1954, to June 30, 1955, were \$65,815,112.14. Total disbursements for the same period were \$57,699,626.95. As of June 30, 1955, the state was obligated for \$3,695,000 worth of revenue bonds (not guaranteed). The state had no general obligation bonds.

Table I.—Principal Crops of Wyoming

	Indicated 1955	1954	Average 1944–53
Corn, bu.	1,254,000	875,000	988,000
Wheat, bu.	5,351,000	3,315,000	6,075,000
Oats, bu.	4,680,000	3,564,000	4,602,000
Barley, bu.	4,088,000	3,648,000	4,176,000
Hay, tons	1,390,000	1,103,000	1,231,000
Beans, dry, 100-lb bags	899,000	976,000	1,085,000
Sugar beets, tons	392,000	475,000	411,000
Potatoes, bu.	1,633,000	1,536,000	1,784,000

Source: U.S. Department of Agriculture.

Agriculture.—The total acreage of crops including wild hay harvested in 1953 was 2,022,000. Cash receipts from crops and livestock and livestock products amounted to \$128,824,000. Cash receipts from crops accounted for 25.7% of the total, and livestock and livestock products

Table II.—Number and Value of Livestock in Wyoming

	Jan. 1, 1954 No. on farms	Value, 1954	Jan. 1, 1953 No. on farms	Value, 1953
Cattle and calves	1,178,000	\$108,376,000	1,178,000	\$139,004,000
Hogs and pigs	37,000	1,202,000	53,000	1,150,000
Stock sheep and lambs	1,935,000	27,864,000	2,103,000	34,700,000
Horses	63,000	2,583,000	66,000	2,310,000
Mules	1,000	40,000	1,000	40,000
Chickens	670,000	871,000	658,000	822,000
Turkeys	11,000	70,000	13,000	78,000

Source: U.S. Department of Agriculture.

for 74.3%. Government payments of all kinds for 1953 totalled \$3,382,000.

Manufacturing.—According to the 1952 survey of manufactures made by the bureau of the census, the total estimated value added by manufacturers was \$38,094,000. The total employment (production workers

only) at this time was 4.241, with total wages paid amounting to \$17-346,000. Total pay roll for the year 1952 for both administrative and production workers was \$23,805,000. (W. F. Bg.)

Mineral Production.- Table III shows the tonnage and value of those mineral commodities produced in Wyoming in 1952 and 1953 (preliminary) whose value exceeded \$100,000. In 1953, Wyoming was third among the states in output of vermiculite, and ranked 16th among the states in the value of its mineral output, with 1.78% of the U.S. total.

Table III.—Mineral Production of Wyoming
(Short tons, except as noted)

Mineral	1952		1953	
	Quantity	Value	Quantity	Value
Clays	707,000	\$ 9,177,000	853,000	\$10,037,000
Coal	6,088,000	26,452,000	5,245,000	23,744,000
Iron ore	543,000	*	733,000	*
Natural gas (000 cu. ft.)	75,313,000	5,874,000	76,262,000	6,025,000
Natural gasoline (gal.)	51,000,000	4,016,000	?	*
Petroleum (bbl.)	68,074,000	148,400,000	82,618,000	195,800,000
Petroleum gases (gal.)	39,000,000	1,881,000	?	*
Phosphate rock	187,000	1,247,000	?	*
Sand and gravel	2,427,000	1,739,000	3,149,000	2,001,000
Stone	1,467,000	1,689,000	1,431,000	1,840,000
Other minerals . . . . .	...	6,353,000	...	16,459,000
Total		\$206,828,000		\$255,906,000

*Value included with other minerals.

X-Ray and Radiology.

S. Macht and P. Lawrence reported in March 1955 the results of an extensive study of the possible effects of relatively small but frequent doses of ionizing radiation on the offspring of radiologists as compared with a control group of nonradiologists. Questionnaires were sent to approximately 3,800 radiologists and 3,800 other medical specialists as controls. It was discovered that normal offspring constituted 82.83% of the unexposed group as compared with 80.59% normal offspring of the exposed group. The offspring of exposed fathers (radiologists) also showed a higher incidence of congenital defects. Congenital defects in offspring of the exposed group had an incidence of 5.99% while in the control group the incidence was 4.84%. These figures indicated that the exposed group showed a consistent trend of higher rates of abnormality in the first generation offspring. The effect on future generations might be much more severe and numerous.

Roentgen examination of the pancreas was made by H. Doubilet and his associates with injection of aqueous contrast medium through a polyvinyl tube inserted into the duct of Wirsung at surgery. This examination was also made postoperatively through a plastic tube which was brought through the abdominal incision along with a T tube which was inserted into the common duct. The authors concluded that the examination was of value in demonstrating the anatomy of the pancreatic duct system, demonstrating aetiologic factors and various pathological features in the clinical course of recurrent pancreatitis, and also demonstrating the presence of oedema or acute inflammation in any part of the pancreas and its resolution under treatment. This study furthered the understanding of the physiology and pathology of the pancreas.

Since tumours within the orbit are frequently difficult to diagnose, the studies made by P. Manchester *et al.* on orbitography were an important step in the roentgenologic diagnosis of tumours of the eye region. Orbitography is defined as the roentgenographic contrast visualization of the orbital structures. Experiments were done by the injection of a water-soluble contrast medium, Diodrast, directly into the orbits of rabbits. Good X-rays were obtained of the orbital structures following the injection of one cubic centimetre of Diodrast. Diodrast is somewhat irritating to the orbital structures if contact is prolonged. The use of hyaluronidase considerably enhanced the absorption of Diodrast and thereby reduced the irritation to the orbital structures. The safety of the procedure was demonstrated in rabbits. It was soon to be tried cautiously in humans.

Intravenous urography in pediatrics is often made difficult by the large amount of gas and faeces in the gastrointestinal tract which obscures the kidney regions. Another factor is the low specific gravity of the urine in infants and consequent poor

concentration of opaque medium in the urine, producing poor pyelographic studies. J. Hope and F. Campoy overcame these difficulties by dehydrating the patients and then using oral feedings of a carbonated beverage following the intravenous injection of the opaque medium. The stomach becomes distended with gas and the underlying kidney shadows are well outlined and visualized. In a series of 200 cases they had excellent intravenous urographic studies in 95%.

Acute radiation sickness frequently interferes with the treatment of malignant tumours by radiation. Corticotropin made it possible to treat tumours more intensively and with much higher doses. Approximately 15 radiologists reported to K. Taber concerning their experience with ACTH in relieving radiation sickness. The vast majority of the patients they treated showed excellent response. Corticotropin provided a valuable contribution to the armamentarium of drugs used whenever radiation sickness occurs. This included patients treated for malignant conditions acquired by roentgen radiation, radioactive isotopes or even in fission bomb disasters.

Radioactive colloidal gold is a useful drug in the treatment of serous effusions resulting from cancer, but technical difficulties limit the ease of use of this isotope. Personnel must be protected from the high-energy gamma radiation and from spillage of the radioactive colloidal gold solution. N. Simon and J. Melamed devised a simple and safe technique for the administration of radioactive gold at Mount Sinai hospital, New York city. By using their technique, no member of the team administering the gold had received more than three milliroentgens of total body radiation in a single treatment. The safety of the procedure was in part the result of its simplicity. The method of administration is to displace the gold from a lead-shielded bottle into the patient from an elevated bottle of saline solution. Expendable plastic tubing which is commercially available is used throughout the procedure. This simple and safe method of administration makes it possible for a larger number of patients to be treated palliatively with radioactive gold.

The interest in high-energy radiation for the treatment of cancer had grown during the past few years. M. Friedman, J. Dresner and G. Hine reviewed the major advantages of super-voltage radiation including increased relative depth dose and reduced skin absorption. Tumour-lethal doses can be delivered to deep-seated tumours which could not be adequately treated with conventional X-ray therapy (250 K.V.P.) machines. Further progress was made with the use of multiple portal crossfiring techniques and rotation therapy. Using these methods, lethal doses can be delivered to tumours while the normal tissues are spared. (See also TUBERCULOSIS.)

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Yachting.

If one were to pick the outstanding yacht and yachtsman of 1955, it would have to be the 54-ft. yawl "Carina II" of Greenwich, Conn., and her owner-skipper, Richard S. Nye. Designed by Philip L. Rhodes of New York and built in Germany, "Carina II" was unloaded from a steamer in New York little more than a week before the start of the 3,450-mi. race from Newport to Sweden, rigged and

fitted out in record time and on June 11, a completely untried craft, she started with six other U.S., German and Norwegian yachts in the trans-Atlantic race. Confounding the experts who said no yacht could safely, let alone successfully, undertake such a shakedown race, she won the race to Sweden—and went on winning. In seven starts she won the trans-Atlantic race; the Fastnet race in a fleet of 46 of the fastest ocean racing yachts in British and European waters; the Britannia, New York Yacht Club Challenge, and Preston Challenge cups in shorter races in British waters, and in her other two starts took a second and a fourth prize.

In another trans-Atlantic race, of 4,200 mi. from Havana, Cuba, to San Sebastian, Sp., the winner among four starters was the 70-ft. yawl "Mare Nostrum," under the Spanish flag, owned and commanded by Enrique Urrutia. "Mare Nostrum" also sailed in the Fastnet race, leading the fleet home although beaten on corrected time.

In the trans-Pacific race, from Los Angeles to Honolulu, Hawaii, history was made when the 39-ft. ketch "Staghound," Ira J. Fulmore, won her second consecutive victory, topping the record 53-boat fleet in a windy race in which the first boat to finish, Richard S. Rheem's 96-ft. ketch "Morning Star," set a new race record of 9 days, 15 hr., 5 min., 10 sec. for the 2,225 mi.

Other major ocean and long distance race winners: the southern circuit, Governor of Florida's trophy, won by "Hoot Mon" owned by Worth Brown, Lockwood Pirie and Charles Ulmer, for the second consecutive year; "Hoot Mon" also took her second St. Petersburg-Havana race. On the east coast, Storm Trysail club-Block Island race, won by "Niña," C. DeCoursey Fales; New London-Annapolis race, won by "Actaea," Henry Sears; Stamford-Vineyard race, won by "Revonoc," Harvey Conover. On the west coast, Swiftsure race, won by "Serada," C. D. Goodhope; Tri-Island series, won by "Ono," Herbert Ward Day; Buckner Trophy race, won by "Ocean Queen V," Ray Demere; the Whitney trophy (Southern California ocean racing series), won by "Nalu II," Peter Grant. On the Great Lakes, Chicago-Mackinac race, won by "Revelry," Norman Sarns; Port Huron-Mackinac race, won by "Glory Bea II," James Parlin; Rochester race, won by "Rascal," Mort Anstice.

A dozen or more U.S. yachts took part in the 125th anniversary regatta of the Royal Swedish Yacht club on the Baltic. One of them, "Windigo," Walter Gubelmann, won the around-Gotland long distance race and another, "Arabella," Pehr Sparre, took the class 4 prize in the same event. U.S. six-metre sloops also took part in the racing at Sandhamn, Swed., but brought home no prizes as "Ylliam IX," Andre Firmenich, of Switzerland, won the One Ton cup. However, a few weeks later on the Solent the same U.S. six-metre team won both the British-American and Old World-New World team race series without losing a single race. In other six-metre events two Toronto, Can., boats took the honours: "Buzzy II," William Gooderham, the North American championships and "Bibis," Denbeigh Taylor, the George cup.

A novel feature of the season was the 50th anniversary of the famous Herreshoff-designed New York Yacht club 30-ft. class. Several of the old but sprightly sloops were out and racing and Henry H. Horrocks' "Blue Moon," from the Chesapeake bay, won the official Golden Jubilee regatta off Manhasset bay, L.I.

Outstanding yacht on the New York Yacht club cruise was "Tioga," new Nielsen-designed yawl owned by Bradley Noyes of Boston, which won several of the squadron runs and the Astor and Una cups. The Queens cup went to J. N. Matthews' 12-metre "Vim."

Individual championship series under the auspices of the North American Yacht Racing union produced new continental senior, women's and junior titleholders. The Mallory trophy (senior championship) was won by the Seattle, Wash., crew headed by William Buchan, Jr.; the Mrs. Adams trophy (women's) by a Manhasset bay crew steered by Miss Toni Monetti, and the Sears Bowl (juniors) by a Royal Canadian Yacht club (Toronto) crew headed by "Skippy" Leonard. Massachusetts Institute of Technology crews won the Morss trophy for the intercollegiate national sailing title.

Winning skippers of the 1955 national and international championships in some of the leading one-design racing classes were as follows: Star class (North American), Jorge de Cardenas, of Cuba; Lightning class, Thomas Allen, Bainbridge, Md. (second straight); Snipe class, Mario Capiro, of Italy; Comet class, Howard Lippincott, Riverton, N.J. (second straight); 110 class, Cornelius Shields, Jr., Larchmont, N.Y.; Penguin class, Billy Seeman, New Orleans, La.; Moth class (Nationals), Sonny Cabell, Norfolk, Va. (second straight); 210 class, John J. McNamara, Jr., Cohasset, Mass.; Thistle class, Gordon Douglass, Paineville, O.; Raven class, J. P. Roosevelt, Oyster Bay, N.Y.; Y Flyers (International), Harry Jones, Pointe Claire, Que.; L-16 class, Henry Enos, Greenwich, Conn.; Highlander class, Benn Sawyer, Cowan Lake, N.Y.; National One-Design class, John Christianson, Milwaukee, Wis.

(W. H. Tr.)

Yalta Documents. The records of the Yalta conference were released to the public on March 16 by the U.S. department of state. These diplomatic documents, officially entitled "The Conferences at Malta and Yalta 1945," disclosed in an estimated 500,000 words details of the conference held by Pres. Franklin D. Roosevelt, Prime Minister Winston Churchill and Marshal Joseph Stalin near the Crimean resort of Yalta in the U.S.S.R., Feb. 4-11, 1945, and of the previous Anglo-American discussions at Malta, Jan. 30-Feb. 2, 1945, attended by President Roosevelt and Prime Minister Churchill. The latter were designed to co-ordinate United States and British views on various subjects expected to arise later at Yalta.

The agreements reached at Yalta, when the end of the European war was in sight, provided for such postwar political arrangements as the occupation of Germany, the payment of reparations by that country, the convocation of a conference to draw up a charter for a world organization, the reorganization of the provisional government of Poland and concessions of territories and privileges in the far east to the Soviet Union in exchange for that nation's entry into the war against Japan. Because portions of these agreements were kept secret, particularly the agreements on the far east, and because they concerned certain areas over which Communist domination expanded after the war, they aroused considerable controversy. Although the text of the agreements was made public by the U.S. state department in March 1947, critics of the agreements demanded release of the complete Yalta proceedings.

The Republican-controlled 83rd congress in 1953 and again in 1954 appropriated funds for the state department to publish a series of volumes on World War II conferences of heads of governments as part of its official diplomatic collection, *Foreign Relations*. The department had scheduled the Yalta conference first in this special series. By the fall of 1954 the Yalta papers were ready for the printer, but the British government, to which a set of proofs had been sent, did not give its approval.

On March 14 the state department announced that it was not going to publish the Yalta documents but was going to send transcripts to congressional leaders for their official use. However, chairmen of important congressional committees, now con-



"UNCORKED AT LAST," a 1955 cartoon by Costello of the *Knickerbocker News* (Albany, N.Y.)

trolled by Democrats, declined to accept the documents on that basis. Some took the position that the state department should either keep the transcripts or publish them in full. On the following day the *New York Times* obtained from the department an advance copy of the text on condition that it publish the documents in full. This was learned by the *Chicago Tribune* which, according to its version, enlisted the aid of certain members of congress to persuade the department of state to make the text generally public. Meanwhile the department had received the British government's agreement to publication and it made a general release of the Yalta papers in the form of two volumes of galley proof on the evening of March 16.

The editors asserted that they aimed at presenting as definitive and comprehensive a coverage of the Yalta and Malta conferences "as could be made at the present time." They believed that the documents, which included materials from the files of the department of state, the Roosevelt library at Hyde Park, N.Y., and the department of defense, gave an accurate portrayal of the basic policy of the United States at the conference. No new major decisions of the conferees were revealed by the Yalta records, but many new details were, such as the efforts—later proved unsuccessful—of the western powers to erect a free and independent government in Poland, and critical remarks of the negotiators regarding certain national groups.

Besides background correspondence, memoranda and briefing papers the Yalta documents also included minutes of many of the meetings. There was no tripartite stenographic account of the sessions, and each delegation kept its own records. Minutes and notes of the meetings were kept by various members of the United States delegation, the most complete of which were those of Charles Bohlen, who acted as interpreter. For some of the conference discussions no records existed, and it was believed

that there might be significant papers still in private collections access to which was not available to the editors. There was little in the published documents, for instance, on the discussions regarding the concessions to the Soviet Union in the far east.

The release of the Yalta documents had a mixed reception. Critics charged that publication was prompted by partisan political motives; that it was a violation of confidence and embarrassing to Sir Winston Churchill, the sole survivor of the three leading Yalta negotiators; that a bad effect would be created abroad, particularly on relations with Germany and France; that it would cause other countries to be more cautious in "secret" diplomatic negotiations with the United States; and that it might handicap efforts to arrange a high-level conference with the Soviet Union.

Defenders of the release maintained that it was in the interest of an informed public and of historical accuracy; that it had long been the practice of the United States government to release diplomatic documents after a suitable period, and that the recent tendency was to publish papers on specific incidents; that knowledge of the details of Yalta carried a lesson for the future and might prevent other secret agreements settling the fate of peoples and territories; and that it was better to publish the documents as a whole than have them leak out piecemeal.

(C. R. G.)

Yellow Fever: see TROPICAL DISEASES.

Yemen. An Arab kingdom in the southwestern coastal region of the Arabian peninsula. Yemen lies between Saudi Arabia (northwest and northeast), Aden (southeast) and the Red sea (southwest). Area: about 75,290 sq.mi. Pop. (1953 est.): 4,500,000. Language: Arabic. Religion: Moslem. Chief towns (pop., est.): Sana (cap.) 50,000–60,000; Taiz (seat of imam) 12,000; Hodeida (port) 30,000. Imam (king): Ahmed ibn Yehya Hamid ed-Din; prime minister in 1955, Crown Prince Seif ul-Islam el-Badr.

History.—The failure in April 1955 of a *coup d'état* led by two of the imam's brothers led to the formation of a new government under the premiership of the crown prince, who had been primarily responsible for the failure of the revolt. No other members of the royal family were included in the cabinet.

In January a meeting between the British agent of the western Aden protectorate and a Yemeni delegate produced an agreement to control tribal unrest along the frontier, and later in the month the British minister of state for colonial affairs (Henry Hopkinson) stated during his visit to Aden that the policy of the British and Aden governments was the maintenance of the friendliest relations with Yemen and that they would welcome any Yemeni proposals which did not run counter to British commitments to Arab rulers within the western protectorate, where plans for federation were under active consideration. But in May and June frontier incidents recurred and British troops were flown to Aden to preserve order.

In March Yemen supported the Egyptian proposals for a new Arab defense treaty and associated itself with the Egyptian and Saudi Arabian protests against the Turco-Iraqi treaty.

(O. M. T.)

See W. Phillips, *Qataban and Sheba* (New York, London, 1955).

Agriculture.—Main crops: wheat, barley, millet; coffee (metric tons, 1953) 4,800, (1952) 4,000.

Finance.—Monetary unit: Maria Theresa dollar, called the *riyal*, nominally equal to 1 Indian rupee with an exchange rate of R. 4.76 to the U.S. dollar.

Foreign Trade.—Trade with the U.K. (1953; 1954 in parentheses): imports £8,000 (£4,000); exports £22,000 (£4,000).

Yiddish Literature: see JEWISH LITERATURE.

Young Men's Christian Association: see SOCIETIES AND ASSOCIATIONS, U.S.

Young Women's Christian Association: *see* SOCIETIES AND ASSOCIATIONS, U.S.

Yugoslavia. A federal people's republic of southeastern Europe. Yugoslavia is bounded north by Austria, north and northeast by Hungary and Rumania, east by Bulgaria, south by Greece and west by Albania, the Adriatic sea and Italy. Area: 98,700 sq.mi. Pop.: (1953 census) 16,989,164; (1955 est.) 17,557,000.

Republic	Population (1953 census)	Capital (pop. 1953 census)
Serbia*	6,983,544	Belgrade (469,988)
Croatia	3,936,642	Zagreb (350,452)
Slovenia	1,501,961	Ljubljana (138,211)
Bosnia-Herzegovina	2,843,486	Sarajevo (135,657)
Macedonia	1,303,906	Skopje (121,551)
Montenegro	419,625	Titograd (16,333)

*Including the autonomous province of Vojvodina (pop., 1,713,905) and the autonomous region of Kosovo-Metohija (pop., 809,234).

Other towns (pop. 1953 census): Subotica 115,402; Novi Sad 83,223; Maribor 77,124; Split 75,377; Rijeka 75,112; Nis 60,677; Osijek 57,320. Nationalities (1953 census): Serb 42%, Croat 23.2%, Slovene 8.9%, Macedonian 3.7%, Montenegrin 3%, undefined (Bosnian, Istrian, etc.) 5.8%, others (national minorities) 13.4%. Religion (1948 est.): Greek Orthodox 49.53%, Roman Catholic 36.7%, other Christian 1.14%, Moslem 12.52%, other 0.11%; at the 1953 census 13.6% replied "no religion." President of the republic, chairman of the federal executive council (government) and supreme commander of the armed forces in 1955, Marshal Tito (Josip Broz) (*q.v.*).

History.—Home Politics.—The trial of Milovan Djilas and Vladimir Dedijer for hostile propaganda against the state took place on Jan. 24, 1955. The proceedings were not public. The two defendants were condemned to 1½ years' and six months' imprisonment respectively, but both sentences were suspended subject to their future good behaviour.

In June 1955 the federal parliament passed a law on the reform of local government. The number of districts (the third level of administration, below republic and region) was reduced from more than 300 to just over 100, the number of communes (the lowest level of administration) from more than 4,000 to about 1,500. The average population of a commune was to be 10,000 persons. The purpose of the reform was to create basic units of local government of such a size as to be able economically to stand on their own feet, though of course they could not be economically self-supporting. The authorities regarded this creation of more rational administrative units as an important step toward the achievement of the type of decentralized socialist democracy which was their declared aim.

The sentences of more than 1,000 Yugoslav political prisoners were wiped out or cut on Dec. 3 under a general amnesty.

Economic Position.—During 1954 total industrial output in Yugoslavia went up by 13%, and at the end of the year was stated to be 209% of the level of 1939. The change in the social structure of the population was shown by the fact that nonagricultural occupations, to which in 1938 belonged less than 24% of the people of Yugoslavia, at the end of 1954 accounted for more than 38%. The most important single industrial achievement of the year was the completion of the Jablanica power station in the Neretva valley in Herzegovina. In March 1955 two of its six turbines began to operate. Its total output was expected to be 800,000 kw.hr. yearly.

In agriculture results were less satisfactory. The area under cultivation for cereals was still substantially smaller than before World War II, and only a part of the difference was made up by greater cultivation of industrial crops. As an incentive to peasant producers, on July 10 substantial increases in prices of wheat bread and fats were announced. Tobacco prices and railway passenger fares were also raised.

Foreign Affairs.—The year 1955 was eventful for Yugoslav foreign policy. On May 26 the Soviet prime minister, Marshal N. A. Bulganin, and the first secretary of the Communist Party of the Soviet Union, N. S. Khrushchev, arrived in Belgrade. In a speech at the airport, Khrushchev attributed the past conflict between Yugoslavia and the Soviet Union to the influence of the executed L. P. Beria and V. S. Abakumov, who had "deliberately provoked bitterness" in their relations. He expressed the belief that mutual confidence and understanding would be restored between the Communist parties of Yugoslavia and the Soviet Union. These remarks were coolly received, and it was made clear that in the Yugoslav view the visit was a matter of relations between the two states, not between the Communist parties. At the end of the visit a statement was issued. It stressed the devotion of both governments to the principles of coexistence and noninterference in the internal affairs of other countries. With regard to Soviet-Yugoslav relations, the most specific point in the statement was the announcement that a separate convention would be concluded on cultural co-operation and on the organization of information services of each government in the other's territory.

That Tito did not regard the references to separate development toward socialism as mere empty words was shown in a speech he made on July 27. Talking of the prospect of better relations with the Danubian people's democracies, he regretted that there were in those countries still persons "to whom this normalization does not appeal" and who explained the visit of Bulganin and Khrushchev as a mere manoeuvre, claiming "that the Soviet Union is practising one of its cunning tactics which are only meant to fool people." Tito referred explicitly to Hungary and Czechoslovakia, to the Rajk trial and subsequent hate campaign against Yugoslavia. Though he did not mention him by name, it was clear that his words applied mainly to Matyas Rakosi, the Hungarian Communist leader.

On Nov. 6, 1955, John Foster Dulles paid a visit to Tito at Brioni, during an interval in the Geneva conference. During their talks they discussed middle eastern, Balkan and Danubian problems. Referring to the eastern European people's democracies, the official statement declared that the two statesmen had been agreed as to the importance of the independence of these states and of "non-interference from outside in their internal affairs and their right to develop their social and economic order in the way of their own choice." Official Belgrade

NIKITA KHRUSHCHEV, Communist party secretary, reading a speech at Belgrade airport as a Soviet delegation visited Yugoslavia in 1955. Marshal Tito stands at left



comment on this phrase made clear that it expressed equal disapproval of forcible intervention from the west in these countries and of unsocialist domination over them by the Soviet Union. The Soviet news agency Tass of Nov. 14 chose to interpret this Yugoslav comment as meaning that Dulles had accepted the principles earlier expressed in the Bulganin-Tito statement of June 2 on equal rights for "different forms of socialist development."

Yugoslavia continued to show interest in its relations with its Balkan allies Greece and Turkey, which were affected however by the sharpening conflict between Greece and Turkey and between Greece and Great Britain in regard to Cyprus. In Sept. 1955 King Paul of Greece paid a state visit to Yugoslavia. Interest in Asian affairs was also maintained throughout 1955 in Yugoslavia. In February Tito arrived home from a two months' visit to India and Burma, during which he received two elephants and two leopards, publicly approved India's claims against Portugal in Gôa, and had a long conversation with Lieut. Col. Gamal Abdel Nasser on board his frigate in the Suez canal. On Dec. 1 Tito left Belgrade for an official visit to Ethiopia and Egypt. (See TURKEY.) (H. S.-W.)

Education.—Schools (1953-54): primary 14,044, pupils 1,402,000, teachers 36,040; middle and secondary 2,106, pupils 523,000, teachers 21,749; vocational (junior and intermediate) 1,074, pupils 140,000, teachers 12,002; fine arts 159, pupils 17,000, teachers 1,954. Adult education centres 229, students 13,000, teachers 1,798. Teachers' training schools and colleges 92, students 25,551, teachers 1,951. Institutions of higher education (including fine arts and physical training) 100 with 59,571 students, out of which 84 university colleges with 57,937 students, 5,195 professors and lecturers. Schools for national minorities (including some of the above with special classes): primary 1,562; middle and secondary 312; teachers' training schools 8.

Finance and Banking.—Monetary unit: dinar, with an official exchange rate of 300 dinars to the U.S. dollar. Budget: approximate revenue and expenditure (1955 est.) 232,000,000,000 dinars; (1954 est.) 262,000,000,000 dinars. Currency circulation (Dec. 1953) 68,050,000,000 dinars; (June 1954) 67,300,000,000 dinars. Bank deposits (Dec. 1953) 75,730,000,000 dinars; (March 1954) 58,190,000,000 dinars. Foreign exchange holdings (March 1954) U.S. \$5,190,000; (March 1955) U.S. \$7,500,000.

Foreign Trade.—(1954) Imports 101,820,000,000 dinars; exports 72,110,000,000 dinars. Main sources of imports: U.S. and Canada 31%; Germany 17%; Italy 7%; other continental European Payments union countries 27%; U.K. and sterling area 11%. Main destinations of exports: Germany 20%; Italy 12%; other continental E.P.U. 33%; U.S. and Canada 10%; U.K. and sterling area 11%. Main exports (1953): lumber 23%; lead 8%; copper 5%; corn 2%.

Transport and Communications.—Roads (1952): 83,170 km., including 38,984 km. metalled. Motor vehicles in use (1953): cars 10,000, commercial vehicles 21,200. Railways (1953) 11,800 km.; passenger-km. (1954) 6,488,000,000; goods, ton-km. (1954) 9,571,000,000. Shipping (July 1954): merchant vessels of 100 gross tons and over 151; total tonnage 269,000. Air transport (1954): passenger-km. 33,034,000; freight, ton-km. 951,600; km. flown 2,729,000. Telephones (Jan. 1954): 149,000. Radio receiving sets (1954): 496,811.

Agriculture.—Main crops (metric tons, 1954): wheat 1,385,000; barley 253,000; oats 233,000; rye 191,000; maize (corn) 3,004,000; rice 26,000; potatoes 1,876,000; sugar beets, raw 168,000; tobacco (1953) 29,600; dry beans 149,000. Livestock (Sept. 1954): cattle 5,097,000; sheep 12,116,000; pigs 4,310,000; horses 1,193,000; mules (Sept. 1953) 31,000; asses 164,000; goats 621,000; chickens 14,347,000; ducks, geese, turkeys 2,615,000. Wool production (metric tons, 1954) 9,000. Wine production (1954) 285,000 metric tons.

Industry.—Index of production (March 1955; 1948=100) 159, (March 1954) 135. Fuel and power (metric tons, 1954): coal 988,300; lignite 12,658,000; natural gas 90,130,000 cu.m.; crude oil 216,400; electricity 3,452,000,000 kw.hr.; manufactured gas 23,980,000 cu.m. Raw materials (metric tons, 1954): iron ore (45% metal content) 1,110,800; pig iron 367,500; crude steel 616,200; bauxite 687,000; copper ore 1,299,000; lead-zinc ore 1,485,000; pyrites (concentrates) 160,000; antimony ore 75,000; chrome ore 124,000; magnesite (1953) 122,500. Foundry production (metric tons, 1954): copper 57,000; lead 66,740; zinc 13,640. Sawn timber (cu.m., 1953): softwood 1,749,000; hardwood 447,000. Manufactured goods (metric tons, 1954): cement 1,394,000; cotton yarn 34,100; wool yarn 8,720; woven cotton fabrics 165,600,000 sq.m.

Yukon Territory. The Yukon Territory, most northerly political division of Canada, was constituted by act of parliament in June 1898. Area: 207,076 sq.mi., including 1,730 sq.mi. water. Population: (1951 census) 9,096 (including whites, 7,533; Indians and Eskimos, 1,563); (June 1, 1954, est.) 10,000. Principal centres: Whitehorse (capital), 2,594; Dawson, 783; Mayo, 241.

History.—The capital was removed from Dawson to White-

horse in April 1953. What latterly told against the former capital was its remoteness from new developments in the territory from which Whitehorse, 460 mi. upriver, is admirably situated to derive benefits. The exploitation of mineral wealth in the territory would probably be in districts more accessible to Whitehorse, which is linked with the Alaska highway. This region remained a centre of interest during 1955 since plans had been made in 1954 to establish a vast metallurgical and electrochemical industry in northern British Columbia, which included a plan to divert the water of the Yukon river through a storage chain of lakes, making it flow southward into the Taku river in British Columbia. In Aug. 1954 the British Columbia government announced that a conditional water-usage licence had been issued to Quebec Metallurgical Industries and that the first phase would be construction of an 880,000-h.p. hydroelectric smelting project and industrial site near the head of navigation on the Taku river.

Education.—The territory had (1954) 15 schools with 51 teachers and 1,234 pupils. The amount spent on education in 1954-55 was \$323,378.48.

Public Health and Welfare.—The bureau of statistics does not keep a separate record of these figures, those of Yukon Territory being included with the Northwest Territories.

Communications.—There were in 1955 58 mi. of railway. The Yukon river, 1,979 mi. long, of which 1,777 mi. are navigable (570 mi. within the Yukon Territory), permits tourist travel by boat from the end-of-steel at Whitehorse to Dawson. All-weather gravel roads connect the capital with Dawson and Mayo. There were (1954) 1,675 mi. of motor roads and secondary roads, including the Alaska highway, which enters Yukon Territory at Mile 1,221. There were 16 post offices in 1955; revenue totalled \$110,706.96 for the year ending March 31, 1955. Commercial air lines provide passenger and express services daily, except Sunday, between Vancouver and Whitehorse and Edmonton and Whitehorse. A service is also maintained twice weekly from Whitehorse to Dawson and Mayo.

Finance.—The territorial revenue and expenditure for three years ending March 31 were: (1953) revenue \$1,540,979, expenditure \$1,284,243; (1954) revenue \$2,015,635, expenditure \$1,709,904; (1955) revenue \$2,073,062, expenditure \$1,783,660.

Agriculture.—Local gardening only; there is no organized agricultural industry.

Production and Industry.—The principal industry is mining. The output of gold in 1954 was 87,811 fine oz. (\$2,991,721), silver 6,758,870 fine oz. (\$5,627,435) and lead 32,558,169 lb. (\$4,340,004). Total value of mineral production (1954) was \$16,308,108, including cadmium and zinc. The fur returns totalled for the year ending June 30, 1954, 176,338 pelts, valued at \$182,238. Beaver, muskrat, squirrel and marten constituted the major portion of the catch.

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Zanzibar: see BRITISH EAST AFRICA.

Zhukov, Georgi Konstantinovich (1895-), Soviet army officer, was born at Strelkovka, Kaluga province, Russia. Drafted into the Russian imperial army in 1915, he joined the Red army in 1917 and the Communist party in 1918. In 1932 he entered the Frunze Military academy for staff officers, and, specializing in armoured warfare, was sent to Spain in 1936 as a military observer. In 1939 he was victorious in a local war against the Japanese on the Mongolian-Manchurian border. In Feb. 1941 he was appointed chief of the general staff and deputy commissar of defense, and in October of that year he commanded the army group which defended Moscow. A year later he directed the defense of Stalingrad and subsequently co-ordinated the operation of the Volkhov and Leningrad armies which resulted in lifting the siege of the city. Two days later he was created marshal of the Soviet Union. He then co-ordinated the great offensives of 1943-44 of the 1st and 2nd Byelorussian and 1st and 2nd Ukrainian army groups. On May 8, 1945, he was one of the four Allied commanders who accepted the German surrender. Zhukov was then appointed Soviet governor and commander in chief in eastern Germany. In March 1946, however, he was recalled to Moscow as commander of Soviet land forces. But J. V. Stalin was jealous of the popularity of a military



"COMRADE ZHUKOV GETS A BID," a 1955 cartoon by Green of the *Providence Journal* (R.I.)

leader who was three times proclaimed Hero of the Soviet Union, three times awarded the Order of Lenin and twice the Order of Victory, and Zhukov was demoted and sent to Odessa as commander of a military region. He emerged again in March 1953, when, after Stalin's death, he was appointed first deputy minister of defense. He became minister of defense when on Feb. 9, 1955, Marshal N. A. Bulganin formed a government. He attended the Warsaw conference where, on May 14, a 20-year treaty of mutual defense was concluded between the U.S.S.R. and seven captive countries. He also was present at the Geneva conference of the heads of the Big Four Powers in Geneva, Switz. (July 18-23).

Zinc. World production of zinc in 1954 rose 3.5% higher than the 1953 output. Table I shows production by principal producing countries, based on U.S. bureau of mines reports.

United States.—In 1954, mine production of recoverable zinc in the U.S. was the lowest since 1934 and smelter production was the lowest since 1948, according to the U.S. bureau of mines. Table II gives data on the zinc industry for 1948-54, based on the bureau's reports. A continued oversupply of zinc, decreased imports and reduced consumption were spotlights of

the domestic industry in 1954. Smelter production was affected by strikes and by operational setbacks. The more than century-old Franklin mine at Franklin Furnace, N.J., was closed as the reserves were exhausted.

In the first nine months of 1955, mine production of zinc totalled 381,800 short tons, compared with 352,400 tons in the same period of 1954. (F. E. H.; B. B. M.)

Zonta International: see SOCIETIES AND ASSOCIATIONS, U.S.

Zoology. Morphology.—The generally accepted view that sponges were unique among multicellular animals in lacking nerve cells was controverted by the studies of Pavans de Caccathy, whose development of special techniques enabled him to surmount the technical difficulties occasioned by the presence of calcareous or siliceous spicules in sponges. He discovered typical nerve cells so interrelated as to justify their being described as a nervous system.

Embryology.—Perhaps the outstanding book in embryology was the comprehensive *Analysis of Development* (Philadelphia, 1955), edited by B. H. Willier, P. A. Weiss and V. Hamburger, in which they and 28 additional specialists co-operated to give an exceptionally well integrated account of the current state of knowledge in the field of experimental embryology in animals. The book would be of the greatest interest to advanced students.

Alfred Kühn's *Vorlesungen über Entwicklungsphysiologie* (Berlin, 1955) was notable not only for the clarity with which it treated and illustrated experimental embryology, but also for the breadth of its approach, inasmuch as it dealt with problems of differentiation in protozoa and plants as well as in animals.

Of the hundreds of papers dealing with specific topics, one may be mentioned. T. W. Torrey's study of the development of the excretory system of human embryos left little doubt that the time-honoured account of the serial development in space and time of pro-, meso- and metanephros held neither for man nor for other mammals. The persistence of the former view in the face of mounting evidence against it perhaps was to be attributed to the dominance of recapitulatory theory in the interpretations of the observations. The existence of a pronephros, for example, in lower vertebrates had led to an expectation that higher vertebrates would possess a pronephros during embryonic life or at least a pronephros in rudimentary form. Torrey interpreted structures that had formerly been identified as pronephric rudiments as parts of a continuous embryonic excretory organ.

Ecology and Behaviour.—Demorest Davenport discussed in a review the problems posed by symbiosis. What stimuli served to bring symbiotic partners together? How did they find one another? What adaptations did symbionts have that their free-living relatives lacked? He pointed out the need for analytical studies. To choose a simple example from his own work, he put marine worms that normally live in the arms of a certain species of starfish in a Y-tube and into each arm of the Y fed sea water from separate aquariums, one of which contained the host animals. The worms invariably moved into the arm of the Y-tube connected to the tank containing the hosts. In numerous experiments of this kind he usually could show strongly positive and highly specific responses to chemical stimuli from the host, responses that would normally lead to parasites or commensals finding their hosts. Davenport pointed out the possibility for further analysis of the many well-known symbiotic relationships. For example, the relation between sea anemones and hermit crabs, in which the crabs, when they moved to a new shell, seized the anemones still attached to the old shell and transplanted them to the new. Despite this rough handling the anemones did not discharge their stinging cells, an adaptation to their

Table I.—World Smelter Production of Zinc

	(In thousands of short tons)						
	1948	1949	1950	1951	1952	1953	1954
Australia	91.1	90.7	93.7	86.3	97.9	101.0	117.1
Belgium	169.6	194.6	195.5	221.4	205.9	213.2	234.5
Canada	194.5	206.0	204.4	218.6	222.2	250.9	213.8
France	61.2	66.8	78.9	82.2	88.3	89.2	122.2
Germany	45.6	95.8	135.4	155.0	162.3	163.4	184.8
Great Britain	80.6	71.8	78.7	78.1	77.0	81.4	89.9
Italy	29.1	29.7	41.8	52.6	60.5	66.2	74.4
Japan	23.4	35.6	54.0	62.1	77.2	85.0	111.7
Mexico	53.0	59.0	59.0	64.8	55.5	58.5	60.5
Netherlands	15.0	17.2	21.8	24.9	28.6	27.8	28.7
Northern Rhodesia	24.8	25.6	25.4	25.3	25.6	28.4	29.7
Norway	46.3	45.2	47.6	45.0	43.2	42.8	48.8
Poland	96.0	94.7	95.9	95.9	105.9	120.9	140.9
Spain	23.4	21.6	23.4	23.5	23.5	25.5	25.1
U.S.S.R., (est.)	121.0	121.0	142.0	163.0	205.0	234.0	275.0
United States	787.8	814.8	843.5	881.6	904.5	916.1	802.4
Total	1,991	2,133	2,170	2,310	2,420	2,560	2,650

Table II.—Data of Zinc Industry in the U.S.

	(In thousands of short tons)						
	1948	1949	1950	1951	1952	1953	1954
Mine production	630.0	593.2	623.4	681.2	666.0	547.4	464.5
Smelter production	787.8	814.8	843.5	881.6	904.5	916.1	808.0
Domestic ores	538.0	591.5	588.3	621.8	575.8	495.4	410.0
Foreign ore	249.8	223.3	255.2	259.8	328.7	420.7	398.0
Imports	357.4	367.8	434.5	390.9	565.3	718.0	595.0
In ore	264.2	241.2	278.6	302.9	449.6	543.4	445.0
Metal	93.2	126.9	156.0	88.0	115.7	234.6	150.0
Secondary recovery	324.6	237.8	326.0	314.4	310.4	294.7	271.8
Stocks	116.7	176.0	73.1	72.6	177.3	265.9	
Producers'	20.8	94.2	8.9	22.0	85.0	180.0	120.5
Consumers'	95.9	81.8	64.2	50.6	92.3	85.7	101.9
Consumption	817.7	711.8	967.1	934.0	852.8	985.9	874.7



ALICE AND TRUDY, members of an elephant octet learning to waltz and perform acrobatics at a training farm in California. The octet gave its first performance in April 1955 at the St. Louis (Mo.) zoo

symbiotic relation to the crabs. Davenport thought that much of the behaviour of symbionts could be described in the language of recent work in animal behaviour; that is, in terms like "sign stimuli" that act as "social releasers." In these terms, he discussed the well-known relation between certain species of orchids and certain wasps. The orchids resembled female wasps, and this resemblance was the sign stimulus that released copulatory behaviour in the male. By visiting one flower after another, the male wasps transferred pollen and thus brought about cross-fertilization. The many other examples of symbiosis cited by Davenport would be of general interest.

Taxonomy, Biogeography and Natural History.—Numerous well-known specialists contributed essays to a volume celebrating the centennial of the California Academy of Sciences, *A Century of Progress in the Natural Sciences, 1853-1953* (San Francisco, 1955). In addition to accounts of the advances in the taxonomy and physiology of the principal orders of insects, there were notable chapters on herpetology (amphibians and reptiles) and animal geography by Karl P. Schmidt, ornithology by Charles G. Sibley, mammalogy by W. J. Hamilton, conservation of wildlife by A. Starker Leopold, and invertebrate paleontology and historical geology by Charles E. Weaver. The book would be of lasting interest to students of biological thought and the history of science.

Francesca R. LaMonte's revision of the classification of the game fish that includes the various marlins, spearfish, sailfish and swordfish would be of interest to sportsmen as well as to zoologists. Her study also furnished several good examples of the confusion that resulted from the use of popular names for

fish—fish of the same species may have been known under different names and fish of different species under the same name in different regions.

General.—Zoologists welcomed the first postwar edition of an important general work in their field, Alfred Kühn's introductory book *Grundriss der allgemeinen Zoologie* (Stuttgart, 1955).

An unusually clear discussion of the place of biology among the sciences and its role as an empirical science was given by Felix Mainx in his *Foundations of Biology*, vol. i, no. 9, *International Encyclopaedia of Unified Science* (Chicago, 1955). Anyone interested in either natural science or philosophy would find much of value in Mainx's discussion of the distinction between the "world picture" (*Weltbild*) developed by biology and the other empirical sciences—a picture that rests on observation, is practical and leads to predictable results—and the "philosophy of life" (*Weltanschauung*), a picture that rests on an inner faith. Mainx contended that there was no bridge from one to the other, that a system of values and faith is independent of the findings of an empirical science.

As editors of *Great Experiments in Biology* (New York, 1955) M. L. Gabriel and S. Fogel brought together some of the most important original publications dealing with the cell theory, general physiology, hormones, vitamins, metabolism, microbiology, plant physiology, embryology, genetics and evolution. The selection, ranging from the 17th century to the present, successfully conveyed the spirit and progress of biological science.

The life and times of Charles Darwin continued to attract interest. Ruth E. Moore, in her *Charles Darwin, a Great Life in Brief* (New York, 1955), skilfully treated both the notable work and the complex personality of Darwin. No previous biographer had made so convincing and well rounded a presentation of Darwin as a human being. William Irvine, in an elaborately documented book, *Apes, Angels and Victorians* (New York, 1955), presented Darwin in a less sympathetic light, although he created a vivid picture of Darwin's relation to T. H. Huxley and to the thought of the 19th century.

Among the many books directed to the general public as well as to scientists, only four will be mentioned. Rachel Carson in her *Edge of the Sea* (New York, 1955) again showed her mastery of a broad and complex subject matter—the life along the shores and in tide pools—and of a remarkable prose style that achieved scientific clarity and accuracy without sacrifice of beauty.

N. B. Marshall's highly readable *Aspects of Deep Sea Biology* (New York, 1954) was a fascinating account of the means of exploration for animals and plants of the abysses of the oceans. Many readers would find his attempt to piece together the food chains in the depths, and his description of the specialized sense and light-producing organs of many abyssal animals, of equal interest.

Karl von Frisch's *The Dancing Bees*, an account of the life and senses of the honey bee, translated by Dora Ilse (New York, 1955), although including material contained in his earlier books on vision, chemical senses and "language," went further in relating the former knowledge to the entire life history and behaviour of these most highly developed social insects.

John T. Bonner's *Cells and Societies* (Princeton, N.J., 1955) was an introduction to biology that would interest the specialist by novelty of approach and freshness of view. In addition, it would appeal to the general reader, even one without scientific background, as a book that conveyed with charm many of the leading contemporary ideas of biology with remarkably little reliance on a specialized vocabulary. (See also ENDOCRINOLOGY; GENETICS; MARINE BIOLOGY; PALAEOLOGY; PHYSIOLOGY.)

(G. P. DUS.)

INDEX

The black type entries are article headings and cross references. These black type article entries do not show page notations because they are to be found in their alphabetical position in the body of the book, but they show the dates of the issues of the *Book of the Year* in which the articles appear. For example "Toy Industry 56, 55, 54" indicates that the article "Toy Industry" is to be found in the 1956 *Book of the Year*, the 1955 *Book of the Year* and the 1954 *Book of the Year*. The reference "Indochina: see Cambodia; Laos; Vietnam 56. See Indochina 55, 54, 53, 52" indicates that information on "Indochina" is to be found in the articles "Cambodia," "Laos" and "Vietnam" in the 1956 *Book of the Year* and under the heading "Indochina" in the 1955 *Book of the Year*, the 1954 *Book of the Year*, the 1953 *Book of the Year* and the 1952 *Book of the Year*. All black type entries without dates indicate that the same entries appear in all the past five issues. Examples, not Advertising, 56, 55, 54, 53, 52, but Advertising; not Abyssinia: see Ethiopia 56, 55, 54, 53, 52, but Abyssinia: see Ethiopia.

The light type headings which are indented under black type article headings and cross references refer to articles elsewhere in the text (of this issue only) related to the entry listed in black type. The light type headings which are not indented refer to information in the text not given a special article. Those which show page references refer to this issue only. Those which refer to the article **Obituaries** are followed by the date of issue in which the obituary appears.

All headings whether consisting of a single word or more are treated for the purpose of alphabetization as single complete headings. Names beginning with "Mc" and "Mac" are alphabetized as "Mac"; "St." is treated as "Saint." All references below show the exact quarter of the page by means of the letters *a*, *b*, *c*, and *d*, signifying respectively the upper and lower halves of the first column and the upper and lower halves of the second column.

Abdullah ibn Hussein: see **Obituaries** 52

Abe, Nobuyuki: see **Obituaries** 54

Abt, Isaac Arthur 507c

Abyssinia: see **Ethiopia**

Academy of Arts and Letters, American: see **Societies and Associations, U.S.**

Academy of Political and Social Science, American: see **Societies and Associations, U.S.**

Accident Insurance: see **Insurance**

Accidents 56, 55. See **Accident Prevention** 54, 53, 52

Automobile Racing 78b; Brewing and Beer 117a; Death Statistics 202b; Disasters 210c; Industrial Health 347d; Motor Transportation 460a; Munitions 463d

Acetazolesamide 652d

Acheson, Dean G. 53, 52

Achromycin 89a

Acosta, Bertrand B.: see **Obituaries** 55

A-course 750d

ACTH: see **Allergy; Endocrinology** 56, 55, 54, 53, 52. See **Cortisone, Hydrocortisone and Corticotropin** 54, 53. See **Psychosomatic Medicine** 53. See **Chemotherapy; Intoxication, Alcoholic** 53, 52. See **Cortisone and ACTH; Heart and Heart Diseases; Medicine** 52

Heart and Circulatory Diseases 317d

Adams, Charles Francis: see **Obituaries** 55

Adams, Maude (Maude Kiskadden): see **Obituaries** 54

Addison, Christopher Addison, 1st Viscount: see **Obituaries** 52

Aden

Adenauer, Konrad 56, 55, 54 Germany 298b

Adjusted Compensation: see **Veterans Administration (U.S.)** 53, 52

Adler, Julius Ochs 507c

Adler, Max: see **Obituaries** 53

Adult Education: see **Education; Libraries** 56, 55, 54, 53, 52. See **Motion Pictures** 55, 54, 53, 52

Advertising Newspapers and Magazines 489c;

Radio and Television 580c

Aeronautics: see **Aviation, Civil; Aviation, Military**

Afghanistan

Archaeology 48c; International Monetary Fund 358b; International Trade 364c; Pakistan 530b; World Health Organization 752c

A.F. of L.: see **Labour Unions**

Africa: see **British East Africa; British South African Territories; British West Africa; French Union; Libya; Portuguese Overseas Territories; Somalia; Somaliland, French; South Africa, The Union of; Spanish Colonial Empire; Trust Territories**; etc. 56, 55, 54, 53, 52. See **Eritrea** 53, 52

American Citizens Abroad 38a; Missions, Foreign (Religious) 447c; Religious Education 593d; Spices 647d

Agostini, Carlo: see **Obituaries** 53

Agricultural and Industrial Chemistry, Bureau of: see **Agricultural Research Administration** 54, 53, 52

Agricultural Research Service 56, 55. See **Agricultural Research Administration** 54, 53, 52

Agriculture

Agricultural Research Service 22c; Aviation, Civil 83a; Budget, National 126b; Building and Construction Industry 128b; Business Review 131d; Census Data, U.S. 149b; Chemistry 152b; Communism 182a; Eastern European Economic Planning 220b; Fairs and Exhibitions 251c; Farm Credit System 252c; Farmers Home Administration 253c; Foreign Aid Programs, U.S. 267a; Four-H Clubs 277a; Home Economics 319c; Income and Product, U.S. 342b; International Trade 360a; Irrigation 371d; Livestock 409a; Organization of American States 527b; Political Parties, U.S. 559a; Prices 566c; Refugees 591d; Soil Conservation 638c; Strikes 654c; Tariffs 666c; Wages and Hours 738a; Words and Meanings, New 750d. See also various products, states, provinces and countries

Agriculture, U.S. Department of: see **Government Departments and Bureaus, U.S.**

Aircraft Manufacture

Aviation, Civil 80a; Aviation, Military 83c; Civil Aeronautics Administration 168d; Jet Propulsion 381b; Munitions 463b

Air Crashes: see **Disasters**

Air Force, U.S. Department of: see **Government Departments and Bureaus, U.S.**

Disasters 210d; Electronics 234b; Munitions 463a; Telephone 670b; Words and Meanings, New 750d

Air Forces of the World: see **Aviation, Military**

Air Mail: see **Post Office**

Airports and Flying Fields: see **Civil Aeronautics Administration** Coast and Geodetic Survey, U.S. 174c. See also various cities, states, provinces and countries

Air Races and Records

Aviation, Military 84a

Air Travel: see **Aviation, Civil**

Aitken, Robert Grant: see **Obituaries** 52

A.L.A.: see **American Library Association**

Alabama

"Alain" (Emile-August Chartier): see **Obituaries** 52

Åland Islands: see **Finland**

Alaska

Coast and Geodetic Survey, U.S. 174c; Disasters 210d; Exploration and Discovery 248d; National Parks and Monuments 476b; Telephone 669c; Wildlife Conservation 745a

Alaska Highway: see **Roads and Highways** 52

Alba, Jacobo Maria del Pilar Carlos Manuel Fitz-James Stuart y Falco, 17th Duke of: see **Obituaries** 54

Albany (Streptonicin) 431a

Albania

Agriculture 30a; Armies of the World 61d; Eastern European Economic Planning 218d; Greece 310a

Alberta

Alcohol, Industrial 54, 53, 52

Paints and Varnishes 329b

Alcoholic Intoxication: see **Intoxication, Alcoholic**

Alcoholic Liquor: see **Brewing and Beer; Liquors, Alcoholic; Wines**

Alcoholics Anonymous: see **Societies and Associations, U.S.** Intoxication, Alcoholic 366b

Alda, Frances: see **Obituaries** 53

Aldosterone: Endocrinology 238c; Physiology 550a

Aldrich, Bess Streeter: see **Obituaries** 55

Aldrich, Winthrop Williams 54

Alémán, Miguel 52

Aleutian Islands: see **Alaska**

Alexander of Tunis, H. R. L. G. A. 53

Alexandrine (q. mother of Denmark): see **Obituaries** 53

Alfalfa: see **Hay and Pastures**

Algeria

Archaeology 47d; Armies of the World 60c; Disasters 212c; France 278b; French Union 282b; Fruit 285a; International Bank for Reconstruction and Development 353b; Iron and Steel 370c; Mineral and Metal Production and Prices 443; UN 700a; Wines 747a

Ali, Mohammed 54

Aliens: see **Immigration, Emigration and Naturalization** 56, 55. See **Aliens** 54, 53, 52

Selective Service, U.S. 617c

Alimentary System, Disorders of: see **Stomach and Intestines, Diseases of the**

Allen, Frederick Lewis: see **Obituaries** 55

Allergy

Drug Administration 215b

Alloys: see **Metallurgy** 55, 54, 53, 52. See **Nickel** 52

Almonds: see **Nuts**

Altamira y Crevea, Rafael: see **Obituaries** 52

Altrosa International, Incorporated: see **Societies and Associations, U.S.**

Aluminum

Architecture 52c; Eastern European Economic Planning 219c; Foreign Investments 269b; Metallurgy 432d; Mineral and Metal Production and Prices 442d; Munitions 463d; Secondary Metals 615a; Town and Regional Planning 682c

AM-955 153b

Ambassadors and Envoys

American Academy of Arts and Letters: see **Societies and Associations, U.S.**

Literary Prizes 407c

American Academy of General Practice: see **Societies and Associations, U.S.**

American Academy of Political and Social Sciences: see **Societies and Associations, U.S.**

American Association for the Advancement of Science: see **Societies and Associations, U.S.**

American Association of Law Libraries: see **Societies and Associations, U.S.** 53, 52

American Association of University Professors: see **Societies and Associations, U.S.**

American Association of University Women: see **Societies and Associations, U.S.**

American Bankers Association: see **Societies and Associations, U.S.**

American Bar Association: see **Societies and Associations, U.S.**

Newspapers and Magazines 490a

American Bible Society: see **Societies and Associations, U.S.**

American Cancer Society: see **Societies and Associations, U.S.** 56, 55, 54

American Chemical Society: see **Societies and Associations, U.S.**

American Citizens Abroad

Immigration, Emigration and Naturalization 340d

American College of Dentists: see **Societies and Associations, U.S.**

American College of Hospital Administrators: see **Societies and Associations, U.S.** 56, 55

American College of Life Underwriters: see **Societies and Associations, U.S.** 56, 53, 52

American College of Physicians: see **Societies and Associations, U.S.**

American College of Surgeons: see **Societies and Associations, U.S.**

American Correctional (Prison) Association: see **Societies and Associations, U.S.**

American Dental Association: see **Societies and Associations, U.S.**

American Dialect Society: see **Societies and Associations, U.S.**

American Economic Association: see **Societies and Associations, U.S.**

American Federation of Labor: see **Labour Unions**

American Geographical Society: see **Societies and Associations, U.S.** 56, 55, 54, 53, 52. See **Cartography** 55, 54, 53. See **Geography** 55, 54, 53, 52

American Historical Association: see **Societies and Associations, U.S.**

American Hotel Association: see **Hotels, U.S.** 56, 55, 54, 53

American Indians: see **Indians, American**

American Institute for Property and Liability Underwriters: see **Societies and Associations, U.S.** 56, 53, 52

American Institute of Accountants: see **Societies and Associations, U.S.**

American Institute of Architects: see **Societies and Associations, U.S.**

American Institute of Chemical Engineers: see **Societies and Associations, U.S.**

American Institute of Electrical Engineers: see **Societies and Associations, U.S.**

American Institute of Mining and Metallurgical Engineers: see **Societies and Associations, U.S.**

American Iron and Steel Institute: see **Societies and Associations, U.S.**

American Law Institute: see **Societies and Associations, U.S.**

American Legion: see **Veterans' Organizations, U.S.**

American Library Association Libraries 402d

American Literature Book Publishing and Book Sales 110b; Children's Books 158a; Literary Prizes 407c; Pulitzer Prizes 577d; Societies and Associations, U.S. 630d; Theatre 676a

American Mathematical Society: see **Societies and Associations, U.S.**

Mathematics 426d

American Medical Association: see **Societies and Associations, U.S.**

Industrial Health 347d

American Optometric Association: see **Societies and Associations, U.S.**

American Pharmaceutical Association: see **Societies and Associations, U.S.** 56

American Prison (Correctional) Association: see **Societies and Associations, U.S.**

American Society of Agricultural Engineers: see **Societies and Associations, U.S.** 56, 55

American Society of Civil Engineers: see **Societies and Associations, U.S.**

American Society of Composers, Authors and Publishers: see **Societies and Associations, U.S.**

- cieties and Associations, U.S.
American Society of Heating and Air-Conditioning (Ventilating) Engineers: *see* Societies and Associations, U.S. 56, 55, 54
American Society of Mechanical Engineers: *see* Societies and Associations, U.S.
American Sunday-School Union: *see* Societies and Associations, U.S.
American Veterans' Committee: *see* Veterans' Organizations, U.S.
American Veterans of World War II (AMVETS): *see* Veterans' Organizations, U.S.
Ameripol SN 605c
Anaemia: *see* Blood, Diseases of the
Anderson, Robert Bernerd 54
Andorra
Angling
Anglo-Egyptian Sudan
 Cotton 190d
Angola: *see* Portuguese Overseas Territories 56, 54, 53, 52
 Coffee 176d; Diamonds 210b; Mineral and Metal Production and Prices 443
Animal Fats: *see* Vegetable Oils and Animal Fats
Animal Industry, Bureau of: *see* Veterinary Medicine 56, 55, 54, 53, 52. *See* Agricultural Research Administration 54, 53, 52
Annam: *see* Indochina 55, 54, 53, 52. *See* French Union 52
Anniversaries and Centennials: *see* Calendar (page xxii)
Antabuse: *see* Intoxication, Alcoholic 55, 54, 53, 52. *See* Psychiatry 53
Antarctica
 Cartography 146b; Exploration and Discovery 248c; Geography 291c; Law 398d; New Zealand 497b
Anthropology
 Archaeology 47d; Children's Books 158c; Exploration and Discovery 249c; Museums 466b; Palaeontology 531a; Philosophy 544b; Sociology 637a
Anti-aircraft Guns: *see* Munitions 55, 54, 53, 52
Antibiotics: *see* Ear, Nose and Throat, Diseases of, 56. *See* Agricultural Research Service 56, 55. *See* Chemistry 56, 55, 54. *See* Stomach and Intestines, Diseases of the, 56, 55, 54, 53. *See* Bacteriology; Chemotherapy 56, 55, 54, 53, 52. *See* Respiratory Diseases 54, 53, 52. *See* Nutrition, Experimental 53
 Bacteriology 89a; Dermatology 208c; Drug Administration 215b; Epidemiology 241b; Foreign Investments 269d; Medicine 429a; Veterinary Medicine 732d; Words and Meanings, New 751a
Antigua: *see* Leeward Islands
Antihistamines: *see* Allergy; Ear, Nose and Throat, Diseases of, 52
Antimony: *see* Mineral and Metal Production and Prices
 Secondary Metals 615b
Antitrust Law: *see* Law 53, 52
Apples: *see* Fruit
Apricots: *see* Fruit
Aqueducts: *see* Irrigation 55, 54. *See* Tunnels 54. *See* Aqueducts 53, 52
Arabia
Arab League: *see* Saudi Arabia 56, 55, 54, 53. *See* Iraq; Jordan; Lebanon; Syria 56, 55, 54, 53, 52. *See* Egypt 54, 53, 52. *See* Middle East 53, 52. *See* Arabia 52
 Islam 373c
Arboretums: *see* Botany
Archaeology
 Exploration and Discovery 249b; Iowa 367a; Museums 467a; National Geographic Society 474a; Words and Meanings, New 751a
Archery
Architecture
 Interior Decoration 352a; Museums 466a; Seismology 617b; Words and Meanings, New 750d
Areas and Populations of the Countries of the World
 Nursing 505a; Public Health Engineering 574b; Town and Regional Planning 681d
Argentina
 Agriculture 29a; Antarctica 43d; Aviation, Civil 80c; Birth Statistics 105d; Cartography 145d; Corn 189a; Cotton 190d; Dairy Products 196d; Death Statistics 202c; Debt, National 204c; Democracy 206c; Education 227d; Epidemiology 241d; Foreign Investments 269d; Fruit 284c; Infant Mortality 349b; International Trade 361d; Latin-American Literature 393c; Lead 400d; Meat 428c; Mineral and Metal Production and Prices 443; Music 469a; Navies of the World 477c; Oats 507c; Organization of American States 527a; Paraguay 535c; Railroads 588c; Religion 593a; Roads and Highways 601d; Roman Catholic Church 603a; Silver 624a; Socialism 628b; Social Security 630c; Soil Conservation 640b; Sugar 656d; Swimming 660d; Telephone 669c; Track and Field Sports 684a; Uruguay 725b; Wheat 744a; Wines 747a; Wool 750a
 Arida (Antoine Pierre) 507d
Arizona
Arkansas
Armies of the World
 European Unity 244a; NATO 499d; U.S.S.R. 695b
Arms, John Taylor: *see* Obituaries 54
Armstrong, Edwin Howard: *see* Obituaries 55
Armstrong, Henry W. ("Harry"): *see* Obituaries 52
Army, U.S. Department of: *see* Government Departments and Bureaus, U.S.
 Disasters 210d; Electronics 234a; Munitions 462d; National Guard 474b; Radio and Television 584c; Rivers and Harbours 600b; Selective Service, U.S. 617d; Wildlife Conservation 745a
 Arnel 153a
Arriba Y Castro, Benjamin de 54
Arsenic: *see* Mineral and Metal Production and Prices
Art: *see* Architecture; Art Exhibitions; Art Sales; Dance; Museums; Music; Photography; Printing; Smithsonian Institution; Theatre; and the Literature articles such as *American Literature; English Literature; etc.* 56, 55, 54, 53, 52. *See* Ceramic Arts and Crafts 54. *See* Etching; Painting; Sculpture 54, 53, 52
 Artane 430b
Arteriosclerosis: *see* Nutrition, Experimental 52
 Death Statistics 202b
Art Exhibitions
 Museums 467a; Vatican City State 727a
Arthritis: *see* Rheumatic Diseases 56, 55, 54, 53, 52. *See* Cortisone, Hydrocortisone and Corticotropin 54, 53. *See* Cortisone and ACTH 52
 Drug Administration 215b; Endocrinology 238b
Arthritis and Rheumatism Foundation: *see* Societies and Associations, U.S. 56, 55, 54
Artificial Satellite: *see* Physics 56
Artificial Weather: *see* Meteorology
Artillery: *see* Munitions 53, 52
Art Sales
 Museums 467b
Aruba: *see* Netherlands Antilles
Asbestos: *see* Mineral and Metal Production and Prices
ASCAP (American Society of Composers, Authors and Publishers): *see* Societies and Associations, U.S.
Ascension: *see* St. Helena
 Telephone 669c
Asgerisson, Asger 53
Ashe, Bowman Foster: *see* Obituaries 53
Asia: *see* Afghanistan; China; etc.
Asian-African Conference 56
 Burma 131b; India 343b; Indonesia 347a; International Law 355b; Pakistan 530b; Southeast Asia Treaty Organization 444d
Association for the Advancement of Science, American: *see* Societies and Associations, U.S.
Association of American Geographers: *see* Geography
Association of Research Libraries: *see* Societies and Associations, U.S.
Astor, Waldorf Astor, 2nd Viscount: *see* Obituaries 53
Astronomy
 Geography 292a; Museums 466c; Physics 547d
Athletics: *see* Track and Field Sports; etc.
 Education 225c
Atlantic Treaty: *see* North Atlantic Treaty Organization 56, 55, 54, 53, 52. *See* European Union 54, 53, 52
Atlas: Aviation, Military 84a; Munitions 465b; Words and Meanings, New 750d
Atomic Energy
 Armies of the World 58b; Cancer 143b; Canning Industry 145a; Chemistry 154a; Children's Books 158a; Denmark 207c; Electrical Industries 235c; Eye, Diseases of the 250c; Glass 302b; Great Britain 308b; Industrial Health 348b; Jet Propulsion 382c; Kusch, Polykarp 390b; Lamb, Willis E., Jr. 393b; Metallurgy 433b; Meteorology 433d; Munitions 462d; Oceanography 521d; NATO 499d; Navies of the World 477c; Paints and Varnishes 529c; Physics 548a; Political Parties, British 557c; Public Health Engineering 574b; Public Utilities 576c; Railroads 588a; Standards, National Bureau of, 649a; U.S.S.R. 695c; UN 699b; Uranium 723c; U.S. 704d; Vatican City State 726d; Words and Meanings, New 750d; World Health Organization 752b
Atom Smashers: *see* Atomic Energy 55, 54, 53, 52
Attlee, Clement Richard 52
 Political Parties, British 557c
Audio-visual Education: *see* Motion Pictures
 Newspapers and Magazines 490c
Aureomycin: *see* Chemotherapy 53, 52
 Bacteriology 89a; Medicine 430d
Auriol, Vincent 52
Austen, Alice Elizabeth: *see* Obituaries 53
Austin, Warren R. 52
Australia, Commonwealth of
 Agriculture 29a; American Citizens Abroad 38a; Antarctica 44b; Armies of the World 59d; Automobile Industry 77b; Aviation, Civil 80c; Birth Statistics 105d; Cartography 146b; Children's Books 158d; Coal 174a; Coke 177b; Commonwealth of Nations 179d; Dairy Products 196d; Dams 198c; Dance 200b; Death Statistics 202c; Debt, National 204c; Electrical Industries 233d; Employment 237d; Epidemiology 242a; Exchange Control and Exchange Rates 246c; Football 265c; Foreign Investments 271c; Forests 274b; Fruit 284b; Gas, Natural and Manufactured 287b; Gliding 302b; Gold 302d; Immigration, Emigration and Naturalization 339c; Infant Mortality 349a; International Bank for Reconstruction and Development 353a; International Monetary Fund 358c; International Trade 363c; Iron and Steel 370c; Law 398d; Lead 400d; Livestock 410a; Lumber 413c; Meat 428b; Mineral and Metal Production and Prices 443; Mormons 452c; Museums 468a; National Parks and Monuments 477a; Navies of the World 477c; Newspapers and Magazines 494b; Olympic Games 524d; Prices 567c; Railroads 588c; Refugees 592a; Rubber 605d; Shipbuilding 619d; Silver 624a; Socialism 627b; Soil Conservation 640a; Southeast Asia Treaty Organization 644c; Suicide Statistics 657b; Tariffs 665c; Telephone 669c; Tennis 672a; Tin 679a; Town and Regional Planning 681d; Track and Field Sports 683b; Tunnels 691a; Uranium 723c; Wheat 744a; Wines 747a; Wool 750a; Zinc 759b
Austria
 Aluminum 36d; Armies of the World 58b; Automobile Industry 77b; Birth Statistics 105d; Communism 182b; Dance 200c; Death Statistics 202c; Debt, National 204c; Electrical Industries 233d; Exchange Control and Exchange Rates 247b; Foreign Investments 272a; Gas, Natural and Manufactured 287b; Geneva Big Four Conferences (1955) 289b; Housing 331a; Ice Skating 336b; Infant Mortality 349b; International Bank for Reconstruction and Development 353a; International Law 357a; International Monetary Fund 358c; Iron and Steel 370c; Italy 377b; Judaism 385a; Lumber 413c; Medical Rehabilitation of the Disabled 429a; Mineral and Metal Production and Prices 443; Museums 468a; Music 469d; NATO 500d; Palaeontology 531b; Radio and Television 585d; Railroads 588c; Refugees 591d; Rumania 606d; Rye 608b; Soccer 626d; Socialism 627a; Tariffs 665b; Tuberculosis 689a; Tunnels 691b; U.S.S.R. 695c; Wines 747a
Autobiography: *see* American Literature; etc.
Automation: Candy 144b; Ceramics 149d; Electronics 234b; Machinery and Machine Tools 414d; Meteorology 435b; Music 470c; Newspapers and Magazines 490a; Plastics 553a; Printing 569a; Standards, National Bureau of, 649a; Telegraphy 669a
Automobile Accidents: *see* Accidents 56, 55. *See* Accident Prevention 54, 53, 52
Automobile Industry
 Business Review 133b; Consumer Credit 185d; Crime 191d; Foreign Investments 269c; International Trade 360a; Labour Unions 391b; Machinery and Machine Tools 414d; Motor Transportation 459d; Newspapers and Magazines 490b; Petroleum 540b; Plastics 553a; Radio and Television 579d; U.S. 703c; Wages and Hours 738a
Automobile Insurance: *see* Insurance

- Basutoland:** *see* **British South African Territories**
Cartography 146b
- Batista, Fulgencio** 53
- Ba U** 53
- Baudoin I** 52
- Bauer, Harold:** *see* **Obituaries** 52
- Bauxite:** *see* **Mineral and Metal Production and Prices**
- Baxter, Warner:** *see* **Obituaries** 52
- Beals, Ralph Albert:** *see* **Obituaries** 55
- Beardsley, William S.: *see* **Obituaries** 55**
- Bechuanaland Protectorate:** *see* **British South African Territories**
Cartography 146b
- Beef:** *see* **Meat**
- Beer:** *see* **Brewing and Beer**
- Belgian Colonial Empire**
Roads and Highways 601b
- Belgian Congo:** *see* **Belgian Colonial Empire**
Coffee 176d; Copper 188b; Dams 198b; Diamonds 210b; Disasters 212b; Exploration and Discovery 249d; Gold 302d; Manganese 419b; Mineral and Metal Production and Prices 443; National Parks and Monuments 477a; Railroads 590b; Silver 624a; Tin 679a; Uranium 723c
- Bolivia**
Antarctica 44b; Architecture 53d; Armies of the World 58d; Astronomy 67d; Atomic Energy 70b; Automobile Industry 77b; Aviation, Civil 80c; Birth Statistics 105d; Cartography 145d; Coal 174a; Coke 177b; Dance 200c; Death Statistics 202c; Debt, National 204c; Disasters 210d; Education 227c; Electrical Industries 233d; European Unity 243d; Exchange Control and Exchange Rates 247a; Fairs and Exhibitions 252b; Foreign Investments 271a; Gas, Natural and Manufactured 287b; Housing 331a; Infant Mortality 349b; International Bank for Reconstruction and Development 353a; International Trade 360c; Iron and Steel 370d; Lead 400d; Linen and Flax 405d; Marriage and Divorce 423a; Mineral and Metal Production and Prices 443; Navies of the World 477d; Oceanography 521c; Physics 548d; Prices 568a; Railroads 588c; Religion 593b; Roads and Highways 602b; Shipbuilding 619d; Socialism 627d; Tariffs 665b; Trust Territories 688c; Wool 750b; Zinc 759b
- Belloc, (Joseph) Hilaire Pierre:** *see* **Obituaries** 54
- Benavente y Martinez, Jacinto:** *see* **Obituaries** 55
- Bender, Charles Albert ("Chief"):** *see* **Obituaries** 55
- Benefactions:** *see* **Donations and Bequests**
- Benelux:** *see* **European Unity** 56, 55, *See* **Luxembourg** 56, 55, 54, *See* **Belgium; Netherlands** 56, 55, 54, 53, 52, *See* **European Union** 52
- Benes, Vojta:** *see* **Obituaries** 52
- Benjamin, Raymond:** *see* **Obituaries** 53
- Benson, Ezra Taft** 56, 55, 54, 53
- Benton, William**
- Benzene:** *see* **Chemistry** 52
- Bequests, Philanthropic:** *see* **Donations and Bequests**
- Beran, Rudolf:** *see* **Obituaries** 55
- Berezowsky, Nicolai:** *see* **Obituaries** 54
- Beria, Lavrenty P.:** *see* **Obituaries** 54
- Berlin**
- Berlin Conference** 55
- Bermuda**
American Citizens Abroad 38a
- Bernardes, Arthur da Silva** 508b
- Beryllium:** *see* **Mineral and Metal Production and Prices**
- Best Sellers:** *see* **Book Publishing and Book Sales**
- Bethune, Mary McLeod** 508b
- Betting and Gambling**
Horse Racing 325a
- Bevan, Aneurin** 53, 52
- Bevin, Ernest:** *see* **Obituaries** 58
- Bhatnagar, Sir Shanti Swarupa** 508c
- Bhutan**
- Bicycling:** *see* **Cycling**
- Bidault, Georges** 54
- Billiards**
- Bingay, Malcolm Wallace:** *see* **Obituaries** 54
- Biochemistry**
Cancer 143c; Chemistry 151d; Genetics 288b; Medicine 429b; Physiology 550a; Psychology 572d; Public Health Service, U.S. 575c; Theorell, Axel Hugo Teodor 678b
- Biography:** *see* **American Literature; Book Publishing and Book Sales; English Literature; Obituaries;** and, in their alphabetical positions, biographies of living persons
- Biology:** *see* **Anthropology; Botany; Endocrinology; Genetics; Marine Biology; Physiology; Zoology**
Philosophy 545a; Psychology 572d
- Birth Control**
- Birth Statistics**
Marriage and Divorce 422a
- Bismarck Archipelago:** *see* **Trust Territories** 55, 54, 53, 52
- Bismuth:** *see* **Mineral and Metal Production and Prices**
- Björnsson, Sveinn:** *see* **Obituaries** 53
- Blake, Francis G.:** *see* **Obituaries** 53
- Blamey, Sir Thomas Albert:** *see* **Obituaries** 52
- Blanco, Juan:** *see* **Obituaries** 53
- Blandy, William Henry Purnell:** *see* **Obituaries** 55
- Blind, Education of the**
See also various states
- Blood, Diseases of the**
Biochemistry 104c; Cancer 143a; Medicine 431a; Physiology 550c; Stomach and Intestines, Diseases of the, 653a; Tropical Diseases 687c
- Blue Cross:** *see* **Insurance**
- Bobsledding**
- Bodenheim, Maxwell:** *see* **Obituaries** 55
- Bohlen, Charles Eustis** 54
- Bolivia**
Aviation, Civil 80c; Debt, National 204c; Exchange Control and Exchange Rates 245d; Foreign Investments 270a; Geology 294c; Illiteracy 339a; International Trade 361d; Mineral and Metal Production and Prices 443; Narcotics 472c; Peru 539b; Roads and Highways 601d; Silver 624a; Tariffs 665c; Tin 679a; World Health Organization 752c
- Bomarc:** Aviation, Military 84a; Munitions 465d
- Bombing:** *see* **Aviation, Military; Munitions of War** 52
- Bombs:** *see* **Atomic Energy**
- Bonaire:** *see* **Netherlands Antilles**
- Bonfield, Margaret Grace:** *see* **Obituaries** 54
- Bonds:** *see* **Banking; Stocks and Bonds**
- Bone, Sir Muirhead:** *see* **Obituaries** 54
- Bonomi, Ivanoe:** *see* **Obituaries** 52
- Bonsal, Stephen:** *see* **Obituaries** 52
- Book Collecting**
- Book Publishing and Book Sales**
American Literature 39b; Anthropology 44c; Botany 112c; Canadian Literature 140b; Cartography 145b; Children's Books 158a; English Literature 239c; Forests 273a; French Literature 281a; Genetics 288d; Geology 293d; German Literature 296c; International Law 357d; Intoxication, Alcoholic 366b; Italian Literature 374d; Jewish Literature 382d; Judaism 385c; Latin-American Literature 393c; Literary Prizes 407c; Mineral and Metal Production and Prices 442d; National Geographic Society 473c; Newspapers and Magazines 490b; Palaeontology 531a; Philosophy 544b; Psychology 572c; Russian Literature 607d; Smithsonian Institution 626c; Sociology 637c; Spanish Literature 647a; Zoology 759c
- Books:** *see* **Book Publishing and Book Sales; Children's Books; Literary Prizes;** *see* also under **American Literature; English Literature; French Literature; Jewish Literature;** and, *see* **Obituaries** 53
- Borchard, Edwin:** *see* **Obituaries** 52
- Border Patrol:** *see* **Immigration, Emigration and Naturalization** 55
- Bordoni, Irene:** *see* **Obituaries** 54
- Borgorini Duca, Francesco** 54
- Born, Max** 55
- Borneo:** *see* **British Borneo; Indonesia**
- Borodin, Michael (Michael Gruzenberg):** *see* **Obituaries** 54
- Boston**
"Boston": Aviation, Military 85a; Munitions 464d
- Botany**
Palaeontology 531d; Rubber 604c
- Bothe, Walther** 55
- Bowles, Chester**
- Bowling**
- Bowls:** *see* **Lawn Bowling**
- Boxing**
- Boy Scouts:** *see* **Societies and Associations, U.S.**
- Bradley, Omar Nelson** 53, 52
- Brando, Marlon** 56
- Braniff, Thomas E.:** *see* **Obituaries** 55
- Brannan, Charles Franklin** 53, 52
- Brazil**
Agriculture 29a; Aviation, Civil 80c; Blind, Education of the, 106d; Cartography 145d; Cocoa 176a; Coffee 176c; Corn 189a; Cotton 190d; Debt, National 204c; Democracy 206d; Diamonds 210b; Disasters 211a; Epidemiology 241d; Exchange Control and Exchange Rates 245d; Foreign Investments 269d; International Trade 360c; Iron and Steel 370c; Latin-American Literature 393c; Lumber 413c; Manganese 419b; Meat 428a; Mineral and Metal Production and Prices 443; Music 469b; Navies of the World 477c; Organization of Amer-
- ican States 526d; Railroads 588c; Religion 593b; Roads and Highways 601d; Roman Catholic Church 603a; Rubber 604d; Socialism 628b; Sugar 656d; Tariffs 665c; Track and Field Sports 684a; Tropical Diseases 687d; Uruguay 725a; U.S. 708d; Wines 747a; World Health Organization 752c
- Bread and Bakery Products:** *see* **Baking Industry** 56, 55, *See* **Bread and Baking Industry** 54, 53, 52
- Breadner, Lloyd Samuel:** *see* **Obituaries** 53
- Breisach, Paul:** *see* **Obituaries** 53
- Brewing and Beer**
Foreign Investments 272d
- Brewster, (Ralph) Owen** 52
- Brice, Fanny:** *see* **Obituaries** 52
- Brickell, Henry Herschel:** *see* **Obituaries** 53
- Bricker, John William** 54
- Bricker Amendment:** *see* **International Law** 55
- Bridge, Contract:** *see* **Contract Bridge**
- Bridges, (Henry) Styles** 53, 52
- Bridges**
Munitions 463b; Rivers and Harbours 600d
- British Borneo**
- British Columbia**
- British Commonwealth:** *see* **Commonwealth of Nations**
- British East Africa**
Merchant Marine 432d; Trust Territories 688c; World Health Organization 752b
- British Guiana**
Epidemiology 241d; Foreign Investments 270d; Manganese 419a; Mineral and Metal Production and Prices 443
- British Honduras**
Archaeology 51b; Disasters 211a
- British Malaya:** *see* **Malaya, Federation of; Singapore** 56, 55, 54, 53, *See* **Malaya (Federation of) and Singapore** 52
- British Somaliland:** *see* **British East Africa**
- British South African Territories**
- British West Africa**
Merchant Marine 432d; Railroads 590b; Trust Territories 688b
- British West Indies** 56, 55, 54, *See* **Bahama Islands; Barbados; Jamaica; Leeward Islands; Trinidad and Tobago; Windward Islands** 54, 53, 52
- American Citizens Abroad** 38a
- Broadcasting:** *see* **Radio and Television** 56, 55, 54, *See* **Radio; Television** 53, 52
- Brookings Institution:** *see* **Societies and Associations, U.S.**
- Brown, Margaret Wise:** *see* **Obituaries** 53
- Brownell, Herbert, Jr.** 56, 55, 54, 53
- Broz, Josip (Tito):** *see* **Tito (Josip Broz)**
- Bruce, Nigel:** *see* **Obituaries** 54
- Brucker, Wilber Marion** 56
- Brunei:** *see* **British Borneo**
- Gas, Natural and Manufactured** 287b
- Brush, Katharine:** *see* **Obituaries** 53
- Bryant, Lane (Mrs. Lena Himmelstein Bryant Malsin):** *see* **Obituaries** 52
- Buddhism:** *see* **Religion** 56
- Budget, National**
Agriculture 25d; Armies of the World 60d; Business Review 133d; Debt, National 203a; Education 222c; Foreign Aid Programs, U.S. 265d; Forests 273b; Hoover Commission 322d; Rivers and Harbours 600c; Roads and Highways 601b; Taxation 666d, *See* also various countries
- Buhl, Wilhelm:** *see* **Obituaries** 55
- Buhl Foundation:** *see* **Societies and Associations, U.S.**
- Building and Construction Industry**
Architecture 52b; Bridges 117b; Business Review 131c; Ceramics 149c; Chemistry 153a; Chicago 156d; Donations and Bequests 214b; Employment 236c; Glass 302a; Hospitals 327b; Hotels, U.S. 327c; Housing 328a; Income and Product, U.S. 341d; Labour Unions 391b; Museums 466a; Paints and Varnishes 529b; Political Parties, U.S. 559a; Post Office 563c; Presbyterian Church 564d; Public Health Service, U.S. 575c; Roads and Highways 601a; Strikes 654a; Tunnels 691a; U.S. 703d; Wages and Hours 737d
- Bulgarian, Nikolai Alexandrovich** 56
- U.S.S.R.** 693d
- Bulgaria**
Agriculture 30a; Armies of the World 61d; Disasters 211a; Eastern European Economic Planning 218d; Greece 310a; Horticulture 325d; Israel 373d; Mineral and Metal Production and Prices 443; Navies of the World 477d; Wines 747a
- Bulldog** 465d
- Bullet, Clarence J.:** *see* **Obituaries** 53
- Bunin, Ivan Alekseyevich:** *see* **Obituaries** 54
- Burgess, (Frank) Gelett:** *see* **Obituaries** 52
- Burke, Arleigh Albert** 56
- Burma**
Aviation, Civil 80c; China 162b; Debt, National 204c; Epidemiology 242a; Foreign Investments 271c; Illiteracy 338d; India 343b; International Trade 364d; Israel 373d; Mineral and Metal Production and Prices 443; Navies of the World 477d; Religion 592b; K 600a; Socialism 627a; Thailand 675b; Tin 679a; World Health Organization 752b
- Burns, Robert Elliott** 508d
- Burns, Tommy (Noah Brusso)** 508d
- Burt, (Maxwell) Struthers:** *see* **Obituaries** 55
- Busch, Adolf Georg W.:** *see* **Obituaries** 53
- Buses:** *see* **Urban Transportation, U.S.** 56, 55, 54, *See* **Motor Transportation** 56, 55, 54, 53, 52, *See* **Automobile Industry** 54, 53, 52, *See* **Electric Transportation** 53, 52
- Business Review**
Agriculture 23d; Banking 90d; Chemistry 151a; Consumer Credit 185d; Co-operatives 187b; Employment 236b; Exchange Control and Exchange Rates 245a; Federal Trade Commission 258a; Foreign Investments 268d; Income and Product, U.S. 340d; International Trade 359b; Machinery and Machine Tools 414d; Newspapers and Magazines 489b; Petroleum 539d; Political Parties, U.S. 559b; Prices 565c; Railroads 586d; Wages and Hours 737a; Wealth and Income, Distribution of, 740a, *See* also various industries, cities, states and countries
- Bustamante y Sirven, Antonio Sánchez de:** *see* **Obituaries** 52
- Butler, Hugh Alfred:** *see* **Obituaries** 55
- Butler, Richard Austen** 54
Political Parties, British 557b
- Butter:** *see* **Dairy Products; Vegetable Oils and Animal Fats**
- Byrd, Harry Flood** 53, 52
- Byrd, Richard Evelyn** 56
- B-Z** 55 430b
- C-130 Hercules** 83d
- Cabinet Members:** *see* **Great Britain; United States** 56, *See* **Cabinet Members** 55, 54, 53, 52, *See* **Radio and Television** 582b
- Cacao:** *see* **Cocoa**
- Cadmium:** *see* **Mineral and Metal Production and Prices**
- Café Filho, João** 55
- Cairns, Sir Hugh William:** *see* **Obituaries** 53
- Calendar (page xxii)**
- Calendar of Events:** *see* **pages 1-16**
- California**
Bridges 117c
- Cambodia** 56, *See* **French Union; Indochina** 55, 54, 53, 52
- Epidemiology** 242a; Foreign Aid Programs, U.S. 266d; Thailand 675b; World Health Organization 752b
- Cameroon:** *see* **British West Africa; Trust Territories**
- Cameroun:** *see* **French Equatorial Africa; French Union**
- Cocoa** 176b; Railroads 590b; World Health Organization 752b
- Camp Fire Girls:** *see* **Societies and Associations, U.S.**
- Camrose, William Ewert Berry:** *see* **Obituaries** 55
- Canada**
Accidents 18d; Advertising 21c; Agriculture 28c; Aluminum 36d; American Citizens Abroad 38a; Armies of the World 58d; Atomic Energy 70b; Automobile Industry 77b; Aviation, Civil 83a; Aviation, Military 83b; Barley 94c; Birth Statistics 105d; Bridges 118c; Canadian Literature 140b; Canals and Inland Waterways 142a; Cartography 145c; Chemistry 151c; Christian Unity 166b; Coal 174a; Coke 177b; Community Trusts 184a; Consumer Credit 186c; Copper 188b; Curling 194a; Dairy Products 196d; Dams 197b; Dance 200c; Death Statistics 202c; Debt, National 204d; Disasters 210d; Disciples of Christ 213a; Education 228a; Eggs 228c; Electrical Industries 233b; Electronics 234a; Employment 237c; Exchange Control and Exchange Rates 245c; Exploration and Discovery 248d; Fairs and Exhibitions 251c; Fisheries 261b; Football 265a; Foreign Investments 268d; Forests 273c; Fruit 284c; Gas, Natural and Manufactured 287b; Gliding 302c; Gold 302d; Golf 304b; Hockey, Ice 318c; Horse Racing 325a; Hospitals 327a; Housing 330c; Immigration, Emigration and Naturalization 339c; India

343a; Industrial Health 348b; Infant Mortality 349a; Insurance 349c; International Trade 359c; Iron and Steel 370b; Jet Propulsion 381d; Labour Unions 391d; Law 398d; Lawn Bowling 400b; Lead 400d; Literary Prizes 408c; Lumber 413b; Marriage and Divorce 423a; Meat 428a; Medical Rehabilitation of the Disabled 428d; Mineral and Metal Production and Prices 443; Motion Pictures 457d; Motor Transportation 460a; Municipal Government 460d; Museums 468a; Music 469d; Narcotics 472b; Navies of the World 477c; Newspapers and Magazines 490c; Nickel 498c; Oats 507c; Palaeontology 531d; Paper and Pulp Industry 534d; Poliomyelitis 556d; Post Office 563c; Potatoes 564b; Presbyterian Church 564c; Prices 568a; Public Utilities 576d; Railroads 588a; Religious Education 593d; Rivers and Harbours 600b; Roads and Highways 601c; Rowing 604b; Rubber 604d; Rye 608b; Seventh-day Adventists 618b; Shipbuilding 619d; Shows 622c; Silver 624a; Socialism 627c; Social Security 628c; Soil Conservation 640a; Strikes 656a; Swimming 661a; Table Tennis 663d; Tariffs 665b; Taxation 668a; Tea 668d; Telephone 669b; Textile Industry 675a; Theatre 676d; Tobacco 680b; Tourist Travel 681b; Town and Regional Planning 681d; Toy Industry 683a; Tuberculosis 689b; Tunnels 691c; United Church of Canada 696d; Universities and Colleges 713b; Uranium 723c; Wheat 744a; Wildlife Conservation 745b; Wines 747a; Wool 750b; Yachting 755b; Zinc 759b. See also various provinces and territories

Canadian Literature

Literary Prizes 408c

Canals and Inland Waterways

Rivers and Harbours 600b

Canary Islands: see Spain

Canasta 52

Canberra Mark 9: 86d

Cancer

Blood, Diseases of the, 108b; Chemistry 152b; Death Statistics 202d; Diabetes 209d; Ear, Nose and Throat, Diseases of, 218b; Motion Pictures 456d; Public Health Service, U.S. 575b; Stomach and Intestines, Diseases of the, 652d; Surgery 659a; Words and Meanings, New 751b; X-ray and Radiology 754c

Candy

Canescine 151d

Cane Sugar: see Sugar

Canning Industry

Federal Trade Commission 258b; Fisheries 260c; Fruit 284b; Vegetables 727d

Capa, Robert (Andrei Friedmann): see **Obituaries** 55

Capehart, Homer Earl 53

Cape Verde Islands: see Portuguese Overseas Territories

Capper, Arthur: see **Obituaries** 52

Caracas Conference: see Inter-American Conference 55

Carmona, Antonio Oscar de Fragosa: see **Obituaries** 52

Carnegie, Dale 508d

Carnegie Trusts: see Societies and Associations, U.S.

Archaeology 51b

Carney, Robert Bostwick 55, 54

Carnivals: see Shows

Carol II, King of Rumania: see **Obituaries** 54

Caroline Islands: see Marshall, Caroline and Mariana Islands 56, 55, 54, 53, 52. See Trust Territories 55, 54, 53, 52

Carpenter, John Alden: see **Obituaries** 52

Carter, Amon Giles 509a

Cartography

Coast and Geodetic Survey, U.S. 174c; Geography 292b; Geological Survey, U.S. 292d; National Geographic Society 474b; Oceanography 521c

Carton de Wiart, Henry Victor Marie Gluslain, Count: see **Obituaries** 52

Castillo Armas, Carlos 55

Castillo Nájera, Francisco: see **Obituaries** 55

Castries, Christian de 55, 52. See De Castries, Christian 54, 53, 52

Catastrophes: see Disasters

Catholic Church: see Roman Catholic Church

Catholic Community Service, National: see Societies and Associations, U.S.

Catholic Library Association: see Societies and Associations, U.S. 53, 52

Catholic Organizations for Youth: see Societies and Associations, U.S.

Catholic Rural Life Conference, National: see Societies and Associations, U.S. 55, 54, 53, 52

Catholic Welfare Conference, National: see Societies and Associations, U.S.

Cattle: see Livestock

Tropical Diseases 687b; Tuberculosis 690a

Celesticetin 152a

Cement

Eastern European Economic Planning 219a; Gas, Natural and Manufactured 287c; Housing 328b

Cellulose Products: see Rayon and Other Synthetic Fibres 54, 53, 52. See Plastics Industry 52

Censorship: see Law 53

Census Data, U.S.

Birth Statistics 105c; Cancer 143a; Child Welfare 160c; Death Statistics 202b; Education 222c; Employment 236b; Housing 330a; Marriage and Divorce 422a; Wealth and Income, Distribution of, 740a

Centennials: see Calendar (page xxii)

Central African Federation: see Rhodesia and Nyasaland, Federation of, 56, 55, 54

Ceramics 56. See Ceramic Arts and Crafts 54. See Ceramic Products 53, 52

Machinery and Machine Tools 415d; Standards, National Bureau of, 649a

Cereals: see Barley; Corn; Oats; Rice; Rye; Wheat

Nutrition, Experimental 506a

Cerianite 445b

Cermets: Ceramics 150a; Standards, National Bureau of, 649a

Cesium Clock 549a

Ceylon

Aviation, Civil 80c; Birth Statistics 105d; Christian Unity 166d; Commonwealth of Nations 179d; Communism 183b; Death Statistics 202c; Debt, National 204d; Epidemiology 241d; Exchange Control and Exchange Rates 247b; Forests 274b; Infant Mortality 349b; International Bank for Reconstruction and Development 353a; International Monetary Fund 358c; International Trade 364d; Law 399c; Merchant Marine 432d; Museums 468a; Navies of the World 477d; Rubber 604d; Spices 647d; Tea 668c

Chad: see French Equatorial Africa

Chambers, Sir Edmund Kerchever: see **Obituaries** 55

Chambers of Commerce: see Societies and Associations, U.S.

Chamoun, Camille: see Shamun, Camille 53

Channel Islands: see Great Britain & Northern Ireland, United Kingdom of 56, 55, 54, 53, 52. See Commonwealth of Nations 55, 54, 53, 52

Chapman, Oscar Littleton 53, 52

Charge Account: see Consumer Credit 53, 52

Charles Hayden Foundation: see Societies and Associations, U.S.

Chase, George Henry: see **Obituaries** 53

Chase, Harry Woodburn 509a

Cheese: see Dairy Products

Chemistry

Eastern European Economic Planning 219a; Employment 236d; Geology 294d; Narcotics 472c; Petroleum 540b; Physics 547d; Plastics 552b; Prices 566b; Public Health Engineering 574b; Venereal Diseases 728c

Chemotherapy

Allergy 36b; Bacteriology 88a; Cancer 143d; Chemistry 152a; Ear, Nose and Throat, Diseases of, 217d; Medicine 429b; Psychiatry 571d; Public Health Service, U.S. 575b; Rheumatic Diseases 597a; Tuberculosis 689b; World Health Organization 752b

Chemurgy 54, 53, 52

Cherries: see Fruit

Chess

Chiang Kai-shek

China 161c

Chicago

Chifley, Joseph Benedict: see **Obituaries** 52

Child Labour

Child Welfare 160b

Children's Books

Canadian Literature 141a; Literary Prizes 408b; Newspapers and Magazines 494a; Political Parties, British 557a

Child Welfare

Accidents 18b; Child Labour 157b; Juvenile Delinquency 385d; Law 398a; Organization of American States 527b; Poliomyelitis 555b; Public Health Service, U.S. 575b; Social Security 628c; Tuberculosis 689b; World Health Organization 752c

Chile

Antarctica 44b; Archaeology 51c; Aviation, Civil 80c; Birth Statistics 105d; Blind, Education of the, 106d; Bolivia 109b; Cartography 145d; Copper 188b; Death Statistics 202c;

Debt, National 204d; Disasters 212d; Epidemiology 241d; Exchange Control and Exchange Rates 246a; Foreign Investments 269d; Infant Mortality 349b; International Trade 360c; Iron and Steel 370b; Latin-American Literature 393c; Manganes 419b; Mineral and Metal Production and Prices 443; Navies of the World 477c; Organization of American States 527a; Roads and Highways 601d; Seismology 617b; Silver 624a; Tariffs 664d; Wines 747a; World Health Organization 752c

China

Agriculture 28b; Armies of the World 58b; Asian-African Conference 66a; Barley 94d; Burma 131b; Cartography 146b; Coal 174a; Communism 183a; Corn 189a; Cotton 190d; Dams 197b; Disasters 212c; Education 227d; Formosa 374c; International Law 355c; Japan 279a; Mineral and Metal Production and Prices 443; Missions, Foreign (Religious) 447b; Motor Transportation 460a; Narcotics 472b; Navies of the World 477c; Olympic Games 524d; Political Parties, British 557c; Portuguese Overseas Territories 562a; Railroads 588c; Refugees 591d; Religion 592d; Roman Catholic Church 602d; Rubber 604d; Seismology 617a; Silk 624a; Socialism 627b; Southeast Asia Treaty Organization 644c; Soybeans 645b; Tin 679a; Tobacco 680b; UN 698d; U.S. 705c; U.S.S.R. 696a; Vietnam 733c; Women's Fashions 748b

Chiropractic 56, 55. See Medicine 54, 53, 52

Chloromycetin: see Chemotherapy 53. See Medicine 52

Chou En-lai 56, 55, 53

Communism 183b

Christians, Mady: see **Obituaries** 52

Christian Science

Christian Unity

Congregational Christian Churches 184d; Friends, Religious Society of, 283c; Lutherans 414a; Missions, Foreign (Religious) 447b; Presbyterian Church 564b; Unitarian Church 696c

Christy, Howard Chandler: see **Obituaries** 53

Chromium and Chromite: see Mineral and Metal Production and Prices

Chronology: see Calendar of Events (pages 1-16)

Churches of Christ 56

Churchill, Sir Winston Leonard S. Political Parties, British 557a

Church Membership

Religion 593b. See also various churches

Chymotrypsin 653a

Cicognani, Gaetano 54

Cigars and Cigarettes: see Tobacco

Cine-Miracle 455a

Cineraama: see Motion Pictures 54, 53

C.I.O.: see Labour Unions

Circuses: see Shows

Ciriaci, Pietro 54

City and Town Planning: see Urban Transportation, U.S. 56, 55, 54. See Building and Construction Industry; Municipal Government; Town and Regional Planning 56, 55, 54, 53, 52. See Housing 55

City Manager Plan: see Municipal Government 52

Civil Aeronautics Administration

Civil Defense, U.S.

Canning Industry 145a; Motion Pictures 457a; Municipal Government 462b; Radio and Television 585a

Civil Rights: see Law; Negroes, American 56, 55, 54, 53, 52. See Education 55, 54, 53, 52

International Law 356c; Newspapers and Magazines 490c

Civil Service

Employment 236d; Social Security 629b; U.S. 706a

Civitan International: see Societies and Associations, U.S. 56, 55

Clark, Bennett Champ: see **Obituaries** 55

Clark, Mark Wayne 54, 53

Claudel, Paul Louis Charles Marie 509b

Clay Products: see Ceramic Arts and Crafts 54. See Ceramic Products 53, 52

Clementis, Vladimir: see **Obituaries** 53

Cleveland

Climate: see Meteorology

Clothing Industry

Labour Unions 391b; Prices 566c; Strikes 654c; Wages and Hours 738a; Women's Fashions 748b

Coal

Disasters 211b; Geological Survey, U.S. 293c; Eastern European Economic Planning 219a; European Unity 244a; Merchant Marine 432c; Mineral and Metal Production and Prices 442d; Prices 568a; Strikes 654c; Urban Transportation, U.S. 724d

Coast and Geodetic Survey, U.S.

Cartography 145c; Seismology 617a;

Selective Service, U.S. 617c

Coast Guard, U.S.

Cobalt: see Mineral and Metal Production and Prices

Cancer 143b

Cobb, John Rhodes: see **Obituaries** 53

Cochin-China: see Indochina 55, 54, 53, 52. See French Union 52

Cockcroft, Sir John Douglas 52

Cocoa

International Trade 361d; Prices 567c

Cody, Henry John: see **Obituaries** 52

Coffee

International Trade 360a; Exchange Control and Exchange Rates 245d

Coffin, Henry Sloane: see **Obituaries** 55

Coffin, Robert Peter Tristram 509c

Coinage

Eastern European Economic Planning 219a

Gold, Common: see Ear, Nose and Throat, Diseases of, 52

Coldwell, Major James

Colette (Sidonie-Gabrielle Colette): see **Obituaries** 55

Coliformin 155a

Colleges and Universities: see Universities and Colleges

Collier, Constance (Laura Constance Hardie) 509c

Collins, Edward Trowbridge: see **Obituaries** 52

Collins, J(oseph) Lawton 53, 52

Colombia

Architecture 53d; Armies of the World 62a; Aviation, Civil 80c; Cartography 145d; Coffee 176c; Debt, National 204d; Disasters 212b; Exchange Control and Exchange Rates 246a; Foreign Investments 272a; Gas, Natural and Manufactured 287b; International Bank for Reconstruction and Development 353a; International Monetary Fund 358b; International Trade 361d; Latin-American Literature 393c; Mineral and Metal Production and Prices 443; Navies of the World 477d; Roads and Highways 601d; Tariffs 665d; Tropical Diseases 687d; Wines 747a; World Health Organization 752b

Colombo Plan Conference 139a

Colorado

Columbia, District of: see Washington, D.C.

Colvin, Mamie White (Mrs. David Leigh Colvin) 509c

Comets: see Astronomy 56

Cominform: see Communism 54, 53, 52

Commerce: see Business Review; International Trade; Tariffs

Commerce, U.S. Department of: see Government Departments and Bureaus, U.S.

Commission on Organization of the Executive Branch of the Government: see Hoover Commission 56

Commodity Credit Corporation: see Agriculture

Rye 608b; Tobacco 679a

Commodity Prices: see Business Review; Prices

Commodity Trading: see Agriculture 53, 52

Commons, House of: see Parliament, British 55, 54, 53, 52

Commonwealth Fund: see Societies and Associations, U.S.

Nursing 505b

Commonwealth of Nations

See also various countries

Communism

Democracy 205d; Eastern European Economic Planning 219a; Education 226b; Egypt 229b; Federal Bureau of Investigation 254c; Law 396c; Malaya, Federation of, 418a; Newspapers and Magazines 490a; Roman Catholic Church 602c; Socialism 627a; Southeast Asia Treaty Organization 644c; Turkey 692b; Yalta Documents 755d. See also various countries

Community Chest

Donations and Bequests 214b

Community Planning: see Urban Transportation, U.S. 56, 55, 54. See Building and Construction Industry; Municipal Government; Town and Regional Planning 56, 55, 54, 53, 52. See Housing 55, 54

Community Trusts

Comoro Islands: see French Union

Compensation, Veterans': see Veterans Administration (U.S.)

Compound E: see Chemotherapy; Cortisone and ACTH; Endocrinology; Rheumatic Diseases 52

Compound F: see Chemotherapy; Endocrinology; Medicine 52

- Christian Unity 166b; Church Membership 168a
- Congress, U.S.:** *see* **United States Congress** 56, 55. *See* **Congress, United States** 54, 53, 52
- Congressional Investigations** 55
- Congress of Industrial Organizations:** *see* **Labour Unions**
- Conklin, Edwin Grant: *see* **Obituaries** 53
- Connally, Tom (Thomas Terry) 52
- Connecticut**
- Conscription:** *see* **Selective Service, U.S.**
- Conservation, Soil:** *see* **Soil Conservation** 56, 55, 54. *See* **Soil Erosion and Soil Conservation** 53, 52
- Conservative Party, Great Britain:** *see* **Political Parties, British** 56, 55, 54, 53
- Construction Industry:** *see* **Building and Construction Industry**
- Consumer Co-operatives:** *see* **Co-operatives**
- Consumer Credit**
- Banking 91a; Business Review 131d; Hotels, U.S. 328a; Housing 328b; Income and Product, U.S. 341c; Prices 566b; Savings and Loan Industry 614b; U.S. 703b; Words and Meanings, New 750d
- Contract Bridge**
- Co-operatives**
- Farm Credit System 252d; Rural Electrification Administration 607b
- Copper**
- Eastern European Economic Planning 219b; Foreign Investments 269b; International Trade 360a; Metallurgy 433a; Mineral and Metal Production and Prices 442d; Prices 567d; Secondary Metals 615a
- Coral Rubber 605d
- Corbett, Harvey Wiley: *see* **Obituaries** 55
- Corn**
- Agriculture 24c; Barley 94d; International Trade 362a; Palaeontology 531d; Vegetables 727d
- Coronation** 54
- Corporation Income Tax:** *see* **Taxation**
- Cortisone, Hydrocortisone and Corticotropin** 54, 53. *See* **Cortisone and ACTH** 52
- Agricultural Research Service 23c; Allergy 36b; Chemistry 152b; Endocrinology 238b; Heart and Circulatory Diseases 317d; Medicine 430d; Rheumatic Diseases 597c; Vitamins and Nutrition 736d; X-ray and Radiology 754c
- Cosmic Rays:** *see* **Physics**
- Costantini, Celso 54
- Costa Rica**
- Birth Statistics 105d; Coinage 177a; Death Statistics 202c; Debt, National 204d; Foreign Investments 270c; Infant Mortality 349a; Nicaragua 498a; Organization of American States 526d; Organization of Central American States 527c; Roads and Highways 601c; Socialism 628b; Tariffs 666a
- Costello, John Aloysius** 55
- Cost of Living:** *see* **Business Review; Prices**
- Housing 328a. *See* also various countries
- Cotton**
- Agricultural Research Service 23a; Agriculture 24c; Chemistry 152b; Disasters 211b; International Trade 360b; Prices 567d; Textile Industry 674a; Vegetable Oils and Animal Fats 727a
- Cottonseed Oil:** *see* **Vegetable Oils and Animal Fats**
- Coty, Rene** 55
- Council of Europe:** *see* **European Unity** 56, 55. *See* **Council of Europe** 55. *See* **European Union** 54, 53, 52
- Council of Foreign Ministers:** *see* **Germany** 53, 52
- Counterfeiting:** *see* **Secret Service, U.S.**
- Countries of the World, Areas and Populations of the:** *see* **Areas and Populations of the Countries of the World**
- Courts:** *see* **Law**
- Cox, Edward Eugene: *see* **Obituaries** 53
- Coxey, Jacob S(echler): *see* **Obituaries** 52
- Coyle, Kathleen: *see* **Obituaries** 53
- Cranberries:** *see* **Fruit**
- Horticulture 326a
- Credit, Consumer:** *see* **Consumer Credit**
- Credit Unions:** *see* **Farm Credit System** 56. *See* **Cooperatives** 56, 55. *See* **Federal Security Agency** 53
- Cricket** 54, 53, 52
- Crime**
- Drug Administration 214d; Education 226c; Federal Bureau of Investigation 254b; Fires and Fire Losses 260b; Juvenile Delinquency 386a; Law 396c; Narcotics 472a; Police 554c; Prisons 570a; Secret Service,
- U.S. 615c
- Cripps, Sir (Richard) Stafford: *see* **Obituaries** 53
- Croce, Benedetto: *see* **Obituaries** 53
- Crockett, Davy 56
- Crosby, Dixie Lee: *see* **Obituaries** 53
- Crude Oil:** *see* **Petroleum**
- Crump, Edward Hull: *see* **Obituaries** 55
- Cuba**
- Aviation, Civil 80c; Bridges 118c; Cartography 145c; International Trade 360c; Latin-American Literature 393d; Manganese 419b; Music 469a; Navies of the World 477d; Nickel 498c; Sugar 656d; Tariffs 665b
- Culbertsen, Ely (Ilya) 509d
- Curaçao:** *see* **Netherlands Antilles**
- Agricultural Research Service 22d
- Curling**
- Currency:** *see* **Coinage; Exchange Control and Exchange Rates**
- International Bank for Reconstruction and Development. 353c *See* also under various countries
- Cycling**
- Cycloserine 152a
- C.Y.O.:** *see* **Societies and Associations, U.S.**
- Cyprus**
- Armies of the World 61a; Copper 188b; Great Britain 308c; Greece 310a; Infant Mortality 349b; Middle Eastern Affairs 441d; Mineral and Metal Production and Prices 443; NATO 500c; Turkey 692b; UN 700b; Wines 747a
- Cyrenaica:** *see* **Libya** 53, 52
- Czechoslovakia**
- Agriculture 30a; Armies of the World 58b; Astronomy 68a; Automobile Industry 77b; Aviation, Civil 80c; Burma 131b; Cartography 146a; Ceylon 150c; Children's Books 158d; Coal 174a; Coke 177b; Eastern European Economic Planning 218d; Education 227d; Egypt 229c; Electrical Industries 233d; International Monetary Fund 358b; Iron and Steel 370c; Mineral and Metal Production and Prices 443; Museums 468a; Railroads 588c; Uranium 723c; Wines 747a
- Dahomey:** *see* **French Union; French West Africa**
- Dairy Industry, Bureau of:** *see* **Agricultural Research Administration** 54, 53, 52
- Dairy Products**
- Agriculture 25b; Child Welfare 159b; Frozen Foods 283d; International Trade 363c; Public Health Engineering 574d
- Dakar:** *see* **French West Africa**
- D'Alton, John Francis** 54
- Dams**
- Eastern European Economic Planning 219d; Irrigation 371d; Soil Conservation 640a; Tunnels 691a
- Dance**
- Communism 182a; Words and Meanings, New 751a
- Dates:** *see* **Fruit**
- Daughters of the American Revolution, National Society of:** *see* **Societies and Associations, U.S.**
- Davenport, Russell Wheeler: *see* **Obituaries** 55
- Davidson, Jo: *see* **Obituaries** 53
- Dávila, Carlos Guillermo 510a
- Davis, John William 510a
- Dawes, Charles Gates: *see* **Obituaries** 52
- Dawes, Henry May: *see* **Obituaries** 53
- Day, Edmund Ezra: *see* **Obituaries** 52
- DDT:** *see* **Agricultural Research Service** 56, 55, 54, 53, 52. *See* **Malaria** 52
- Epidemiology 241c; Public Health Engineering 575a
- DDVP (dimethyl dichloro vinyl phosphate) 751a
- Deafness:** *see* **Hearing**
- Deakin, Arthur 510b
- Dean, Man Mountain (Frank S. Leavitt): *see* **Obituaries** 54
- Deaths (of prominent persons):** *see* **Obituaries**
- Death Statistics**
- Accidents 17b; Cancer 143a; Disasters 210c; Infant Mortality 348d; Public Health Service, U.S. 575b; Suicide Statistics 657b; Tuberculosis 689b; Venereal Diseases 728b
- Debt, National**
- Banking 91a; Budget, National 125c. *See* also various countries
- De Castries, Christian:** *see* **Castries, Christian de** 55. *See* **De Castries, Christian** 54, 53, 52
- Defense, U.S. Department of:** *see* **Budget, National; Government Departments and Bureaus, U.S.**
- Budget, National 126a; Federal Communications Commission 255b; U.S. 705c
- Defense Mobilization, Office of:** 54. *See* **Defense Production Administration; Price Stabilization, Office of; Rent Stabilization, Office of; Wage Stabilization Board** 53. *See* **Economic Stabilization Agency, U.S.** 53. *See* **Defense Mobilization Agencies, U.S.** 52
- Defense Production Administration, Office of:** 54. *See* **Defense Mobilization Administration** 53
- Defense Transport Administration:** *see* **Railroads** 53, 52
- De Gasperi, Alcide:** *see* **Obituaries** 55. *See* **Gasperi, Alcide de** 53, 52
- Delaware**
- Democracy**
- Turkey 692b
- Democratic Party:** *see* **Political Parties, U.S.** 56, 55, 54, 53. *See* **Democratic Party** 52
- See* also various states
- Denmark**
- Agriculture 29c; Armies of the World 58d; Automobile Industry 77b; Aviation, Civil 80c; Barley 94d; Birth Statistics 105d; Cartography 146a; Dairy Products 196d; Dance 200c; Death Statistics 202c; Debt, National 204d; Eggs 228c; Gas, Natural and Manufactured 287b; Housing 331a; International Monetary Fund 358c; Marriage and Divorce 423a; Meat 428a; Merchant Marine 432b; Navies of the World 477d; Newspapers and Magazines 494c; Physics 548d; Poliomyelitis 556d; Prices 568b; Railroads 590a; Shipbuilding 619d; Socialism 627c; Sociology 638a; Sweden 660c; Tariffs 665c; Track and Field Sports 684a; Tuberculosis 689b
- Dentistry**
- Bacteriology 88d; Nursing 505a; Nutrition, Experimental 506b; Public Health Service, U.S. 575b; Selective Service, U.S. 617c; Societies and Associations, U.S. 631c
- Derain, André: *see* **Obituaries** 55
- Dermatology**
- De Rose, Peter: *see* **Obituaries** 54
- Deserpigne 151d
- Derogents:** *see* **Chemistry** 52
- Dermatology 208d
- Detroit**
- Deuterium:** *see* **Atomic Energy** 54
- De Valera, Eamon** 52
- Devaluation:** *see* **Exchange Control and Exchange Rates** 54, 53, 52
- De Voto, Bernard (Augustine) 510b
- Dewey, John: *see* **Obituaries** 53
- Dewey, Thomas Edmund** 53, 52
- Political Parties, U.S. 558c
- Diabetes**
- Death Statistics 202b; Endocrinology 238b; Medicine 430b
- Diamonds**
- Chemistry 153d; International Trade 364b; Mineralogy 445d
- Diels, Otto: *see* **Obituaries** 55
- Dietetics:** *see* **Nutrition, Experimental** 53, 52
- Dimethyl 153b
- Dimethylhydrazine 153d
- Dimmet, Ernest: *see* **Obituaries** 55
- Dionne, Emilie: *see* **Obituaries** 55
- Diplomatic Services:** *see* **Ambassadors and Envoys**
- Direct Mail Advertising:** *see* **Advertising** 56, 55, 54
- Dirksen, Everett McKinley 53, 52
- Disabled American Veterans:** *see* **Veterans' Organizations, U.S.**
- Veterans Administration (U.S.) 730d
- DiSalle, Michael V.** 52
- Disasters**
- Agriculture 28b; Civil Defense, U.S. 171a; Connecticut 185a; Fires and Fire Losses 260b; Floods and Flood Control 261d; Fruit 284a; Haiti 313b; Insurance 350a; Marine Corps, U.S. 422a; Massachusetts 425d; Meteorology 433c; Mexico 438d; National Guard 474d; Navies of the World 477c; North Carolina 501b; Oceanography 522d; Radio and Television 583a; Red Cross 590d; Rhode Island 597d; Seismology 616d; Seventh-day Adventists 618c; Wildlife Conservation 745a
- Disciples of Christ**
- Church Membership 168a
- Displaced Persons:** *see* **Refugees** 56, 55, 54, 53, 52. *See* **Immigration and Emigration** 54, 53, 52. *See* **Child Welfare** 52
- District of Columbia:** *see* **Washington, D.C.**
- Divorce:** *see* **Marriage and Divorce**
- Roman Catholic Church 603a
- Dix, Dorothy: *see* **Obituaries** 52
- Dixon-Yates Contract:** *see* **Atomic Energy** 56
- Political Parties, U.S. 559b
- D-Lysergic acid (LSD) 429d
- Dodecanese:** *see* **Greece** 54, 53, 52
- Dog Shows:** *see* **Shows**
- Doidge, Sir Frederick Widdowson: *see* **Obituaries** 55
- Dominica:** *see* **Windward Islands**
- Dominican Republic**
- Aviation, Civil 80c; Birth Statistics 105d; Coinage 177a; Death Statistics 202c; Debt, National 204d; Foreign Investments 270c; Navies of the World 477d; Sugar 656d; Tariffs
- 665b; World Health Organization 752b
- Donaldson, Jessie M.** 53, 52
- Donations and Bequests**
- Cancer 143b; Community Chests 183c; Education 223c; Hospitals 326b; Libraries 403b; Museums 467b; National Parks and Monuments 476d; Religious Education 594b; Societies and Associations, U.S. 633b
- Donnelly, Walter Joseph** 53
- Dougherty, Dennis Joseph Cardinal: *see* **Obituaries** 52
- Doughton, Robert L.: *see* **Obituaries** 55
- Douglas, Lloyd C.: *see* **Obituaries** 52
- Douglas, Norman: *see* **Obituaries** 53
- Douglas, Paul Howard** 53, 52
- Dove 465d
- Downes, (Edwin) Olin 510c
- Draft:** *see* **Selective Service, U.S.**
- Drama:** *see* **Theatre**
- Dreier, Katherine S.: *see* **Obituaries** 53
- Dress:** *see* **Women's Fashions** 56, 55, 54, 53. *See* **Fashion and Dress** 52
- Drew, George Alexander**
- Driscoll, Charles Benedict: *see* **Obituaries** 52
- Drought:** *see* **Soil Conservation** 56, 55. *See* **Meteorology** 56, 55, 54, 53, 52
- Drug Administration, U.S.**
- Drugs:** *see* **Public Health Service, U.S.** 56, 55, 54. *See* **Agricultural Research Service; Allergy; Biochemistry; Blood Diseases of the; Chemistry; Chemotherapy; Dermatology; Drug Administration, U.S.; Endocrinology; Medicine; Narcotics; Stomach and Intestines, Diseases of the; Veterinary Medicine** 56, 55, 54, 53, 52. *See* **Tropical Diseases** 55, 54, 53, 52. *See* **Health, Education and Welfare, U.S. Department of** 54. *See* also articles on specific diseases, such as **Cancer; Diabetes; etc.**
- Birth Control 105a; Intoxication, Alcoholic 366c
- Drug Traffic:** *see* **Narcotics**
- Drum, Hugh A.: *see* **Obituaries** 52
- Drunkenness:** *see* **Intoxication, Alcoholic** 56, 55, 54, 53
- Dry Point:** *see* **Etching** 54, 53, 52
- Duchin, Edwin Frank: *see* **Obituaries** 52
- Duff, James Henderson** 52
- Duffy, Hugh: *see* **Obituaries** 55
- Duffy, Raoul: *see* **Obituaries** 54
- Duke Endowment:** *see* **Societies and Associations, U.S.**
- Dulles, John Foster
- Duplessis, Maurice Le Noblet 56
- Dupong, Pierre: *see* **Obituaries** 54
- Du Pont, Pierre Samuel:** *see* **Obituaries** 55
- Durkin, Martin P.** 53
- Obituaries** 510d
- Dutch Guiana:** *see* **Surinam**
- Dutch Overseas Territories:** *see* **Netherlands Antilles; Netherlands New Guinea; Surinam**
- Du Vigneau, Vincent** 56
- Nobel Prizes 499c
- Dyes** 56, 55, 54. *See* **Dyestuffs** 53, 52
- Ear, Nose and Throat. Diseases of:** *see* **Hearing** 317a; **Medicine** 431b
- Early, Stephen Tyree: *see* **Obituaries** 52
- Earnings, Company:** *see* **Business Review**
- Earthquakes:** *see* **Disasters; Seismology**
- Earth Satellite:** *see* **Physics** 56
- East Africa, British:** *see* **British East Africa**
- Eastern European Economic Planning** 56
- U.S.S.R. 695b
- East Indies, Dutch:** *see* **Indonesia; Netherlands New Guinea**
- Eaton, Charles Aubrey: *see* **Obituaries** 54
- Eckener, Hugo: *see* **Obituaries** 55
- Eclipses of the Sun and Moon:** *see* **Calendar** (page xxii) 56, 55, 54, 53, 52. *See* **Astronomy** 52
- Economic Cooperation Administration:** *see* **Foreign Aid Programs, U.S.** 56, 55, 54. *See* **Mutual Security Program** 53. *See* **European Recovery Program** 52
- Economics**
- Agriculture 23d; Banking 90d; Business Review 131c; Debt, National 202d; Eastern European Economic Planning 218d; Employment 236b; Income and Product, U.S. 340d; International Trade 359b; Labour Unions 391a; Organization of American States 527b; Political Parties, British 557b; Prices 565c
- Economic Stabilization Agency:** *see* **Defense Mobilization Office of** 54. *See* **Economic Stabilization**

Agency, U.S. 53
Ecuador
Debt, National 204d; Exchange Control and Exchange Rates 246b; Latin-American Literature 393d; Mineral and Metal Production and Prices 443; Narcotics 472c; Navies of the World 477d; Organization of American States 526d; Peru 539b; Roads and Highways 601d; Seismology 617a; Tariffs 665d; Tuberculosis 689a; World Health Organization 752c
Eczema: *see* Dermatology 56, 55, 54
Eden, Sir (Robert) Anthony 56, 55, 53
Great Britain 306d; Political Parties, British 557a
Edson, Merritt Austin 510d
Education
Birth Control 105b; Blind, Education of the, 106b; Building and Construction Industry 128b; Census Data, U.S. 149a; Ceramics 149c; Child Labour 157b; Donations and Bequests 214a; European Union 244d; Four-H Clubs 277b; Geology 294a; Hearing 316b; Home Economics 319d; Illiteracy 338c; Indians, American 346l; Industrial Health 347d; Islam 373b; Libraries 404a; Medical Rehabilitation of the Disabled 428d; Mormons 452d; Motion Pictures 456b; Museums 466b; Negroes, American 481a; Newspapers and Magazines 490c; Nursing 505b; Organization of American States 527b; Organization of Central American States 527d; Philosophy 544b; Political Science 560a; Radio and Television 580a; Refugees 591d; Religious Education 593d; Societies and Associations, U.S. 630d; United States Air Force Academy 709d; Universities and Colleges 713b; Veterans Administration (U.S.) 730c. *See also* various cities, states, provinces and countries
Education, Religious: *see* Religious Education
Education, U.S. Office of: *see* Education 56, 55, 54, 53, 52. *See* Health, Education and Welfare, U.S. Department of, 54. *See* Federal Security Agency 53, 52
Eggs
Agriculture 25b; Frozen Foods 283d
Egloff, Gustav 510d
Egypt
Agriculture 29c; Anglo-Egyptian Sudan 42d; Archaeology 48a; Armies of the World 58b; Aviation, Civil 80c; Cotton 190d; Debt, National 204d; Disasters 212c; Exchange Control and Exchange Rates 247d; Foreign Aid Programs, U.S. 266d; Foreign Investments 271d; Great Britain 308c; Illiteracy 338d; International Trade 360b; Iraq 368d; Islam 373c; Jordan 384b; Judaism 385a; Lebanon 401a; Middle Eastern Affairs 441c; Mineral and Metal Production and Prices 443; Narcotics 472b; Navies of the World 477d; Roads and Highways 601b; Saudi Arabia 613c; Seismology 617b; Soil Conservation 639d; Syria 663a; Tariffs 665d; Tuberculosis 689a; Tunnels 691a; U.S.S.R. 696b; UN 700b; Wines 747a; World Health Organization 752c
Einstein, Albert 511a
Einsteinium 548a
Eire: *see* Ireland, Republic of
Eisenhower, Dwight D.
Armies of the World 58c; Atomic Energy 70a; Elections, U.S. 231c; Political Parties, U.S. 557d; Radio and Television 582b; Stocks and Bonds 650c; U.S. 705d
Elections, U.S.
Political Parties, U.S. 557d. *See also* various countries, states and cities
Electrical Industries
Atomic Energy 72b; Chemistry 152d; Eastern European Economic Planning 219a; Electronics 234c; Federal Power Commission 256c; Labour Unions 391b; Metallurgy 433b; Munitions 464b; Prices 567d; Public Utilities 576a; Rural Electrification Administration 607a; Strikes 654c; TVA 671c; Wages and Hours 738a
Electric Transportation: *see* Urban Transportation, U.S. 56, 55, 54. *See* Electric Transportation 53, 52
Electrification, Rural: *see* Rural Electrification Administration
Electrofax 235a
Electronics
Ceramics 149d; Children's Books 158a; Meteorology 435b; Munitions 463a; Oceanography 522a; Patents 537a; Physics 548d; Post Office 563d; Radio and Television 584d; Rail-

roads 587d; Standards, National Bureau of, 649a; Telegraphy 668d; Telephone 670b; Words and Meanings, New 751a
Elementary Education: *see* Education
Elements: *see* Physics 56, 55
Elena (O. of It.): *see* Obituaries 53
Elizabeth II 56, 55, 54, 53. *See* Elizabeth, Princess 52
Great Britain 306c; Navies of the World 478b
Elks, Benevolent and Protective Order of: *see* Societies and Associations, U.S.
Ellice Islands: *see* Pacific Islands, British
Ellsworth, Lincoln: *see* Obituaries 52
El Salvador: *see* Salvador, El
Embassies, United States: *see* Ambassadors and Envoys
Emigration: *see* Immigration, Emigration and Naturalization
Employment
Business Review 131d; Census Data, U.S. 148d; Labour Unions 391a; Negroes, American 481b; Patents 536d; Political Parties, U.S. 559b; Railroads 587a; Social Security 628c. *See also* separate industries and various cities, states, provinces and countries
Encyclopaedia Britannica Films Inc. 456b
Enders, John Franklin 55
Endocrinology
Blood, Diseases of the, 107c; Diabetes 209d; X-ray and Radiology 754b
Enesco, Georges 511b
England: *see* Great Britain & Northern Ireland, United Kingdom of
English Literature
Literary Prizes 408c
Entomology: *see* Bacteriology 56. *See* Aviation, Civil 56, 55. *See* Agricultural Research Service 56, 55, 54, 53, 52. *See* Horticulture 54, 53, 52
Entomology and Plant Quarantine, Bureau of: *see* Agricultural Research Administration 54, 53, 52
Epidemiology 56, 55, 54. *See* Epidemics and Public Health Services 53, 52
Medicine 431b; Poliomyelitis 555a; Public Health Engineering 574c; Public Health Service, U.S. 575d; Respiratory Diseases 594d; Tuberculosis 689b; Venereal Diseases 728b; World Health Organization 752b
Episcopal Church: *see* Protestant
Episcopal Church
Equanil (Miltown) Chemotherapy 155b; Medicine 429d
Eritrea: *see* Ethiopia 56, 55, 54. *See* Eritrea 53, 52
Erskine, John: *see* Obituaries 52
Estimé, Dumarsais: *see* Obituaries 54
Estonia
Etamycin 152a
Etching 54, 53, 52
Ethiopia
Aviation, Civil 80c; British East Africa 121a; Coffee 176d; International Monetary Fund 358c; International Trade 364c; Mineral and Metal Production and Prices 443; Roads and Highways 601b; Trust Territories 688d; World Health Organization 752c
Ethnology: *see* Anthropology
European Coal and Steel Community: *see* European Unity 56, 55. *See* European Coal and Steel Community 54. *See* France 53. *See* European Union 53, 52
European Defense Community: *see* Armies of the World; European Union 56, 55. *See* North Atlantic Treaty Organization 56, 55, 54. *See* Council of Europe 55. *See* European Union 54, 53, 52
European Economic Cooperation, Organization for: *see* Foreign Aid Programs, U.S. 54. *See* Mutual Security Program 53. *See* European Recovery Program 52
European Payments Union: *see* Exchange Control and Exchange Rates 56, 55, 54, 53, 52. *See* Organization for European Economic Cooperation 55. *See* International Trade 54, 53, 52. *See* European Recovery Program 52
European Recovery Program: *see* Foreign Aid Programs, U.S. 56, 55, 54. *See* Mutual Security Program 53. *See* European Recovery Program 52
European Unity 56, 55. *See* European Union 54, 53, 52
Belgium 100a; Germany 298d; Italy 377a
Evans, Luther Harris 54
Evans, Silliman 511b
Events of the Year: *see* Calendar of Events (pages 1-16)
Exchange Control and Exchange Rates
Foreign Investments 270c. *See also* various countries
Exhibitions: *see* Fairs and Exhibi-

tions; Shows
Existentialism: *see* Philosophy 52
Experiment Stations, Office of: *see* Agricultural Research Administration 54, 53, 52
Exploration and Discovery
Antarctica 43c; Geography 291b
Explosions: *see* Disasters
Export-Import Bank of Washington
Foreign Investments 270d; Liberia 402b; U.S. 707d
Exports: *see* Agriculture; International Trade
Drug Administration 215d; Prices 568a. *See also* various industries, products and countries
Eye, Diseases of the
Child Welfare 159d; Diabetes 209d; Medicine 431b; Venereal Diseases 728c; X-ray and Radiology 754b
F7U Cutlass 85a
F-102A 83d
Fabre, Emile 511b
Facsimile: *see* Telegraphy 56, 55, 54, 53, 52. *See* Radio 52
Faeroe Islands 56, 55, 54, 53
Denmark 207b
Fairbank, Janet Ayer: *see* Obituaries 52
Fairs and Exhibitions
Horticulture 326a; Machinery and Machine Tools 414d
Fair Trade Laws: *see* Law 53, 52
Falcon: Aviation, Military 84a; Munitions 465b
Falk Foundation, Maurice and Laura: *see* Societies and Associations, U.S.
Falkland Islands
Family Income: *see* Census Data, U.S. 52
Famines: *see* Agriculture
Farm Co-operatives: *see* Farm Credit System 56. *See* Co-operatives 56, 55, 54, 53, 52. *See* Farm Credit Administration 55, 54, 53, 52
Farm Credit System 56. *See* Farm Credit Administration 55, 54, 53, 52
Co-operatives 187b
Farmers Home Administration
Farm Income: *see* Agriculture
Farm Machinery: *see* Agriculture
Farm Population: *see* Census Data, U.S. 56, 55, 54, 53, 52. *See* Agriculture 52
Farnum, William: *see* Obituaries 54
Farouk Fuad, Prince 53
Fascism 54, 53, 52
Fashion and Dress: *see* Women's Fashions 56, 55, 54, 53. *See* Shoe Industry 56, 55, 54, 53, 52. *See* Fashion and Dress 52
Fatemi, Hossein: *see* Obituaries 55
Fath, Jacques: *see* Obituaries 55
Fats and Oils: *see* Vegetable Oils and Animal Fats
Faulhaber, Michael Cardinal von: *see* Obituaries 53
Faure, Edgar 56
France 277c; French Union 281d; Germany 300b; Tunisia 690b
FBI: *see* Federal Bureau of Investigation
Fechter, William Morrow 53, 52
Federal Bureau of Investigation
Federal Communications Commission
Motion Pictures 454c; Radio and Television 580a
Federal Deposit Insurance Corporation
Federal Housing Administration: *see* Housing
Federal Income Tax: *see* Taxation
Federal Land Banks: *see* Farm Credit System 56. *See* Farm Credit Administration 55, 54, 53, 52
Federal Power Commission
Public Utilities 576a
Federal Reserve System
Banking 90d; Debt, National 204b; Prices 566b; Stocks and Bonds 651a; U.S. 703d
Federal Security Agency: *see* Health, Education and Welfare, U.S. Department of, 54. *See* Federal Security Agency 53, 52
Federal Trade Commission
Federated Malay States: *see* Malaya, Federation of; Singapore 56, 55, 54, 53. *See* Malaya (Federation of) and Singapore 52
Feisal II 54
Feller, Abraham Howard: *see* Obituaries 53
Felton, Maurice 54
Fencing
Ferguson, Homer 53, 52
Fermi, Enrico: *see* Obituaries 55
Fermium 548a
Ferrier, Kathleen: *see* Obituaries 54
Fertilizers: *see* Co-operatives 56, 55. *See* Chemistry; Tennessee Valley Authority 56, 55, 54. *See* Agriculture 56, 55, 54, 53, 52. *See* Fertilizers 53, 52
Formosa 276b; Horticulture 325c
Festival of Britain: *see* Fairs and Exhibitions 52

FHA (Federal Housing Administration): *see* Housing
Fiction: *see* Jewish Literature 56, 55, 54. *See* American Literature; Book Publishing and Book Sales; Canadian Literature; English Literature; French Literature; German Literature; Italian Literature; Latin-American Literature; Literary Prizes; Russian Literature; Spanish Literature 56, 55, 54, 53, 52
Figs: *see* Fruit
Figueres, José 54
Fiji 56. *See* Pacific Islands, British 55, 54, 53, 52
World Health Organization 752b
Fillberts: *see* Nuts
Financial Review: *see* Business Review
Fine Arts: *see* Architecture; Dance; Music; Theatre 56, 55, 54, 53, 52. *See* Painting; Sculpture 54, 53, 52
Art Exhibitions 63a
Finland
Automobile Industry 77b; Aviation, Civil 80c; Birth Statistics 105d; Communism 182b; Dance 200c; Death Statistics 202c; Debt, National 204d; Electrical Industries 233d; Exchange Control and Exchange Rates 247b; Foreign Investments 272a; Housing 331a; Ice Skating 336c; Infant Mortality 349b; International Bank for Reconstruction and Development 353a; International Monetary Fund 358c; International Trade 363c; Lumber 413c; Mineral and Metal Production and Prices 443; Music 469d; Navies of the World 477d; Socialism 627a; Social Security 628c; Sweden 660c; Tariffs 665b; Track and Field Sports 684a; Tuberculosis 689b; U.S.S.R. 695d
Finletter, Thomas Knight 53, 52
Fires and Fire Losses
Disasters 211b; Forests 272d; Insurance 350b
Fish and Wildlife Service: *see* Fisheries 54, 53, 52. *See* Wildlife Conservation 52
Fisher, Dudley: *see* Obituaries 52
Fisher, Hammond Edward ("Ham") 511c
Fisher, Harry Conway ("Bud"): *see* Obituaries 55
Fisheries
Canning Industry 144d; Frozen Foods 283d; Tropical Diseases 687b; Wildlife Conservation 745a
Fishing: *see* Angling
FJ-3 Fury 85a
Flanders, Ralph Edward 53
Flax: *see* Linen and Flax
Flaxedil (Gallamine triethiodide) 429d
Fleming, Sir Alexander 511c
Fleming, Archibald Lang: *see* Obituaries 54
FLOGWINGS (Fleet Logistics Air Wings) 751a
Floods and Flood Control
Connecticut 185a; Disasters 212b; Massachusetts 425d; Meteorology 436c; Mexico 438d; Soil Conservation 638d; Tunnels 691d
Florida
Bridges 117c
Flour: *see* Baking Industry 56, 55. *See* Wheat 56, 55, 54, 53, 52. *See* Flour 53, 52
Flynn, Edward Joseph: *see* Obituaries 54
Fogo, James Gordon: *see* Obituaries 53
Folland Gnat 86d
Folsom, Marion Bayard 56
Food and Agriculture Organization: *see* Agriculture
Fisheries 260b
Food and Drug Administration: *see* Drug Administration, U.S. 56, 55, 54, 53. *See* Health, Education and Welfare, U.S. Department of, 54
Food Supply of the World: *see* Agriculture
Eggs 228b; Fisheries 260b
Football
Radio and Television 582a; Words and Meanings, New 751b
Forbes, Ralph: *see* Obituaries 52
Ford, Francis X.: *see* Obituaries 53
Ford Foundation: *see* Societies and Associations, U.S. 56, 55, 54, 53, 52. *See* Education; Libraries 55, 54, 53
Atomic Energy 72a; Donations and Bequests 214a; Hutchins, Robert Maynard 335b; International Law 358a; Sociology 637c
Foreign Aid Programs, U.S. 56, 55, 54. See Mutual Security Program 53. *See* European Recovery Program 52
U.S. 705c
Foreign Economic Policy, Commission on: *see* Tariffs 56, 55. *See* International Trade 55
Foreign Exchange: *see* Exchange Control and Exchange Rates
Foreign Investments

- Chile 161a; Export-Import Bank of Washington 250b; International Bank for Reconstruction and Development 352d
- Foreign Loans, U.S.:** *see* **United States**
- Foreign Ministers' Conferences:** *see* **Berlin Conference; European Unity; Geneva Conference; London Conference and Paris Agreements 55.** *See* **European Union 54, 53, 52.** *See* **North Atlantic Treaty Organization 53, 52.** *See* **European Recovery Program; Germany 52**
- Foreign Missions:** *see* **Missions, Foreign (Religious)**
- Foreign Operations Administration:** *see* **Foreign Aid Programs, U.S.**
- Foreign Trade:** *see* **International Trade**
- Forests**
Aviation, Civil 83a; Disasters 211b; TVA 672a
- Formosa**
Armies of the World 60b; China 161d; Disasters 210d; Exchange Control and Exchange Rates 248b; Foreign Aid Programs, U.S. 266c; Illiteracy 338d; Infant Mortality 349b; Mineral and Metal Production and Prices 443; Missions, Foreign (Religious) 447c; Roads and Highways 602c; Sugar 656d; Tuberculosis 689a; World Health Organization 752b
- Foundations:** *see* **Community Trusts; Societies and Associations, U.S. 56, 55, 54, 53, 52.** *See* **Donations and Bequests 52**
- Four-H Clubs**
- Fowler, Henry H. 53**
- Fox, William:** *see* **Obituaries 53**
- France**
Agriculture 29b; Algeria 35d; Aluminum 36d; Andorra 42a; Antarctica 44b; Armies of the World 58b; Art Exhibitions 64c; Automobile Industry 77b; Automobile Racing 78c; Aviation, Civil 79d; Aviation, Military 87a; Barley 94d; Birth Statistics 105d; Bridges 118d; Canadian Literature 141b; Ceylon 150c; Coal 174a; Coke 177b; Cycling 194d; Dairy Products 196d; Dams 198a; Dance 200a; Death Statistics 202c; Debt, National 204d; Disasters 211d; Education 227c; Electrical Industries 233d; Epidemiology 242a; Employment 237d; European Unity 243d; Exchange Control and Exchange Rates 247a; Exploration and Discovery 249d; Fairs and Exhibitions 252b; Football 265b; Foreign Aid Programs, U.S. 266c; Foreign Investments 270b; French Literature 281a; French Union 281d; French West Africa 283b; Fruit 284d; Gas, Natural and Manufactured 287b; Geneva Big Four Conferences (1955) 289a; Germany 298d; Glass 302a; Gliding 302c; Housing 331a; Ice Skating 336b; Immigration, Emigration and Naturalization 339c; Infant Mortality 349b; International Trade 360c; Iron and Steel 370c; Jet Propulsion 381d; Laos 393b; Lead 400d; Linen and Flax 406b; Literary Prices 408c; Lumber 413c; Marriage and Divorce 423a; Meat 428a; Merchant Marine 432b; Mineral and Metal Production and Prices 443; Morocco, French 453a; Motion Pictures 454c; Narcotics 472b; NATO 500b; Navies of the World 477c; Newspapers and Magazines 494c; Oats 507c; Palaeontology 531a; Prices 568b; Railroads 588c; Rubber 604d; Rye 608b; Saar 608d; Shipbuilding 619d; Silk 623d; Soccer 626d; Socialism 627d; Social Security 628c; Sociology 637d; Southeast Asia Treaty Organization 644c; Spanish Colonial Empire 646d; Sugar 656d; Tariffs 665b; Telephone 669c; Tobacco 680b; Tuberculosis 689b; Tunisia 690b; UN 698d; Uranium 723c; U.S. 708d; Vietnam 733c; Wheat 744c; Wines 746d; Women's Fashions 748b; Wool 750c; Yalta Documents 756c; Zinc 759b
- Francis Report 555b
- Franco, Francisco 55, 54, 53, 52**
- Franklin Institute:** *see* **Societies and Associations, U.S.**
- Fraser, James Earle: *see* **Obituaries 54**
- Freeman, Douglas Southall: *see* **Obituaries 54**
- Freemasonry:** *see* **Societies and Associations, U.S.**
- Freer Gallery of Art:** *see* **Smithsonian Institution**
- French Colonial Empire:** *see* **French Union**
- French Equatorial Africa**
Trust Territories 688c; Telephone 669c
- French Guiana**
Social Security 628c
- French Guinea:** *see* **French West Africa**
- French India 55, 54, 53, 52**
- French Indochina:** *see* **Indochina 55, 54, 53, 52**
- French Literature**
Literary Prizes 408c
- French Overseas Territories:** *see* **French Union**
- French Pacific Islands:** *see* **Pacific Islands, French**
- French Union**
- French West Africa**
Coffee 176c; Trust Territories 688c
- Frequel: Chemistry 151d; Chemotherapy 155b
- Frequency Modulation:** *see* **Radio 53, 52.** *See* **Federal Communications Commission 52**
- Friends, Religious Society of**
Christian Unity 166b; Church Membership 168a
- Friganza, Trixie (Delia O'Callahan) 511d
- Frozen Foods 56, 55, 54, 53**
Fisheries 260c; Fruit 284b; Public Health Engineering 574d; Vegetables 727d
- Fruit**
Agricultural Research Service 22c; Agriculture 24c; Canning Industry 144d; Chemistry 152c; Frozen Foods 283d; Public Health Engineering 574d
- Fungichromatin: Chemistry 152a; Chemotherapy 154d
- Fungichromin: Chemistry 152a; Chemotherapy 154d
- Furniture Industry**
Art Sales 65b; Interior Decoration 352b
- Furs**
Women's Fashions 748d
- Furtwängler, Wilhelm: *see* **Obituaries 55**
- Future Farmers of America:** *see* **Societies and Associations, U.S.**
- Galapagos Islands:** *see* **Ecuador**
- Galard-Terraube, Genevieve de 55**
- Gallagher, Richard S. ("Skeets") 511d
- Gallamine triethiodide (Flaxedil) 429d
- Gambia:** *see* **British West Africa**
- Gambling:** *see* **Betting and Gambling**
- Garbett, Cyril Forster 511d
- Garfield, John: *see* **Obituaries 53**
- Garrett, Gare (Edward Peter Garrett): *see* **Obituaries 55**
- Gas, Natural and Manufactured**
Federal Power Commission 256a; Petroleum 540b; Prices 566a; Public Utilities 576a; Wages and Hours 738a
- Gasoline:** *see* **Petroleum**
- Gasperi, Alcide de 53, 52**
- Gas Turbine Engines:** *see* **Jet Propulsion 56, 55, 54, 53, 52.** *See* **Automobile Industry 55, 54, 53, 52**
- Gatt:** *see* **Tariffs**
- GAW (Guaranteed annual wage) 751b
- Gem Stones**
Mineralogy 445b
- Genetics**
Palaeontology 531c; X-ray and Radiology 754a
- Geneva Big Four Conferences (1955) 56**
Armies of the World 58c; Atomic Energy 71d; China 164b; Communism 182b; Eisenhower, Dwight D. 230d; Great Britain 308c; Newspapers and Magazines 490a; Southeast Asia Treaty Organization 645a; UN 699b; U.S. 705a; U.S.S.R. 694a
- Geneva Conference 55**
- Geneva Conference on Peaceful Uses of Atomic Energy:** *see* **Atomic Energy 56**
- Genocide, Convention on:** *see* **International Law 52**
- Gentile, Don S.: *see* **Obituaries 52**
- Geography**
Cartography 145b; Exploration and Discovery 248c. *See* also various cities, states, provinces and countries
- Geological Survey, U.S. 56, 55, 54**
Irrigation 371d
- Geology**
Cartography 145c; Exploration and Discovery 249d; Geological Survey, U.S. 292c; International Geophysical Year (1957-58) 354d; Oceanography 522a; Palaeontology 531d; Seismology 617b
- George VI:** *see* **Obituaries 53.** *See* **George VI 52**
- George, Gladys (Gladys Clare): *see* **Obituaries 55**
- George, Walter Franklin 53, 52**
- Georges, Alphonse Joseph: *see* **Obituaries 52**
- Georgia**
Georgia Warm Springs Foundation: *see* **Societies and Associations, U.S. 53, 52**
- Gerard, James Watson: *see* **Obituaries 52**
- German Literature**
- Germany**
Agriculture 29b; Aluminum 36d; Armies of the World 58b; Astronomy 67d; Austria 74d; Automobile Industry 77b; Aviation, Civil 82a; Aviation, Military 87b; Birth Statistics 105d; Burma 131b; Canada 139a; Canals and Inland Waterways 142d; Cartography 146a; Chemistry 151b; Coal 174a; Coke 177b; Commonwealth of Nations 179d; Communism 182b; Dairy Products 196d; Dance 200c; Death Statistics 202c; Democracy 206a; Denmark 207b; Disasters 211a; Dyes 217a; Eastern European Economic Planning 218d; Education 227c; Eggs 228c; Electrical Industries 233d; Employment 238a; European Unity 243d; Exchange Control and Exchange Rates 247b; Fairs and Exhibitions 252b; Football 265b; Foreign Investments 270a; Forests 274b; Fruit 285c; Gas, Natural and Manufactured 287b; Geneva Big Four Conferences (1955) 289c; Geography 291c; German Literature 296c; Glass 302a; Heart and Circulatory Diseases 317d; Horticulture 325c; Housing 331a; Immigration, Emigration and Naturalization 340a; Infant Mortality 349b; International Law 357a; International Monetary Fund 358c; International Trade 360b; Iron and Steel 370c; Italy 377c; Lead 400d; Linen and Flax 406b; Lumber 413b; Marriage and Divorce 423a; Meat 428a; Merchant Marine 432b; Mineral and Metal Production and Prices 443; Music 468b; NATO 500b; Navies of the World 477d; Newspapers and Magazines 495a; Oats 507c; Olympic Games 524d; Philippines, Republic of the 543c; Photography 545c; Poland 553b; Prices 568a; Psychology 573a; Radio and Television 585d; Railroads 588c; Refugees 591d; Rubber 604d; Rye 608b; Shipbuilding 619d; Soccer 626d; Socialism 627c; Social Security 628c; Sociology 637a; Sugar 656d; Tariffs 664d; Telephone 669c; Town and Regional Planning 682d; Toy Industry 682c; Tuberculosis 689b; U.S. 706a; U.S.S.R. 695c; Vatican City State 726d; Wildlife Conservation 745c; Wines 747a; Wool 750b; Yalta Documents 755d; Zinc 759b
- Ghavam (Qavam) es-Saltaneh, Ahmed 512a
- Gheorg VI (Gheorg Khachaturovich Cheorekchian): *see* **Obituaries 55**
- Giannini, Lawrence M.: *see* **Obituaries 53**
- G.I. Bill:** *see* **Veterans Administration (U.S.)**
- Gibraltar**
Gide, André Paul Guillaume: *see* **Obituaries 52**
- Gilbert and Ellice Islands Colony:** *see* **Pacific Islands, British**
- Girl Scouts:** *see* **Societies and Associations, U.S.**
- Glands:** *see* **Endocrinology**
- Glass**
- Gliding**
Goddard, Calvin Hooker 512b
- Gold**
Exchange Control and Exchange Rates 245c; Foreign Investments 272b; International Trade 362b; Mineral and Metal Production and Prices 445c; Secondary Metals 615b; X-ray and Radiology 754c
- Gold Coast:** *see* **British West Africa**
- Cocoa 176b; Diamonds 210b; Forests 274b; Gold 302d; Manganese 419b; Mineral and Metal Production and Prices 443
- Golden, John 512b
- Goldichite 445b
- Goldsbrough, T(homas) Alan: *see* **Obituaries 52**
- Golf**
- Gonorrhoea:** *see* **Venereal Diseases 54, 53, 52**
- Gottwald, Klement: *see* **Obituaries 54**
- Gould, Ralph E.: *see* **Obituaries 55**
- Government Departments and Bureaus, U.S.**
Agricultural Research Service 22c; Civil Aeronautics Administration 168c; Coast and Geodetic Survey, U.S. 174c; Federal Bureau of Investigation 254b; Geological Survey, U.S. 292c; Hoover Commission 321d; Post Office 562c; Railroads 587a; Secret Service, U.S. 615b
- Govorov, Leonid Aleksandrovich 512c
- Gow, James: *see* **Obituaries 53**
- Gracias, Valerian 54**
- Graham, William Franklin ("Billy") 56**
- Grain:** *see* **Barley; Corn; Oats; Rice; Rye; Wheat**
- Grange, National:** *see* **Societies and Associations, U.S.**
- Grapefruit:** *see* **Fruit**
- Grapes:** *see* **Fruit**
- Graphic Arts:** *see* **Printing**
- Gray, Carl Raymond, Jr. 512c
- Graziani, Rodolfo 512c
- Great Books of the Western World 53.** *See* **Book Publishing 52**
- Great Britain & Northern Ireland, United Kingdom of**
Aden 19b; Advertising 21c; Agriculture 29b; Aluminum 36d; Antarctica
- 43d; Arabia 47b; Archaeology 49b; Armies of the World 58b; Art Exhibitions 64b; Atomic Energy 70a; Automobile Industry 77b; Aviation, Civil 80d; Aviation, Military 86b; Badminton 89b; Banking 92d; Barley 94d; Betting and Gambling 103a; Birth Statistics 105d; Book Collecting 110b; Botany 112d; Boxing 114d; British East Africa 121a; Budget, National 127a; Business Review 136a; Canals and Inland Waterways 142b; Candy 144a; Cartography 146c; Chemistry 151c; Child Labour 157d; Christian Unity 166c; Civil Service 172b; Coal 174a; Coke 177b; Commonwealth of Nations 179d; Contract Bridge 186d; Co-operatives 187c; Crime 192a; Cyprus 194d; Dairy Products 196d; Dance 199d; Death Statistics 202c; Debt, National 204d; Democracy 206a; Disasters 210d; Dominican Republic 213c; Education 227c; Eggs 228c; Egypt 228d; Electrical Industries 233d; Employment 237a; English Literature 239c; Epidemiology 242a; Ethiopia 243a; European Unity 244a; Exchange Control and Exchange Rates 245b; Exploration and Discovery 250a; Fairs and Exhibitions 251d; Football 265b; Foreign Aid Programs, U.S. 266d; Foreign Investments 271c; Forests 273d; Gas, Natural and Manufactured 287b; Geneva Big Four Conferences (1955) 289a; Gliding 302c; Gold 303a; Golf 304b; Greece 310a; Heart and Circulatory Diseases 317d; Horse Racing 325a; Horticulture 325c; Hospitals 327b; Housing 330d; Iceland 335c; Immigration, Emigration and Naturalization 339c; Industrial Health 348c; Infant Mortality 349a; Insurance 351b; International Law 356d; International Trade 359c; Iran 368a; Iraq 369a; Ireland, Republic of, 369c; Iron and Steel 370c; Jet Propulsion 381c; Jordan 384b; Labour Unions 392b; Law 397d; Linen and Flax 405d; Literary Prizes 408c; Lumber 413c; Malaya, Federation of, 418a; Malta 418d; Marriage and Divorce 422d; Meat 428b; Medical Rehabilitation of the Disabled 428d; Medicine 431a; Merchant Marine 432b; Middle Eastern Affairs 441c; Mineral and Metal Production and Prices 443; Motion Pictures 454c; Museums 467d; Music 468d; National Parks and Monuments 476d; NATO 500b; Navies of the World 477c; Newspapers and Magazines 490d; Oats 507c; Paper and Pulp Industry 534d; Photography 545c; Physics 548c; Police 555a; Political Parties, British 557a; Prices 567c; Psychology 572c; Radio and Television 585b; Railroads 588b; Respiratory Diseases 595b; Roads and Highways 602a; Rowing 604b; Rubber 604c; Saudi Arabia 613d; Shipbuilding 619c; Silk 623d; Soccer 626d; Socialism 627a; Social Security 628c; Sociology 638a; South Africa, The Union of, 642a; Southeast Asia Treaty Organization 646c; Spain 645d; Squash Racquets 648a; Stocks and Bonds 651d; Strikes 655d; Sugar 656d; Suicide Statistics 657b; Table Tennis 663d; Tariffs 665c; Tea 668c; Telephone 669b; Tennis 672b; Theatre 677b; Tin 679a; Town and Regional Planning 681d; Track and Field Sports 684a; Trinidad and Tobago 686d; Trust Territories 688d; Tuberculosis 689a; Tunnels 691a; Turkey 692c; UN 698d; U.S. 708d; U.S.S.R. 696a; Wealth and Income, Distribution of, 741b; Wheat 744a; Wildlife Conservation 745c; Wool 750c; Yemen 756d; Zinc 759b. *See* also **British Empire**
- Great Lakes Traffic:** *see* **Canals and Inland Waterways**
- Greece**
Archaeology 48c; Armies of the World 59a; Aviation, Civil 80c; Cyprus 194d; Dance 200d; Debt, National 204d; Disasters 210d; Education 227d; Epidemiology 241d; Exchange Control and Exchange Rates 247c; Exploration and Discovery 250a; Foreign Aid Programs, U.S. 266c; Great Britain 308c; Housing 331a; Illiteracy 339a; International Trade 364c; Irrigation 372d; Merchant Marine 432b; Middle Eastern Affairs 441b; Mineral and Metal Production and Prices 443; Music 469a; NATO 500c; Navies of the World 477d; Railroads 590a; Refugees 591d; Roads and Highways 602b; Seismology 616d; Social Security 630c; Soil Conservation 639c; Tariffs 664d; Tobacco 680b; Turkey 692b; UN 700b; Wines 747a; Yugoslavia 758a

Green, William *see* **Obituaries** 53

Greenland
Exploration and Discovery 249c;
Palaeontology 531b

Green River Ordinances: *see* **Law** 52

Greenstreet, Sydney Hughes: *see* **Obituaries** 55

Grenada: *see* **Windward Islands**

Grente, Georges Francois Xavier Maria 54

Griffith, Clark C. 512d

Griseoviridin: Chemistry 152a; Chemotherapy 154d

Griswold, Dwight Palmer: *see* **Obituaries** 55

Groll, Albert Lorey: *see* **Obituaries** 53

Gromyko, Andrei A. 53, 52

Gronchi, Giovanni 56

Italy 376a

Gross, Milt: *see* **Obituaries** 54

Ground Observer Corps: *see* **Aviation, Military; Civil Defense, U.S.** 55, 54, 53

Group Insurance: *see* **Insurance**

Gruenther, Alfred Maximilian 55, 54

Guadeloupe
Social Security 628c

Guam
Infant Mortality 349b

Guaranteed Annual Wage: *see* **Automobile Industry; Labour Unions** 56

Guatemala
Aviation, Civil 80c; Birth Statistics 105d; Children's Books 158d; Coffee 176d; Death Statistics 202c; Debt, National 204d; Foreign Investments 270c; Infant Mortality 349b; International Bank for Reconstruction and Development 353b; Latin-American Literature 394a; Organization of Central American States 527c; Roads and Highways 601c; Salvador, El 611a; Tariffs 665d; Tropical Diseases 687d; World Health Organization 752c

Guderian, Heinz: *see* **Obituaries** 55

Guevara, Juan Gualberto: *see* **Obituaries** 55

Guggenheim Memorial Foundation
John Simon: *see* **Societies and Associations, U.S.**

Literary Prizes 407d

Guiana, British: *see* **British Guiana**

Guiana, Dutch: *see* **Surinam**

Guiana, French: *see* **French Guiana**

Guided Missiles: *see* **Munitions** 56, 55, 54, 53, 52. *See* **Jet Propulsion** 55, 54, 53, 52

Aircraft Manufacture 31a; Aviation, Military 84a

Guinea: *see* **French Union; Portuguese Overseas Territories; Spanish Colonial Empire**

Guinea, French: *see* **French West Africa**

Gulbenkian, Calouste Sarkis 512d

Gynaestics

Gynaecology and Obstetrics: *see* **Psychosomatic Medicine** 55. *See* **Gynaecology and Obstetrics** 54, 52

Cancer 143b; Diabetes 210a; Physiology 550c; World Health Organization 752c

Hahne, Ernest H.: *see* **Obituaries** 53

Haiti
Aviation, Civil 80c; Debt, National 204d; Horticulture 325c; International Trade 361d; Motor Transportation 460a; Navies of the World 477d; Tariffs, 665c; World Health Organization 752b

Halford, Frank Bernard 513a

Hall, James Norman: *see* **Obituaries** 52

Hammar skjöld, Dag 56, 55, 54

Hammar skjöld, Knut Hjalmar Leonard: *see* **Obituaries** 54

Hammer Throw: *see* **Track and Field Sports**

Hampden, Walter (Walter Hampden Dougherty) 513b

Hamsun, Knut: *see* **Obituaries** 53

Handball

Harbours: *see* **Rivers and Harbours**

Harlan, John Marshall 55

Harmon, Hubert R. 55

Harness Racing: *see* **Horse Racing**

Harriman, Averell 56, 53, 52

Political Parties, U.S. 558c

Harrison, Carter Henry: *see* **Obituaries** 54

Harrison, William K., Jr. 53

Haskell, Henry J.: *see* **Obituaries** 53

Hatoyama, Ichiro 56

Japan 378c

Hawaii
Children's Books 158d; Disasters 210d; Infant Mortality 349b; National Parks and Monuments 476b; Sugar 656d; Telephone 669c; Tunnels 691c; Wildlife Conservation 745a

Hawley 445b

Hay and Pastures
Agriculture 24c; Rye 608b; Soil Con-

servation 639d

Hayden, Carl (Trumbull) 53

Hayes, Ira 513b

Hay Fever: *see* **Allergy** 52

Hays, Arthur Garneld: *see* **Obituaries** 55

Hays, Will (iam) H (arrison): *see* **Obituaries** 55

Haywood, Allan Shaw: *see* **Obituaries** 54

Health, Education and Welfare, U.S. Department of: *see* **Drug Administration, U.S.; Education; Public Health Service, U.S.; Social Security** 56, 55. *See* **Health, Education and Welfare, U.S. Department of**, 54

Health, Industrial: *see* **Industrial Health**

Hearing
Public Health Engineering 575a

Hearst, William Randolph: *see* **Obituaries** 52

Heart and Circulatory Diseases
Death Statistics 202b; Public Health Service, U.S. 575c; Rheumatic Diseases 597a; Surgery 658b

Hebrew Literature: *see* **Jewish Literature** 56, 55, 54

Hedin, Sven A.: *see* **Obituaries** 53

Hedtoft, Hans Christian 513c

Heflin, J (ames) Thomas: *see* **Obituaries** 52

Helicopter: *see* **Aviation, Military** 56, 55, 54, 53. *See* **Civil Aeronautics Administration** 56, 55, 54, 53, 52. *See* **Aircraft Manufacture** 53, 52

Children's Books 158a

Hemingway, Ernest 55

Hempel, Frieda 513c

Henderson, Fletcher H.: *see* **Obituaries** 53

Heparin 575c

Heppburn, Mitchell Frederick: *see* **Obituaries** 54

Herbert, Hugh: *see* **Obituaries** 53

Hergesheimer, Joseph E.: *see* **Obituaries** 55

Herrndon, Hugh, Jr.: *see* **Obituaries** 53

Higgins, Andrew J.: *see* **Obituaries** 53

High-Fidelity or Hi-Fi: *see* **Music** 55

Highways: *see* **Roads and Highways**

Hillary, Sir Edmund P. 54

Hilton, James: *see* **Obituaries** 55

Hispaniola: *see* **Dominican Republic; Haiti**

Hobby, Oveta Culp 55, 54, 53

Hockey, Field

Hockey, Ice
Montreal 452b

Hodiak, John 513c

Hodoscope 549b

Hodson, Thomas Callam: *see* **Obituaries** 54

Hoey, Clyde Roark: *see* **Obituaries** 55

Hoffman, Harold Giles: *see* **Obituaries** 55

Hoffman, Paul Gray 56, 54, 53, 52

Hogs: *see* **Livestock**

Holland: *see* **Netherlands**

Holt, Jack: *see* **Obituaries** 52

Holt, Rush Dew 513d

Home Building, Federal: *see* **Housing**

Home Economics

Home Furnishings: *see* **Furniture Industry; Interior Decoration**

Home Rule, City: *see* **Municipal Government** 55, 54, 53, 52

Honduras
Aviation, Civil 80c; Cartography 145c; Debt, National 204d; Foreign Investments 270d; Nicaragua 498a; Organization of Central American States 527c; Roads and Highways 601c; Silver 624a; Tariffs 665c; World Health Organization 752c

Honduras, British: *see* **British Honduras**

Honegger, Arthur 513d

Honey: *see* **Sugar**

Honeywell, J. Frank: *see* **Obituaries** 52

Hong Kong
Birth Statistics 105d; Death Statistics 202c; Formosa 276c; Infant Mortality 349b; International Trade 364d; Motion Pictures 454c; Refugees 591d; Shipbuilding 619d; World Health Organization 752c

Honours and Awards: *see* **Libraries; Theatre** 56, 55. *See* **Radio and Television** 56, 55, 54. *See* **American Library Association; Anthropology; Art Exhibitions; Geography; Literary Prizes; Mineralogy; Motion Pictures; Nobel Prizes; Pulitzer Prizes; Roman Catholic Church; Societies and Associations, U.S.; etc.** 56, 55, 54, 53, 52

Vatican City State 727a. *See* also various sports

Hooper, Claude Ernest: *see* **Obituaries** 55

Hooton, Earnest Albert: *see* **Obituaries** 55

Hoover, Herbert, Jr. 55

Hoover Commission 56

Hormones: *see* **Endocrinology** 56, 55, 54, 53, 52. *See* **Chemotherapy; Cortisone, Hydrocortisone and**

Corticotropin 54, 53

Allergy 36b; Chemistry 152b; Physiology 550a; Rheumatic Diseases 597a

Horowitz, Bela 513d

Horse Racing

Horses: *see* **Livestock**

Horse Shows: *see* **Shows**

Horticulture
Agricultural Research Service 22c; Botany 112c; Fairs and Exhibitions 252a

Hospitalization Insurance: *see* **Insurance**

Hospitals
Building and Construction Industry 128b; Cancer 143b; Disasters 211b; Munitions 464b; Narcotics 472d; Nursing 505a; Psychiatry 571b; Public Health Service, U.S. 575c; Radio and Television 584a; Red Cross 590c; Salvation Army 611d; Venereal Diseases 728c; Veterans Administration (U.S.) 731a

Hotels, U.S.
Disasters 211b; Labour Unions 391b; Wages and Hours 737d

Housing
Architecture 52b; Banking 90d; Building and Construction Industry 127d; Business Review 135a; Co-operatives 188a; Home Economics 319c; Municipal Government 461d; Organization of American States 527b; Prices 566a; Stocks and Bonds 651a; Town and Regional Planning 682a; Veterans Administration (U.S.) 730d

Housing Administration, Federal: *see* **Housing**

Howard (Black), Tom 514a

Howey, Walter Crawford: *see* **Obituaries** 55

Hrozny, Bedrich (Friedrich): *see* **Obituaries** 53

Hubble, Edwin Powell: *see* **Obituaries** 54

Hughes, William M.: *see* **Obituaries** 53

Hull, Cordell 514a

Human Nutrition and Home Economics, Bureau of: *see* **Home Economics** 55, 54, 53, 52. *See* **Agricultural Research Administration** 54, 53, 52

Human Rights, Covenant of: *see* **International Law; United Nations**

Humour
Theatre 676b

Humphrey, George Magoffin 56, 55, 54, 53

Humphrey, Hubert Horatio, Jr. 53

Hungary
Agriculture 30a; Armies of the World 61d; Automobile Industry 77b; Cartography 146a; Coal 174a; Eastern European Economic Planning 218d; Forests 274b; Infant Mortality 349b; Iron and Steel 371a; Italy 377b; Mineral and Metal Production and Prices 443; Motor Transportation 460a; Museums 468c; Navies of the World 477d; Railroads 590a; Soil Conservation 639c; Track and Field Sports 683b; Wines 747a

Hunt, Lester Callaway: *see* **Obituaries** 55

Hunting: *see* **Wildlife Conservation**

Hurdling: *see* **Track and Field Sports**

Hussein I 54

Hussey, Mary Inda: *see* **Obituaries** 53

Hutcheson, William Levi: *see* **Obituaries** 54

Hutchins, Robert Maynard
Hyde, Charles C.: *see* **Obituaries** 53

Hydrocortisone: *see* **Cortisone, Hydrocortisone and Corticotropin** 54, 53

Hydroelectric Power: *see* **Federal Power Commission**

Eastern European Economic Planning 219d; International Bank for Reconstruction and Development 353a; Irrigation 372b; Mexico 439b; Tibet 678d; Tunnels 691a

Hydrogen Bomb: *see* **Atomic Energy** 56, 55, 54, 53, 52. *See* **Physics** 54

ICBM (intercontinental ballistic missile) 751b

ICC: *see* **Interstate Commerce Commission**

Ice Cream: *see* **Dairy Products** 53, 52

Federal Trade Commission 258b

Ice Hockey: *see* **Hockey, Ice**

Iceland
American Citizens Abroad 38a; Aviation, Civil 80c; Navies of the World 477d; Socialism 627c; Sweden 660c; Tuberculosis 689b

Ice Shows: *see* **Shows**

Ice Skating

Ickes, Harold Le Clair: *see* **Obituaries** 53

Idaho
IL-28-2 (bomber) 86a

Illinois
Bridges 117d

Illiteracy

IL.O.: see **International Labour Organization**

Ilyushin IL-13 (bomber) 86a

Immigration, Emigration and Naturalization

Law 395b; Refugees 591d

Imports: *see* **International Trade; Tariffs**

Prices 568a. *See* also various industries, products and countries

Income, Distribution of: *see* **Wealth and Income, Distribution of**

Income and Product, U.S.
Agriculture 26b; Budget, National 125b; Business Review 132a; Census Data, U.S. 148b; Chemistry 151a; Consumer Credit 186a; Prices 565d; U.S. 703b; Wealth and Income, Distribution of, 740a

Income Tax: *see* **Taxation**

India
Agriculture 28b; Asian-African Conference 60a; Automobile Industry 77b; Aviation, Civil 80c; Barley 94d; Birth Statistics 105d; Bridges 118d; Burma 130d; Ceylon 150b; China 162b; Christian Unity 166c; Coal 174a; Coke 177b; Commonwealth of Nations 179d; Communism 183a; Co-operatives 187a; Corn 189a; Cotton 190d; Death Statistics 202c; Debt, National 204d; Disasters 211a; Dyes 217b; Education 227d; Electrical Industries 233d; Epidemiology 241c; Exchange Control and Exchange Rates 247b; Fairs and Exhibitions 252b; Foreign Aid Programs, U.S. 266d; Foreign Investments 271c; Gold 302d; Heart and Circulatory Diseases 318a; Illiteracy 338d; International Bank for Reconstruction and Development 353a; International Monetary Fund 358c; International Trade 360b; Iran 368a; Iron and Steel 370c; Law 399c; Libraries 404b; Manganese 419b; Marriage and Divorce 423b; Medical Rehabilitation of the Disabled 429a; Merchant Marine 432d; Mineral and Metal Production and Prices 443; Missions, Foreign (Religious) 447c; Navies of the World 477d; Nepal 482c; Newspapers and Magazines 494c; Nuts 507a; Pakistan 530a; Portuguese Overseas Territories 561d; Prices 568b; Railroads 588c; Rice 600a; Roads and Highways 602c; Shipbuilding 619d; Socialism 627b; Southeast Asia Treaty Organization 644d; Spices 647c; Sugar 656d; Tariffs 665b; Tea 668c; Tobacco 680b; Tuberculosis 689a; Tunnels 691a; Wheat 744a; Wildlife Conservation 745c; Women's Fashions 748b; World Health Organization 752c

India, French: *see* **French India** 55, 54, 53, 52

India, Portuguese: *see* **Portuguese Overseas Territories**

Indians, American
Archaeology 49c; Children's Books 158b; Exploration and Discovery 249c; Law 397a; Public Health Service, U.S. 575c; Radio and Television 582b; Roman Catholic Church 603a; Tuberculosis 689c

- See Business Review* 54, 53, 52. *See Consumer Credit* 53, 52. *Foreign Investments* 268c; *Housing* 328b; *Stocks and Bonds* 652c. *See also* various countries
- Influenza:** *see Respiratory Diseases* 56, 55, 54, 53, 52. *See Bacteriology; Epidemiology* 54
- Infant Mortality** 349c
- Information Agency, U.S.:** *see United States Information Agency* 55, 54
- Inge, William Ralph: *see Obituaries* 55
- Ingram, Jonas Howard: *see Obituaries* 53
- Inland Waterways:** *see Canals and Inland Waterways*
- Insanity:** *see Psychiatry* 53, 52
- Insects and Insecticides:** *see Agricultural Research Service; Public Health Engineering* 56, 55, 54, 53, 52. *See Horticulture* 54, 53, 52
- Agricultural Research Service** 22d; *Aviation*, Civil 83a; *Chemistry* 152b; *Dermatology* 208d; *Forests* 274a; *Horticulture* 325c; *Museums* 466c; *Words and Meanings*, New 751a
- Installment Buying and Selling:** *see Business Review; Consumer Credit*
- Insulin:** *see Diabetes*
- Drug Administration** 215b
- Insurance**
- Co-operatives 187c; *Federal Deposit Insurance Corporation* 255d; *Federal Trade Commission* 258a; *Hospitals* 326c; *Housing* 329b; *Lumber* 413c; *Nursing* 505a; *Public Utilities* 576d; *Social Security* 628c; *Societies and Associations*, U.S. 631c; *Veterans Administration* (U.S.) 731d
- Insurance, Old Age:** *see Social Security*
- Inter-American Conference** 55
- Inter-American Highway:** *see Roads and Highways* 53, 52
- Inter-American Investment Conference:** *see Foreign Investments* 56
- Interior, U.S. Department of:** *see Government Departments and Bureaus*, U.S.
- Interior Decoration**
- Furniture Industry* 286b
- International Bank for Reconstruction and Development**
- British East Africa* 120c; *Finland* 259d; *Foreign Aid Programs*, U.S. 267c; *Foreign Investments* 268d; *Honduras* 321a; *Immigration* 373a; *Italy* 377b; *Lebanon* 401b; *Pakistan* 530a; *Panamá* 533a; *Peru* 539b; *Rhodesia* and *Nyasaland*, *Federation of*, 599b; *Thailand* 675d; *UN* 701b
- International Children's Emergency Fund:** *see Child Welfare*
- International College of Surgeons:** *see Societies and Associations*, U.S.
- International Confederation of Free Trade Unions:** *see Labour Unions* 56, 55, 54, 53, 52. *See Democracy* 52
- International Conference of American States:** *see Inter-American Conference* 55
- International Cooperation Administration:** *see Foreign Aid Programs*, U.S. 56
- International Court of Justice:** *see International Law* 56, 55, 54, 53, 52. *See United Nations* 53, 52
- Peru* 539b; *Trust Territories* 688d; *UN* 698b
- International Geophysical Year (1957-58)** 56
- Antarctica* 44b; *Byrd*, *Richard Evelyn* 137a; *Exploration and Discovery* 248c; *Geography* 291b; *Meteorology* 436b; *Oceanography* 521c
- International Labour Organization**
- Medical Rehabilitation of the Disabled* 428d; *U.S.S.R.* 696a; *Venezuela* 729a
- International Law**
- International Monetary Fund**
- Exchange Control and Exchange Rates* 245b; *Gold* 302d; *International Trade* 365a
- International Red Cross:** *see Red Cross*
- International Refugee Organization:** *see Refugees*
- International Law* 356c
- International Trade**
- Business Review* 136b; *Egypt* 229c; *Exchange Control and Exchange Rates* 245a; *Foreign Investments* 268d; *Japan* 379a; *Organization of Central American States* 527d; *Political Parties*, U.S. 558d; *Tariffs* 664b. *See also* various industries, products and countries
- International Wheat Agreement:** *see Agriculture; Wheat*
- Interstate Commerce Commission**
- Law* 395a; *Railroads* 586d
- Intestinal Disorders:** *see Stomach and Intestines, Diseases of the*
- Intoxication, Alcoholic**
- Crime* 191c; *Medicine* 429d; *Psychiatry* 571d
- Inventions:** *see Electronics; Munitions; Patents; Printing; Standards, National Bureau of; Telephone* 56, 55, 54, 53, 52. *See Agricultural Research Administration* 54, 53, 52. *See Ceramic Products* 53, 52
- Agricultural Research Service** 23a
- Inverchapel*, *Archibald John Kerr Clark Kerr*, 1st Baron: *see Obituaries* 52
- Investigations, Congressional:** *see Congressional Investigations* 55
- Investment Banking:** *see Banking*
- Investments, Foreign, in the U.S.:** *see Foreign Investments* 56
- Iowa**
- Bridges* 117d
- Iran**
- Archaeology* 48c; *Armies of the World* 58b; *Aviation*, Civil 80c; *Cartography* 146a; *Foreign Aid Programs*, U.S. 266d; *Foreign Investments* 271d; *Horticulture* 325c; *International Law* 356a; *International Monetary Fund* 358c; *International Trade* 364b; *Islam* 373c; *Middle Eastern Affairs* 441b; *Mineral and Metal Production and Prices* 443; *Navies of the World* 477d; *Railroads* 590b; *Religion* 593a; *Roads and Highways* 602c; *Turkey* 692c; *U.S.S.R.* 696b; *Wines* 747a; *Women's Fashions* 748b; *World Health Organization* 752b
- Iraq**
- Agriculture* 29d; *Archaeology* 48a; *Armies of the World* 58b; *Aviation*, Civil 80c; *Canals and Inland Waterways* 142d; *Communism* 183b; *Exploration and Discovery* 250a; *Fruit* 284d; *Great Britain* 308c; *International Trade* 364b; *Iran* 368a; *Jordan* 384b; *Lebanon* 401a; *Middle Eastern Affairs* 441b; *NATO* 500c; *Navies of the World* 477d; *Roads and Highways* 602b; *Syria* 663a; *Turkey* 692c; *World Health Organization* 752b
- Ireland, Northern:** *see Great Britain and Northern Ireland, United Kingdom of*, 55, 54. *See Ireland, Northern* 53, 52
- Ireland, Republic of**
- Astronomy* 67d; *Aviation*, Civil 80c; *Birth Statistics* 105d; *Death Statistics* 202c; *Debt, National* 204d; *Exchange Control and Exchange Rates* 247b; *Housing* 331a; *Immigration, Emigration and Naturalization* 339c; *Infant Mortality* 349b; *Linen and Flax* 405d; *Marriage and Divorce* 423b; *Navies of the World* 477d; *Physics* 548d; *Shipbuilding* 619d
- Iron and Steel**
- Coke* 177b; *Eastern European Economic Planning* 219a; *European Unity* 244a; *Foreign Investments* 269b; *Housing* 328b; *International Trade* 360a; *Labour Unions* 391b; *Merchant Marine* 432b; *Metallurgy* 433a; *Mineral and Metal Production and Prices* 442d; *Prices* 568a; *Secondary Metals* 615b; *U.S.* 703c; *Wages and Hours* 737b
- Iron and Steel Institute, American:** *see Societies and Associations*, U.S.
- Irrigation**
- Eastern European Economic Planning* 219d; *Geological Survey*, U.S. 293b; *Public Health Engineering* 574c; *Soil Conservation* 639b; *Tropical Diseases* 687d; *Tunnels* 691c
- Irvin*, *William Adolf:* *see Obituaries* 53
- Isham*, *Ralph Heyward* 514b
- Islam**
- Religion* 592c; *Spanish Colonial Empire* 646d
- Isle of Man:** *see Great Britain and Northern Ireland, United Kingdom of*, 56, 55, 54, 53, 52. *See Commonwealth of Nations* 55, 54, 53, 52
- Ismay, Hastings Lionel Ismay** 53
- Isotopes:** *see Atomic Energy* 53, 52
- Israel**
- Agriculture* 29d; *Archaeology* 48b; *Armies of the World* 58b; *Aviation*, Civil 80c; *Birth Statistics* 105d; *Cartography* 146a; *Death Statistics* 202c; *Education* 227d; *Egypt* 228d; *Exchange Control and Exchange Rates* 248a; *Foreign Aid Programs*, U.S. 266d; *Foreign Investments* 271d; *Fruit* 284b; *Infant Mortality* 349b; *Irrigation* 372d; *Jewish Literature* 382d; *Jordan* 384b; *Judaism* 384d; *Middle Eastern Affairs* 442b; *Mineral and Metal Production and Prices* 443; *Music* 468d; *Navies of the World* 477d; *Religious Education* 594c; *Shipbuilding* 620b; *Socialism* 628a; *Sociology* 637d; *Syria* 663b; *UN* 700b; *Wines* 747a
- Italian Colonial Empire:** *see Eritrea; Libya; Somaliland, Italian* 53, 52
- Italian Literature**
- Italy*
- Agriculture* 29b; *Aluminum* 36d; *Archaeology* 48d; *Armies of the World* 58d; *Art Exhibitions* 65a; *Automobile Industry* 77b; *Aviation*, Civil 79d; *Aviation*, Military 87a; *Birth Statistics* 105d; *Cartography* 145d; *Ceylon* 150c; *Coke* 177b; *Communism* 183a; *Corn* 189a; *Cycling* 194c; *Dairy Products* 196d; *Dams* 198c; *Dance* 200d; *Death Statistics* 202c; *Debt, National* 204d; *Democracy* 206a; *Disasters* 210d; *Education* 227c; *Electrical Industries* 233d; *European Unity* 243d; *Foreign Investments* 271b; *Fruit* 285a; *Gas, Natural and Manufactured* 287b; *Horticulture* 325c; *Housing* 331a; *Immigration, Emigration and Naturalization* 340a; *Infant Mortality* 349b; *International Bank for Reconstruction and Development* 353a; *International Law* 356b; *International Trade* 360b; *Iron and Steel* 371a; *Irrigation* 373a; *Italian Literature* 374d; *Lead* 400d; *Lumber* 413c; *Medical Rehabilitation of the Disabled* 429a; *Merchant Marine* 432b; *Mineral and Metal Production and Prices* 443; *Motion Pictures* 454c; *Museums* 467c; *Narcotics* 472b; *NATO* 500c; *Navies of the World* 477c; *Newspapers and Magazines* 495a; *Nuts* 507a; *Olympic Games* 524d; *Physics* 548c; *Prices* 568b; *Radio and Television* 585d; *Railroads* 588c; *Refugees* 591d; *Roads and Highways* 602b; *Shipbuilding* 619d; *Silk* 623d; *Socialism* 628a; *Social Security* 630c; *Sociology* 638a; *Sugar* 656d; *Sulphur* 657c; *Telephone* 669c; *Tobacco* 680b; *Trust Territories* 688b; *Turkey* 692c; *Wines* 746d; *Wool* 750c; *Zinc* 759b
- Ives*, *Charles Edward:* *see Obituaries* 55
- Ivory Coast:** *see French Union; French West Africa*
- Cocoa* 176b
- Jack*, *Richard:* *see Obituaries* 53
- Jackson*, *Joseph Henry* 514b
- Jackson*, *Robert Houghwout:* *see Obituaries* 55
- Jacobs*, *Michael Strauss (Mike):* *see Obituaries* 54
- Jamaica**
- Socialism* 627a
- James*, *Edwin Leland:* *see Obituaries* 52
- James*, *Marquis* 514b
- Japan**
- Agriculture* 30b; *Aluminum* 36d; *Antarctica* 44b; *Asian-African Conference* 66a; *Astronomy* 68b; *Automobile Industry* 77b; *Aviation*, Civil 80c; *Aviation*, Military 87d; *Barley* 94d; *Birth Statistics* 105d; *Bridges* 118d; *Ceylon* 150c; *Chemistry* 151c; *Coal* 174a; *Coke* 177b; *Copper* 188b; *Dance* 200d; *Death Statistics* 202c; *Democracy* 206c; *Disasters* 211b; *Electrical Industries* 233d; *Employment* 237d; *Exchange Control and Exchange Rates* 248a; *Fisheries* 260c; *Foreign Aid Programs*, U.S. 266d; *Foreign Investments* 271d; *Formosa* 276c; *Fruit* 284c; *Gas, Natural and Manufactured* 287b; *Horticulture* 326a; *Infant Mortality* 349b; *International Bank for Reconstruction and Development* 353d; *International Law* 356a; *International Trade* 359c; *Iran* 368a; *Iron and Steel* 370c; *Lead* 400d; *Linen and Flax* 406b; *Lumber* 413b; *Manganese* 419b; *Merchant Marine* 432b; *Mineral and Metal Production and Prices* 443; *Missions, Foreign (Religious)* 447b; *Motion Pictures* 454c; *Music* 468c; *Narcotics* 472b; *Navies of the World* 477d; *Philippines, Republic of the*, 543b; *Railroads* 588c; *Religion* 592d; *Rice* 600a; *Roads and Highways* 602c; *Rubber* 604d; *Shipbuilding* 619d; *Silk* 623d; *Silver* 624a; *Socialism* 628a; *Sociology* 638a; *Southeast Asia Treaty Organization* 644c; *Sulphur* 657c; *Tariffs* 664b; *Tea* 668c; *Telephone* 669c; *Tobacco* 680b; *Toy Industry* 682d; *U.S.* 708d; *U.S.S.R.* 696a; *Wines* 747a; *Women's Fashions* 748b; *Wool* 750c; *Wrestling* 752d; *Yalta Documents* 755d; *Zinc* 759b
- Japanese Peace Conference** 52
- Jardine*, *William M.* 514c
- Java:** *see Indonesia*
- Disasters* 212c; *Epidemiology* 242a
- Javelin Throw:** *see Track and Field Sports*
- Jazz:** *see Music* 56, 55, 53
- Jeffers*, *William Martin:* *see Obituaries* 54
- Jeffries*, *James J.:* *see Obituaries* 54
- Jehovah's Witnesses* 56
- Jenkins*, *Charles Francis:* *see Obituaries* 52
- Jerusalem** 54, 53, 52
- Jet Propulsion**
- Aircraft Manufacture* 30c; *Aviation*, Civil 82d; *Aviation*, Military 83d; *Motion Pictures* 456d; *Motor-Boat Racing* 459b; *Munitions* 463a; *Standards, National Bureau of*, 54; *Words and Meanings*, New 750d
- Jewels:** *see Diamonds; Gem Stones*
- Jewish Literature (Hebrew and Yiddish)** 56, 55, 54
- Judaism* 385c; *Literary Prizes* 407d
- Jewish Religious Life:** *see Judaism;*
- Birth Statistics** 105d; *Cartography* 145d; *Ceylon* 150c; *Coke* 177b; *Communism* 183a; *Corn* 189a; *Cycling* 194c; *Dairy Products* 196d; *Dams* 198c; *Dance* 200d; *Death Statistics* 202c; *Debt, National* 204d; *Democracy* 206a; *Disasters* 210d; *Education* 227c; *Electrical Industries* 233d; *European Unity* 243d; *Foreign Investments* 271b; *Fruit* 285a; *Gas, Natural and Manufactured* 287b; *Horticulture* 325c; *Housing* 331a; *Immigration, Emigration and Naturalization* 340a; *Infant Mortality* 349b; *International Bank for Reconstruction and Development* 353a; *International Law* 356b; *International Trade* 360b; *Iron and Steel* 371a; *Irrigation* 373a; *Italian Literature* 374d; *Lead* 400d; *Lumber* 413c; *Medical Rehabilitation of the Disabled* 429a; *Merchant Marine* 432b; *Mineral and Metal Production and Prices* 443; *Motion Pictures* 454c; *Museums* 467c; *Narcotics* 472b; *NATO* 500c; *Navies of the World* 477c; *Newspapers and Magazines* 495a; *Nuts* 507a; *Olympic Games* 524d; *Physics* 548c; *Prices* 568b; *Radio and Television* 585d; *Railroads* 588c; *Refugees* 591d; *Roads and Highways* 602b; *Shipbuilding* 619d; *Silk* 623d; *Socialism* 628a; *Social Security* 630c; *Sociology* 638a; *Sugar* 656d; *Sulphur* 657c; *Telephone* 669c; *Tobacco* 680b; *Trust Territories* 688b; *Turkey* 692c; *Wines* 746d; *Wool* 750c; *Zinc* 759b
- Ives*, *Charles Edward:* *see Obituaries* 55
- Jordan**
- Archaeology* 48a; *Armies of the World* 58b; *Aviation*, Civil 80c; *Foreign Aid Programs*, U.S. 266d; *International Trade* 364c; *Mineral and Metal Production and Prices* 443; *Roads and Highways* 602b; *Soil Conservation* 639d; *World Health Organization* 752c
- Jouhaux*, *Léon:* *see Obituaries* 55. *See Jouhaux, Léon* 52
- Jouvet*, *Louis:* *see Obituaries* 52
- Joy*, *Charles Turner* 52
- Joyce*, *Alice* 514d
- Judaism**
- Church Membership* 168b; *Religious Education* 594b;
- Judo:** *see Wrestling*
- Jugoslavia:** *see Yugoslavia*
- Juliana** 53
- Jumping:** *see Track and Field Sports*
- Junior Colleges:** *see Universities and Colleges*
- Justice, U.S. Department of:** *see Government Departments and Bureaus*, U.S.
- Motion Pictures* 454d
- Juvenile Delinquency**
- Child Labour* 157b; *Child Welfare* 159b; *Crime* 191d; *Education* 226c; *Narcotics* 472d; *Newspapers and Magazines* 490a; *Psychiatry* 572a
- Kalman*, *Emmerich:* *see Obituaries* 54
- Kansas, Rocky:* *see Obituaries* 55
- Kansas**
- Motion Pictures* 455a
- Kapell*, *William:* *see Obituaries* 54
- Kashani*, *Abul-Kasim Hossaini* 53
- Kashmir:** *see India; Pakistan* 56, 53. *See Kashmir* 55, 54, 52. *See United Nations* 53
- Keck*, *Charles:* *see Obituaries* 52
- Keenan*, *Joseph Berry:* *see Obituaries* 55
- Kefauver, Estes** 56, 53, 52
- Political Parties*, U.S. 558c
- Kefauver Committee:** *see Crime* 52. *See Betting and Gambling; Municipal Government* 52
- Kellogg*, *Will Keith:* *see Obituaries* 52
- Kellogg Foundation:** *see Societies and Associations*, U.S.
- Kelly, Grace (Patricia)** 56
- Kemadrin* 430b
- Kennan, George Frost** 53
- Kenny*, *Elizabeth:* *see Obituaries* 53
- Kentucky**
- Kenya:* *see British East Africa* 54, 53, 52
- Disasters* 211a; *Forests* 274a; *International Bank for Reconstruction and Development* 353a; *Mineral and Metal Production and Prices* 443; *National Parks and Monuments* 477a
- Kenyon*, *Sir Frederic G.:* *see Obituaries* 53
- Khrushchev, Nikita S.** 56
- U.S.S.R.* 694c
- Kimball, Dan A.** 53, 52
- Kimpton, Lawrence Alpheus**
- Kinetin* 152b
- King*, *Stanley:* *see Obituaries* 52
- Kimsey Report:** *see Marriage and Divorce; Sociology* 54
- Kirby*, *Rollin:* *see Obituaries* 53
- Kirk, Grayson Louis** 54
- Kiwanis International:** *see Societies and Associations*, U.S.
- Kleffens*, *Eelco Nicolaas van* 55
- Kleist*, *Paul Ludwig Ewald von:* *see Obituaries* 55
- Knapp*, *Joseph Palmer:* *see Obituaries* 52
- Knights of Columbus:** *see Societies and Associations*, U.S.
- Knowland, William Fife** 56, 55, 54, 53
- Political Parties*, U.S. 558b
- Knutson*, *Harold:* *see Obituaries* 54
- Koerner, Theodor** 52
- Koje-Do Riots:** *see Korean War; Prisoners of War* 53
- Komisarijevsky*, *Theodore:* *see Obituaries* 55

Korea

Armies of the World 60b; Aviation, Civil 80c; China 162b; Co-operatives 187b; Exchange Control and Exchange Rates 248a; Foreign Aid Programs, U.S. 266c; Glass 302b; International Monetary Fund 358b; Mineral and Metal Production and Prices 443; Missions, Foreign (Religious) 447b; Narcotics 472b; Navies of the World 477d; Religion 592d; Southeast Asia Treaty Organization 644c; Tuberculosis 689a; U.N. 699d

Korean War 54, 53, 52

Veterans Administration (U.S.) 730c
Kotelawala, Sir John Lionel 54
Koussevitzky, Sergei (Alexandrovitch): *see* **Obituaries** 52

Krauss, Clemens Heinrich: *see* **Obituaries** 55

Krebs, Hans Adolph 54
Kress, Samuel Henry 514d

Kubitschek, Juscelino: Brazil 115c; Democracy 206d
Kucharszewski, Jan: *see* **Obituaries** 53
Kuniyoshi, Yasuo: *see* **Obituaries** 54

Kurusu, Saburo: *see* **Obituaries** 55

Kusch, Polykarp 56
Nobel Prizes 499d

Kuwait: *see* **Arabia**
International Trade 364b

Labor, U.S. Department of: *see* **Government Departments and Bureaus, U.S.**

Labour: *see* **Agriculture; Child Labour; Employment; International Labour Organization; Labour Unions; National Labor Relations Board; Strikes; United States; Wages and Hours** 56, 55, 54, 53, 52. *See* **Law** 55, 54, 53, 52. *See* also various industries, products, states, provinces and countries

Labour Party, Great Britain: *see* **Political Parties** British 56, 55, 54, 53. *See* **Socialism** 56, 55, 54, 53, 52

Labour Unions
Democracy 206a; Furs 287a; International Labour Organization 354d; Law 396b; National Labor Relations Board 475a; Newspapers and Magazines 490a; Political Parties, U.S. 559c; Railroads 587a; Socialism 627b; Strikes 654b; U.S. 704a

Labrador: *see* **Newfoundland and Labrador**

Labuan: *see* **British Borneo**

Lacrosse
LaCrosse (guided missile) 465c

LaFollette, Robert Marion, Jr.: *see* **Obituaries** 54

Lagerkvist, Pär Fabien 52

Lahey, Frank H.: *see* **Obituaries** 54

Lait, Jacquin Leonard (Jack): *see* **Obituaries** 55

Lamb, Arthur Becket: *see* **Obituaries** 53

Lamb, Willis E., Jr. 56

Lamb: *see* **Meat**

Land Reform: *see* **Agriculture** 53

Laniel, Joseph 54

Laos 56. *See* **French Union; Indochina** 55, 54, 53, 52

Foreign Aid Programs, U.S. 266d; Thailand 675b; World Health Organization 752b

Lard: *see* **Vegetable Oils and Animal Fats**

Lasker, Albert Davis: *see* **Obituaries** 53

Latin America: *see* **Argentina; Bolivia; Brazil; British Guiana; British Honduras; Chile; Colombia; Costa Rica; Ecuador; French Union; Guatemala; Honduras; Mexico; Nicaragua; Panamá; Paraguay; Peru; Salvador, El; Surinam; Uruguay; Venezuela**

Latin-American Literature
Latter Day Saints: *see* **Mormons**

Lattre de Tassigny, Jean-Joseph-Marie-Gabriel de: *see* **Obituaries** 53

Latvia
Laureano, Napoleón: *see* **Obituaries** 52

Laurie, Joseph (Joe), Jr.: *see* **Obituaries** 55

Law
Advertising 21c; Agriculture 27b; Betting and Gambling 102d; Child Labour 157c; Immigration, Emigration and Naturalization 339c; Indians, American 345d; International Law 355b; International Trade 360d; Irrigation 372d; Labour Unions 391d; Motion Pictures 454d; Narcotics 472a; National Labor Relations Board 475a; Negroes, American 481a; Newspapers and Magazines 489d; Nursing 505b; Organization of Central American States 527d; Panama Canal Zone 533d; Post Office 562c; Psychiatry 572a; Public Health Engineering 574b; Public Utilities 576c; Railroads 587b; Roman Catholic Church 603a; Securities and Ex-

change Commission 615d; Selective Service, U.S. 617c; Shipbuilding 619b; Social Security 628c; Societies and Associations, U.S. 631b; Soil Conservation 639a; Taxation 666d; U.S. 706a; Wildlife Conservation 745c; Words and Meanings, New 751c

Lawn Bowling

Lawn Tennis: *see* **Tennis**

Lawrence, Gertrude: *see* **Obituaries** 53

Laxness, Halldor Kiljan 56
Nobel Prizes 499c

Lead

Mineral and Metal Production and Prices 445; Prices 567d; Secondary Metals 615a

League of Women Voters of the United States: *see* **Societies and Associations, U.S.**

Leather: *see* **Shoe Industry** 54. *See* **Leather** 53, 52

Employment 236d; Strikes 654c

Lebanon

Armies of the World 59d; Aviation, Civil 80c; Communism 183b; Epidemiology 241d; Foreign Investments 271d; International Bank for Reconstruction and Development 353b; International Trade 364c; Irrigation 373a; Islam 373c; Narcotics 472b; Saudi Arabia 613d; Soil Conservation 639d; Tariffs 665d; Tunnels 691a; Wines 747a

Lee, Canada: *see* **Obituaries** 53

Lee, Clark Gould: *see* **Obituaries** 54

Leeward Islands
Léger, Fernand 515a

Léger, Paul Emile 54

Legislation: *see* **Law; Taxation; United States**

See also individual nations and U.S. states

Lemons: *see* **Fruit**

Leprosy: *see* **Tropical Diseases** 53, 52

Public Health Service, U.S. 575c

Lercaro, Giacomo 54

Leukemia: *see* **Blood, Diseases of the**

Levinthal, Bernard Louis: *see* **Obituaries** 53

Lewis, David John: *see* **Obituaries** 53

Lewis, Sinclair: *see* **Obituaries** 52

Lewisohn, Ludwig 515a

Liberia
Aviation, Civil 80c; Communism 183b; Iron and Steel 370d; Merchant Marine 432b; Roads and Highways 601c; Tariffs 666a; World Health Organization 752b

Libraries
American Library Association 38c; Book Collecting 110a; Education 226b; Museums 467d; Patents 536d

Libya
Archaeology 47d; Aviation, Civil 80c; Foreign Aid Programs, U.S. 266d; Foreign Investments 271d; Illicit traffic 338c; International Trade 364c; Soil Conservation 639d; World Health Organization 752c

Lie, Trygve 53, 52

Liechtenstein
Life Insurance: *see* **Insurance**

Life Statistics: *see* **Birth Statistics; Census Data, U.S.; Death Statistics; Infant Mortality; Suicide Statistics**

Lighting: *see* **Electrical Industries** 52

Motion Pictures 457b

Lillie, Ralph Stayner: *see* **Obituaries** 53

Limes: *see* **Fruit**

Linen and Flax
Agriculture 24c

Lin Piao: *see* **Obituaries** 53

Linton, Ralph: *see* **Obituaries** 54

Lions Clubs, International Association of: *see* **Societies and Associations, U.S.**

Lipmann, Fritz Albert 54

Liquors, Alcoholic
Brewing and Beer 116d; Taxation 667d

Literary Prizes
Latin-American Literature 393c

Literature: *see* **Jewish Literature** 56, 55, 54. *See* **American Literature; Book Publishing and Book Sales; Canadian Literature; English Literature; French Literature; German Literature; Italian Literature; Latin-American Literature; Literary Prizes; Nobel Prizes; Pulitzer Prizes; Russian Literature; Spanish Literature** 56, 55, 54, 53, 52

Music 470d; Negroes, American 481d

Lithuania
International Law 355d; Immigration, Emigration and Naturalization 339d

Litvinov, Maxim M.: *see* **Obituaries** 52

Liver Disorders: *see* **Stomach and Intestines, Diseases of the**, 56, 55, 54, 53, 52

Livestock
Agricultural Research Service 22d; Agriculture 25a; Chemistry 152c; Dairy Products 196c; Drug Administration 215b; Farmers Home Administration 254a; Four-H Clubs 277a;

Meat 427c; Shows 621d; Veterinary Medicine 732c. *See* also various states, provinces and countries

Livestock Shows: *see* **Shows**

Local Government: *see* **Municipal Government**

Locke, Alain LeRoy: *see* **Obituaries** 55

Lodge, Henry Cabot, Jr. 56, 55, 54, 53

LOGAIR (Logistics airline) 751b

Lonardi, Eduardo 55b

London
London Conference and Paris Agreements 55

Lonsdale, Frederick (Frederick Leonard): *see* **Obituaries** 55

Lopes, Francisco Higino C. 52

Lorac (Long range accuracy) 751b

Lord, Daniel Aloysius 515b

Lords, House of: *see* **Parliament, British** 53, 52

Los Angeles
Mormons 452c

Louisiana
Bridges 117c

Lovett, Robert Abercrombie 53, 52

Low, Solon Earl

Loyalty Investigations: *see* **Congressional Investigations** 55

LSD (D-Lysergic acid) 429d

Luce, Clare Boothe 54

Lumber
Burma 130d; Forests 273b; Housing 328b; Interior Decoration 352b; International Trade 360c; Prices 566d; Strikes 654c; Wages and Hours 737d

Lumière, Auguste Marie Louis Nicolas: *see* **Obituaries** 55

Luque, Crisanto 54

Lutherans
Christian Unity 166a; Church Membership 168a

Luxembourg
Aviation, Civil 80c; European Unity 243d; Exchange Control and Exchange Rates 247a; Iron and Steel 370c; Tariffs 665c; Wines 747a

Lyttel, Bert: *see* **Obituaries** 55

Macao: *see* **Portuguese Overseas Territories**

MacArthur, Douglas 53, 52

MacArthur Investigation 52

MacBride, Maud Gonne: *see* **Obituaries** 54

McCarran, Patrick Anthony: *see* **Obituaries** 55. *See* **McCarran, Patrick Anthony** 54, 43, 52

MacCarthy, Sir Desmond: *see* **Obituaries** 53

McCarthy, Joseph R. 55, 54, 53, 52

McCarthy, Leighton Goldie: *see* **Obituaries** 53

McCloy, John Jay 52

McCormack, John William 53, 52

McCormick, Anne O'Hare: *see* **Obituaries** 55

McCormick, Lynde Dupuy 53

McCormick, Robert Rutherford 515b

McDaniel, Hattie: *see* **Obituaries** 53

Macedonia: *see* **Yugoslavia** 56, 55, 54, 53, 52. *See* **Greece** 52

Macfadden, Bernarr 515c

McFarland, Ernest William 52

McGill Fence 751b

McGranery, James Patrick 53

Machinery, Farm: *see* **Agriculture**

Machinery and Machine Tools
Agricultural Research Service 23a; Communism 181d; International Trade 363d; Patents 537a; Plastics 553a; Prices 566d; Strikes 654c

McIntyre, James Francis Aloysius 54, 53

McKay, Douglas 56, 55, 54, 53

McKellar, Kenneth Douglas 52

McLevy, Jasper 55

McMahon, Brien: *see* **Obituaries** 53. *See* **McMahon, Brien** 52

McManus, George: *see* **Obituaries** 55

McMillan, Edwin Mattison 52

McNally, John Thomas: *see* **Obituaries** 53

McNeil, Hector 515d

McNutt, Paul Vories 515d

McVey, Frank LeRond: *see* **Obituaries** 54

Madagascar
Coffee 176d; Mineral and Metal Production and Prices 443

Madeira: *see* **Portugal**

Magazines and Periodicals: *see* **Newspapers and Magazines**

Magnesium: *see* **Mineral and Metal Production and Prices**

Secondary Metals 615b

Magsaysay, Ramón 54

Philippines, Republic of the, 543a

Maine
Maize: *see* **Corn**

Makins, Sir Roger Mellor 53

Malan, Daniel François 53

Malaria: *see* **Tropical Diseases** 56, 55, 54, 53. *See* **Medicine, Military** 54. *See* **Malaria** 52

Genetics 288b; Public Health Engineering 575a

Malaya, Federation of
Archaeology 49b; Armies of the World 61a; Australia 73c; Cartography 146b; Cocoa 176b; Exchange Control and Exchange Rates 247b;

International Bank for Reconstruction and Development 353d; International Trade 364d; Mineral and Metal Production and Prices 443; Navies of the World 478a; Palaeontology 531c; Railroads 590b; Rice 600a; Rubber 604c; Tariffs 666a; Tin 679a; World Health Organization 752c

Maldives Islands 55, 54

Malenkov, Georgi Maximilianovich 55, 54, 53

U.S.S.R. 693d

Malik, Jacob A. 55, 52

Malta
Wines 747a

Manchuria: *see* **China**

Mandated Pacific Islands: *see* **Trust Territories**

Mandates: *see* **Trust Territories**

International Law 355c

Manganese
Eastern European Economic Planning 219b; Mineral and Metal Production and Prices 445

Mann, Thomas 516a

Manitoba
Mannerheim, Carl Gustaf Emil, Baron: *see* **Obituaries** 52

Manufacturing: Business Review 134d; Census Data, U.S. 149a; Electrical Industries 233a; Employment 236c; Income and Product, U.S. 342b; Machinery and Machine Tools 414d; Narcotics 472c; Plastics 552c; Strikes 654a; Wages and Hours 737a. *See* also separate industries and various states, provinces and countries

Mao Tse-tung
China 161c

Maple Sugar: *see* **Sugar**

Maps: *see* **Cartography** 56, 55, 54, 53, 52. *See* **Geography** 52

Maranville, Walter James Vincent ("Rabbit"): *see* **Obituaries** 55

Marcantonio, Vito: *see* **Obituaries** 55

March, Peyton Conway 516a

March, William (William Edward March Campbell): *see* **Obituaries** 55

Marchetti-Selvaggianni, Francesco Cardinal: *see* **Obituaries** 52

Margarine: *see* **Vegetable Oils and Animal Fats** 55, 54, 53, 52

Mariana Islands: *see* **Marshall, Caroline and Mariana Islands** 56, 55, 54, 53, 52. *See* **Trust Territories** 55, 54, 53, 52

Marin, John: *see* **Obituaries** 54

Marine Accidents: *see* **Disasters**

Marine Biology
Fisheries 260d; National Geographic Society 473d; Palaeontology 531a; Zoology 759d

Marine Corps, U.S.

Maritime Administration, U.S.: *see* **Merchant Marine**

Marriage and Divorce
Census Data, U.S. 148a; Judaism 385b; Law 396d

Marsh, Sir Edward Howard: *see* **Obituaries** 54

Marsh, Reginald: *see* **Obituaries** 55

Marshall, George Catlett 54

Marshall, Caroline and Mariana Islands

Rhett 53, 52
Meany, George 56
 Labour Unions 390d; Roman Catholic Church 603d
Meat
 Agriculture 25b; Canning Industry 144d; International Trade 363b; Labour Unions 391b; Livestock 409b; Nutrition, Experimental 506a; Public Health Engineering 574d
Medical Rehabilitation of the Disabled
 Industrial Health 347d; Psychiatry 571c; Public Health Service, U.S. 575c
Medicine
 Drug Administration 214d; Electronics 235b; Industrial Health 347d; Motion Pictures 457a; Munitions 463b; Narcotics 472d; Nursing 505a; Prices 566c; Public Health Service, U.S. 575a; Radio and Television 584a; Selective Service, U.S. 617c; Societies and Associations, U.S. 630d; Veterinary Medicine 732c; Vitamins and Nutrition 735d; Words and Meanings, New 750d; World Health Organization 752b. *See also* specific diseases and medical sciences
Medicine, Military 54
 Medina Angarita, Isaías: *see* **Obituaries 54**
 Megawatt klystron 463a
 Meinecke, Friedrich: *see* **Obituaries 55**
 Meissner, Otto: *see* **Obituaries 54**
 Mekhlis, Lev Zakharovich: *see* **Obituaries 54**
 Mendeleevium 548a
 Mendelsohn, Erich: *see* **Obituaries 54**
Mendes-France, Pierre 55
 France 277c; French Union 281d; Germany 300b; Tunisia 690b
 Mephenesin 429d
Merchant Marine 56, 55, *See* Shipping, Merchant Marine 54, 53, 52
 Disasters 211d; Insurance 350c; Panama Canal Zone 533d; Shipbuilding 618d
Mercury: *see* Mineral and Metal Production and Prices
 Merriam, Charles E.: *see* **Obituaries 54**
 Merrill, Frank D. 516c
 Mescaline 429d
Metalurgy
 Iron and Steel 370b; Uranium 723c
Metal Prices and Production: *see* Mineral and Metal Production and Prices
Meteorology
 Cartography 145c; Disasters 211b; Electronics 234b; Fisheries 261a; International Geophysical Year (1957-58) 354a; Nuts 506d; Oceanography 521c; Physics 547d
Methodist Church
 Christian Unity 166c; Church Membership 168a
Mexico
 Agriculture 28b; Archaeology 51a; Architecture 53d; American Citizens Abroad 38a; Automobile Racing 79a; Aviation, Civil 80c; Birth Statistics 105d; Cartography 145c; Children's Books 158c; Coffee 176d; Copper 188b; Corn 189a; Cotton 190d; Dance 201b; Death Statistics 202c; Disasters 210d; Electrical Industries 233d; Exchange Control and Exchange Rates 247b; Foreign Investments 270d; Fruit 285b; Gas, Natural and Manufactured 287b; Glass 302b; Gold 302d; Immigration, Emigration and Naturalization 339d; International Bank for Reconstruction and Development 353a; International Monetary Fund 358c; International Trade 360c; Iron and Steel 370d; Latin-American Literature 394a; Lead 400d; Manganese 419b; Mineral and Metal Production and Prices 443; Motion Pictures 454c; Music 469a; Narcotics 472b; Navies of the World 477d; Organization of American States 526d; Palaeontology 532a; Railroads 588c; Roads and Highways 601c; Silver 624a; Soccer 626d; Sugar 656d; Swimming 660d; Tariffs 665d; Tourist Travel 681c; Tuberculosis 689a; Wheat 744a; Wines 747a; World Health Organization 752b; Zinc 759b
 Meyerhof, Otto (Fritz): *see* **Obituaries 52**
Michigan
Microbiology: *see* Bacteriology
Micronesia: *see* Marshall, Caroline and Mariana Islands 56
Middle East 53, 52
Middle East Defense Organization: *see* Egypt; Middle East 53, 52
Middle Eastern Affairs 56
Migration: *see* Immigration, Emigration and Naturalization; Refugees
 Mikimoto, Kokichi: *see* **Obituaries 55**
Milbank Memorial Fund: *see* Societies and Associations, U.S.
Military Medicine: *see* Medicine, Military 54
Milk: *see* Dairy Products
 Canning Industry 144d; Nutrition, Experimental 506a

Miller, Kenneth Hayes: *see* **Obituaries 53**
 Milles, Carl Wilhelm Emil 516c
 Millikan, Robert Andrews: *see* **Obituaries 54**
Millikin, Eugene Donald 52
 Milontin 430b
 Miltown (Equanil): Chemotherapy 155b; Medicine 429d
Mimmi, Marcello 54
Mineral and Metal Production and Prices
 Eastern European Economic Planning 219b; Foreign Investments 269b; Geological Survey, U.S. 293c; Machinery and Machine Tools 415a; Metallurgy 432d; Prices 566d. *See also* separate minerals and various states, provinces and countries
Mineralogy
 Cartography 145c; Geological Survey, U.S. 292d; Geology 294c; Uranium 723c
Mining: *see* Mineral and Metal Production and Prices
 Business Review 135a; Employment 236c; Income and Product, U.S. 342a; Strikes 654c; Wages and Hours 737b. *See also* under various minerals
Minnesota
Mint, United States: *see* Coinage
Miquelon: *see* French Union; St. Pierre and Miquelon
 Miranda, Carmen (Maria do Carmo Miranda da Cunha) 516d
Missiles, Guided: *see* Munitions 56, 55, 54, 53, 52. *See* Jet Propulsion 53, 52
Missions, Foreign (Religious)
See also various churches
Mississippi
Missouri
Mitchell, James Paul 56, 55, 54
 Mitchell, William DeWitt 516d
Mohammedanism: *see* Islam
 Molnar, Ferenc: *see* **Obituaries 53**
Molotov, Vyacheslav Mikhailovich 56, 55, 54
 U.S.S.R. 694c
Molybdenum: *see* Mineral and Metal Production and Prices
Monaco
Monetary Units: *see* Exchange Control and Exchange Rates
Money Markets: *see* Banking
Mongolian People's Republic
Montana
 Montessori, Maria: *see* **Obituaries 53**
 Montez, Maria: *see* **Obituaries 52**
Montreal
Montserrat: *see* Leeward Islands
 Moody, (Arthur Edson) Blair: *see* **Obituaries 55**
 Moore, A(rthur) Harry: *see* **Obituaries 53**
Moose, Loyal Order of: *see* Societies and Associations, U.S.
Moral Re-Armament, World Assembly for: *see* World Assembly for Moral Re-Armament 56, 55, 54, 53
Mormons
 Church Membership 168a
Morocco, French
 Armies of the World 60c; Disasters 212b; Egypt 229b; France 278b; French Union 282b; Iron and Steel 370c; Judaism 384d; Manganese 419b; Mineral and Metal Production and Prices 443; UN 700a
Morocco, Spanish: *see* Spanish Colonial Empire
 Armies of the World 60d; Iron and Steel 370c; Mineral and Metal Production and Prices 443
Morphine: *see* Chemistry 53
 Narcotics 472b
 Morris, Lloyd: *see* **Obituaries 55**
 Morrow, Elizabeth Reeve Cutter (Mrs. Dwight Whitney Morrow) 517a
Morse, Wayne Lyman 52
Mortgages, Farm: *see* Farm Credit System 56. *See* Farmers Home Administration 56, 54, 53, 52. *See* Farm Credit Administration 55, 54, 53, 52
Mortgages, Home: *see* Banking 56, 55, 54, 53. *See* Housing 56, 55, 54, 53, 52
 Savings and Loan Industry 614b; U.S. 703b
 Morton, Mark: *see* **Obituaries 52**
Moscow 55, 54, 53, 52
Mossadegh, Mohammed 54, 53, 52
Motels: *see* Tourist Travel 54, 53, 52
Motion Pictures
 Brando, Marlon 115b; Foreign Investments 271d; Kelly, Grace 387c; Lutherans 414b; Music 470c; Photography 547b; Radio and Television 581d; Words and Meanings, New 750d
Motor-Boat Racing
Motor Transportation
 Automobile Industry 76a; Disasters 212d; Labour Unions 391b; Munitions 463b; Petroleum 539d; Police 554d; Railroads 587c; Taxation 667d; Tourist Travel 681a; Town and Regional Planning 681d; Tunnels 691a; Urban Transportation, U.S. 723d. *See also* various states and countries

Motor Vehicles: *see* Urban Transportation, U.S. 56, 55, 54. *See* Accidents (Accident Prevention); Automobile Industry; Federal Bureau of Investigation; Motor Transportation 56, 55, 54, 53, 52. *See* Electric Transportation 53, 52
 Mott, John Raleigh 517a
 Moulton, Forest Ray: *see* **Obituaries 53**
Mountain Climbing: *see* Geography 56. *See* Exploration and Discovery 56, 55, 54, 53, 52
Mt. Everest, Climbing of: *see* Exploration and Discovery 54, 53, 52
Mozambique: *see* Portuguese Overseas Territories
Mules: *see* Livestock
Mundt, Karl Earl 55
Municipal Government
 Debt, National 204c; Police 554c; Public Health Engineering 574b; Social Security 629b; Town and Regional Planning 681d; Urban Transportation, U.S. 723d. *See also* various cities and states
Munitions
 Armies of the World 59a; Aviation, Military 83b; Jet Propulsion 381c; Marine Corps, U.S. 421d; NATO 499d; Navies of the World 478b; Radio and Television 584c; Standards, National Bureau of, 649a; Words and Meanings, New 750d
 Munn, Frank: *see* **Obituaries 54**
 Murdoch, Sir Keith A.: *see* **Obituaries 53**
 Murray, Philip: *see* **Obituaries 53**
Muscat (Masqat) and Oman: *see* Arabia
Museums
 Art Exhibitions 62d; Photography 547c; Smithsonian Institution 625d
Music
 Communism 182a; Electronics 235c; Labour Unions 391b; Motion Pictures 458c; Negroes, American 481d; Pulitzer Prizes 578b; Theatre 676b
Music Library Association: *see* Societies and Associations, U.S. 53, 52
Mutton: *see* Meat
Mutual Security Program: *see* Foreign Aid Programs, U.S. 56, 55, 54. *See* Mutual Security Program 53. *See* European Recovery Program 52
 International Trade 360a
 Mysoline 430b
 Mystecrin 431b
 Mysuran chloride 430b
Naghib, Mohammed 55, 54, 53, 52
Nagy, Imre 54
Narcotics
 Crime 191c; Psychiatry 571d; Public Health Service, U.S. 575c
 Nasalli-Rocca di Corneliano, Giovanni-Battista Cardinal: *see* **Obituaries 53**
Nasser, Gamal Abdel 56, 55
 Egypt 228d
National Academy of Sciences: *see* Societies and Associations, U.S.
National Association for the Advancement of Colored People: *see* Societies and Associations, U.S.
National Association of Manufacturers: *see* Societies and Associations, U.S.
National Association of State Libraries: *see* Societies and Associations, U.S.
National Budget: *see* Budget, National
National Bureau of Standards: *see* Standards, National Bureau of
National Catholic Community Service: *see* Societies and Associations, U.S.
National Catholic Welfare Conference: *see* Societies and Associations, U.S.
National Congress of Parents and Teachers: *see* Societies and Associations, U.S.
National Council of the Churches of Christ in the United States of America: *see* Societies and Associations, U.S. 56
National Debt: *see* Debt, National
National Education Association: *see* Societies and Associations, U.S.
National Foundation for Infantile Paralysis: *see* Poliomyelitis 56, 55. *See* Societies and Associations, U.S. 56, 55, 54, 53, 52. *See* Infantile Paralysis 54
National Gallery of Art: *see* Smithsonian Institution
National Geographic Society
 Astronomy 68d; Geography 292a
National Guard
 Selective Service, U.S. 618b
National Income and National Product: *see* Income and Product, U.S.
National Insurance: *see* Social Security
Nationalization of Industries: *see* Great Britain and Northern Ireland, United Kingdom of; Railroads 54, 53, 52. *See* Coal; Public

Utilities 53, 52. *See* Iran 53, 52
 Newspapers and Magazines 494a
National Labor Relations Board
National Museum: *see* Smithsonian Institution
National Parks and Monuments
 Tourist Travel 681b
National Production Authority: *see* Defense Mobilization Agencies, U.S. 52
National Recreation Association: *see* Societies and Associations, U.S. 56, 55
National Safety Council: *see* Accidents 56, 55. *See* Accident Prevention 54, 53, 52
National Science Foundation: *see* Societies and Associations, U.S. 56, 55, 54, 53
National Shipping Authority: *see* Shipping, Merchant Marine 54, 53
National Society for Crippled Children and Adults, Inc.: *see* Societies and Associations, U.S. 56, 55, 54
National Temperance League, Inc.: *see* Societies and Associations, U.S.
National Wealth: *see* Wealth and Income, Distribution of
Natural Gas: *see* Gas, Natural and Manufactured
Naturalization: *see* Immigration, Emigration and Naturalization 56, 55. *See* Aliens 54, 53, 52
Nauru: *see* Trust Territories
 "Nautilus" 477c
 Navajoite 445b
Navies of the World
 Atomic Energy 72a; Aviation, Military 84d; Disasters 211d
Navy, U.S. Department of: *see* Government Departments and Bureaus, U.S.
 Aviation, Military 84d; Disasters 210d; Electronics 234a; Merchant Marine 431d; Munitions 464b; Navies of the World 478b; Radio and Television 584d; Selective Service, U.S. 617d; Shipbuilding 619a; U.S. 705d
Nazimuddin, Khwaja 52
N.E.A.: *see* Societies and Associations, U.S. 54, 53, 52
Nebraska
Neurology: *see* Obituaries
Negroes, American
 Education 226d; Roman Catholic Church 602d. *See also* various states
Nehru, Jawaharlal
 India 343b; Portuguese Overseas Territories 561d; Socialism 627b
 Nelson, Harold Hayden: *see* **Obituaries 55**
 Nelson, Oscar Matthew (Batting): *see* **Obituaries 55**
Nepal
 World Health Organization 752b
Nervous System: *see* Psychosomatic Medicine 56, 55, 54, 52
 Death Statistics 202b; Dermatology 209a; Public Health Service, U.S. 575c; Surgery 659a
Netherlands
 Armies of the World 58d; Art Exhibitions 64d; Automobile Industry 77b; Aviation, Civil 79d; Birth Statistics 105d; Coal 174a; Coke 177b; Dairy Products 196d; Dance 201b; Death Statistics 202c; Debt, National 204d; Eggs 228c; Electrical Industries 233d; European Unity 243d; Exchange Control and Exchange Rates 247b; Foreign Investments 271b; Forests 274b; Gas, Natural and Manufactured 287b; Glass 302a; Horticulture 325c; Housing 331a; Immigration, Emigration and Naturalization 339c; Infant Mortality 349b; International Bank for Reconstruction and Development 353c; International Trade 360d; Merchant Marine 432b; Mineral and Metal Production and Prices 443; Museums 468b; Music 468d; Navies of the World 477c; Prices 568a; Railroads 588c; Refugees 592a; Religion 593b; Rye 608b; Shipbuilding 619d; Socialism 628a; Surinam 659c; Tariffs 664d; Telephone 669c; Tuberculosis 689b; U.S. 708d; Wines 747a; Zinc 759b
Netherlands Antilles
Netherlands New Guinea
 World Health Organization 752b
Netherlands Overseas Territories: *see* Netherlands Antilles; Netherlands New Guinea; Surinam
 Neumann, Alfred: *see* **Obituaries 53**
Neutrons: *see* Physics
Nevada
New Brunswick
New Caledonia: *see* Pacific Islands, French
 Mineral and Metal Production and Prices 443; Nickel 498c

Newfoundland and Labrador

American Citizens Abroad 38a
New Guinea: *see* **Papua-New Guinea** 56, 55, 54, 53. *See* **Netherlands New Guinea**; **Trust Territories** 56, 55, 54, 53, 52
 Mineral and Metal Production and Prices 443

New Hampshire

New Hebrides

New Jersey

New Mexico

Newspapers and Magazines

Advertising 20a; Communism 181d; Friends, Religious Society of, 283c; Literary Prizes 407c; Motion Pictures 456a; Printing 569b; Pulitzer Prizes 577d; Russian Literature 608a; Turkey 692b

New York

Bridges 117c

New York City

Bridges 117b

New Zealand

Agriculture 29a; American Citizens Abroad 38a; Antarctica 44b; Armies of the World 59d; Aviation, Civil 80c; Birth Statistics 105d; Commonwealth of Nations 179d; Dairy Products 196d; Death Statistics 202c; Debt, National 204d; Epidemiology 242a; Exchange Control and Exchange Rates 247b; Football 265c; Forests 274b; Immigration, Emigration and Naturalization 339c; Infant Mortality 349a; International Trade 363c; Law 399b; Lumber 413c; Meat 428b; Mineral and Metal Production and Prices 443; Mormons 452c; Motor Transportation 460a; Museums 468a; Navies of the World 477d; Oceanography 522b; Prices 567c; Refugees 592a; Socialism 627b; Social Security 630c; Soil Conservation 640a; Southeast Asia Treaty Organization 644c; Tariffs 665c; Town and Regional Planning 682b; Trust Territories 688d; Tuberculosis 689b; Wines 747a; Wool 750a

Nicaragua

Aviation, Civil 80c; Costa Rica 189b; Exchange Control and Exchange Rates 246b; Foreign Investments 270d; Honduras 320d; Illiteracy 339a; International Bank for Reconstruction and Development 353b; International Monetary Fund 358c; Organization of American States 526d; Organization of Central American States 527c; Roads and Highways 601c; Tariffs 665b; World Health Organization 752c

Nickel

Mineral and Metal Production and Prices 445; Secondary Metals 615b

Nieto del Río, Félix: *see* **Obituaries** 54

Niger: *see* **French Union**; **French West Africa**

Nigeria: *see* **British West Africa**

Cartography 146b; Cocoa 176b; Forests 274a; International Bank for Reconstruction and Development 353d; Islam 373b; Mineral and Metal Production and Prices 443; Tin 679a; World Health Organization 752b

Niles, David K.: *see* **Obituaries** 53

Nitti, Francesco Saverio: *see* **Obituaries** 54

Nixon, Richard Milhous 56, 55, 54, 53
 Political Parties, U.S. 558a

NLRB: *see* **National Labor Relations Board**

Nobel Prizes

Noble, Thomas Tertius: *see* **Obituaries** 54

Norfolk Island: *see* **Commonwealth of Nations** 55, 54, 52

North Atlantic Treaty Organization Armies of the World 58b; Commonwealth of Nations 179d; Communism 182c; Cyprus 195a; Denmark 207a; Foreign Aid Programs, U.S. 266c; International Trade 362c; Italy 377b; Marine Corps, U.S. 422a; Middle Eastern Affairs 441d; Navies of the World 478a; Southeast Asia Treaty Organization 644c; U.S.S.R. 695c

North Borneo: *see* **British Borneo**

North Carolina

North Dakota

Northern Ireland: *see* **Great Britain and Northern Ireland**, United Kingdom of 56, 55, 54. *See* **Ireland**, Northern 53, 52

Astronomy 67d

Northern Rhodesia: *see* **Rhodesia and Nyasaland, Federation of**, 56, 55, 54. *See* **Rhodesia**, Northern 54, 53, 52

Cartography 146b; Copper 188b; Mineral and Metal Production and Prices 443; National Parks and Monuments 477b; Tunnels 691a; Zinc 759b

Northwest Territories

Norway

Aluminum 36d; Antarctica 44b; Armies of the World 58d; Automobile Industry 77b; Aviation, Civil 80c; Birth Statistics 105d; Death Statistics 202c; Debt, National 204d; Electrical Industries 233d; Employment 238a; Exchange Control and Exchange Rates 247b; Fisheries 261a; Foreign Investments 272b; Housing 331a; Ice Skating 336c; International Bank for Reconstruction and Development 353b; Lumber 413c; Merchant Marine 432b; Mineral and Metal Production and Prices 443; Music 468d; Navies of the World 478a; Prices 568b; Shipbuilding 619d; Socialism 627c; Sociology 638a; Sweden 660c; Track and Field Sports 684a; Tuberculosis 689b; Zinc 759b

Norwich, Alfred Duff Cooper, 1st Viscount, of Aldwich: *see* **Obituaries** 55

Nose and Throat, Diseases of: *see* **Ear, Nose and Throat, Diseases of**

Nova Scotia

Novello, Ivor: *see* **Obituaries** 52

Nuclear Armies: *see* **Physics**

Nursing 56, 55. *See* **Hospitals** 54, 53, 52

Hospitals 326c; Industrial Health 348b; Public Health Service, U.S. 575c; Red Cross 590c; World Health Organization 752c

Nutrition, Experimental

Agricultural Research Service 23c; Biochemistry 103d; Child Welfare 159b; Dentistry 207d; Home Economics 319b; Physiology 550b; Public Health Service, U.S. 575b; Surgery 659b; Tropical Diseases 687b; Vitamins and Nutrition 735d

Nuts

Horticulture 325c

Nuvolari, Tazio: *see* **Obituaries** 54

Nyasaland: *see* **Rhodesia and Nyasaland, Federation of**, 56, 55, 54. *See* **Nyasaland** 54, 53, 52

Cartography 146b

Nylon: *see* **Textile Industry** 55, 54, 53. *See* **Rayon and Other Synthetic Fibres** 54, 53, 52

Plastics 552c

Nygardsvold, Johan: *see* **Obituaries** 53

Nystatin: Dermatology 208c; Medicine 431a

Oats

Agriculture 24c; International Trade 361b

Obituaries

Obstetrics: *see* **Medicine** 55. *See* **Gynaecology and Obstetrics** 54, 53, 52

Occupational Diseases: *see* **Industrial Health**

Occupational Therapy: *see* **Medical Rehabilitation of the Disabled** 52

Oceanography

Cartography 145c; Coast and Geodetic Survey, U.S. 174c; Electronics 235d; Exploration and Discovery 249d; Fisheries 261a; Geology 294a; International Geophysical Year (1957-58) 354b; Marine Biology 420a; National Geographic Society 473d

Odria, Manuel A. 52

Office of Defense Mobilization: *see* **Defense Mobilization, Office of**, 54. *See* **Defense Mobilization Agencies**, U.S. 52

Office of Education, U.S.: *see* **Education** 56, 55, 54, 53, 52. *See* **Health, Education and Welfare, U.S. Department of**, 54. *See* **Federal Security Agency** 53, 52

Office of Rent Stabilization: *see* **Rent Stabilization, Office of**, 53

Ohio

Oil: *see* **Petroleum**

Oils and Fats, Vegetable and Animal: *see* **Vegetable Oils and Animal Fats**

Oklahoma

Old-Age Insurance: *see* **Social Security**

Old-Age Pensions: *see* **Social Security**

See also under various states

Oleomargarine: *see* **Vegetable Oils and Animal Fats** 55, 54, 53, 52

Olives: *see* **Fruit**

Olympic Games

O'Mahoney, Joseph Christopher 52

Oman and Muscat (Masqat) 52

Arabia

O'Neill, Eugene Gladstone: *see* **Obituaries** 54

Ontario

Ontos 421d

Opera: *see* **Music**

Ophthalmology: *see* **Eye, Diseases of the**

Law 395c

Opium: *see* **Narcotics and Narcotic Traffic** 52

Oppenheimer, J. Robert 55

OPSPA (oxa-penta-methylene-diethylene-thio-phosphoramide) 751b

Oranges: *see* **Fruit**

Orchestras: *see* **Music**

Oregon

Bridges 117d

Organization for European Economic Cooperation: *see* **Foreign Aid Programs**, U.S. 56, 54. *See* **International Trade** 56, 54, 53, 52. *See* **Organization for European Economic Cooperation** 55. *See* **Mutual Security Program** 53. *See* **European Recovery Program** 52

Dyes 217a

Organization of American States Costa Rica 189b; Ecuador 221c; Nicaragua 498a; Organization of Central American States 527c

Organization of Central American States 56. *See* **Guatemala** 55, 54

Honduras 321a; Salvador, El 611a

Orlando, Vittorio Emanuele: *see* **Obituaries** 53

Osteopathy 56, 55. *See* **Medicine** 54, 53, 52

O.T.C. (Organization for Trade Cooperation): *see* **Tariffs** 56

Ottaviani, Alfredo 54

Ottawa

Oursler, (Charles) Fulton: *see* **Obituaries** 53

Outdoor Advertising: *see* **Advertising** 54, 53, 52

Outer Mongolia: *see* **Mongolian People's Republic**

Oxamycin 154d

P2V-7 Neptune 85a

P5M-2 Marlin 85a

P6M SeaMaster 85a

PA-105 152a

Pace, Frank, Jr. 53, 52

Pacific Islands, British

Pacific Islands, French

Pacific Islands, U.S.: *see* **Samoa, American** 56, 55. *See* **Guam**; **Hawaii** 56, 55, 54, 53, 52

Pacific Islands Under Trusteeship: *see* **Marshall, Caroline and Mariana Islands**; **Trust Territories**

Padilla Nervo, Luis 52

Pagitan 430b

Painting 54, 53, 52

Art Sales 65b; Museums 467a

Paints and Varnishes

Foreign Investments 270d; Labour Unions 391b

Pakistan

Afghanistan 21d; Agriculture 28b; Armies of the World 58b; Aviation, Civil 80c; Canals and Inland Waterways 142d; Christian Unity 166d; Commonwealth of Nations 179d; Communism 183b; Cotton 190d; Dams 198c; Dyes 217b; Exchange Control and Exchange Rates 246d; Foreign Aid Programs, U.S. 266c; Foreign Investments 271c; India 343c; International Bank for Reconstruction and Development 353b; International Monetary Fund 358c; International Trade 363c; Iran 368a; Iraq 368c; Islam 373b; Law 399c; Marriage and Divorce 423b; Merchant Marine 432d; Middle Eastern Affairs 441b; Mineral and Metal Production and Prices 443; Motor Transportation 460a; Museums 468a; Navies of the World 477d; Railroads 588c; Rice 600a; Seismology 617a; Southeast Asia Treaty Organization 644c; Squash Racquets 648a; Tariffs 665b; Tea 668c; Turkey 692c; Wheat 744a; World Health Organization 752c

Palaeontology

Botany 112c; Geology 294b

Palestine: *see* **Israel**; **Jordan**; **United Nations** 56, 55, 54, 53, 52. *See* **Jerusalem** 54, 53, 52

Refugees 592b; UN 700b

Panama

Birth Statistics 105d; Death Statistics 202c; Debt, National 204d; Foreign Investments 272a; Infant Mortality 349b; International Bank for Reconstruction and Development 353b; Latin-American Literature 394a; Merchant Marine 432b; Navies of the World 477d; Organization of American States 527b; Organization of Central American States 527c; Panama Canal Zone 533d; Roads and Highways 601c; Roman Catholic Church 603a; World Health Organization 752c

Panama Canal Zone

Armies of the World 61c; Panamá 533a

Pan American Union: *see* **Organization of American States**

Pandit, Vijayalakshmi 54

Papagos, Alexandros 517c

Paper and Pulp Industry

Advertising 21a; Employment 236d; Foreign Investments 272c; Forests 273c; International Trade 361b; Labour Unions 391b; Newspapers and Magazines 489d; Prices 566d; Printing 569b; Public Health Engineering 574c; Strikes 654c; Wages and Hours 738a

Papua-New Guinea 56, 55, 54, 53. *See* **Commonwealth of Nations** 52

Cartography 146c

Paraguay

Aviation, Civil 80c; Disasters 211a; International Monetary Fund 358c; Navies of the World 477d; Organization of American States 526d; Roads and Highways 601d; World Health Organization 752c

Parasitology 430b

Parents and Teachers, National Congress of: *see* **Societies and Associations**, U.S.

Paris

Paris Agreements: *see* **London Conference and Paris Agreements** 55

Parks and Monuments: *see* **National Parks and Monuments**

Parliament, British 55, 54, 53, 52

Pashtunistan or Pakhtoonistan: *see* **Pakistan** 56. *See* **Afghanistan** 56, 55, 54, 53, 52

Pasvolsky, Leo: *see* **Obituaries** 54

Patents

Patterson, Paul C.: *see* **Obituaries** 53

Patterson, Robert P.: *see* **Obituaries** 53

Pauling, Linus Carl 55

Paz, Ezequiel P.: *see* **Obituaries** 54

Paz Estenssoro, Victor 53

Peaches: *see* **Fruit**

Peanuts

Agriculture 24c; Vegetable Oils and Animal Fats 727a

Pears: *see* **Fruit**

Pearson, Lester Bowles 53, 52

Pecans: *see* **Nuts**

Peers, Edgar Allison: *see* **Obituaries** 53

Pekkala, Mauno: *see* **Obituaries** 53

Pella, Giuseppe 54, 53, 52

Penicillin: *see* **Medicine** 56, 55, 54, 53, 52. *See* **Chemotherapy** 55, 54, 53, 52. *See* **Chemistry** 54, 53

Heart and Circulatory Diseases 317d; Tropical Diseases 687c

Pennsylvania

Penrose, Stephen B. L., Jr.: *see* **Obituaries** 55

Pension, Old-Age: *see* **Social Security**

See also under various states

Pensions, Veterans': *see* **Veterans Administration (U.S.)**

Pentolinum tartrate 751c

Perez Jimenez, Marcos 54

Performing Right Societies: *see* **Societies and Associations, U.S.**

Perón, Juan Domingo

Argentina 54d; Roman Catholic Church 603a

Perón, María Eva Duarte de: *see* **Obituaries** 53. *See* **Perón, María Eva Duarte de** 52

Perret, Auguste: *see* **Obituaries** 55

Perry, Bliss: *see* **Obituaries** 55

Perry, John Lester: *see* **Obituaries** 53

Persia: *see* **Iran**

ganization 644c; Sugar 656d; Tariffs 666b; World Health Organization 752c

Philosophy

Literary Prizes 407c

Phosphates: *see* **Mineral and Metal Production and Prices**

Photography

Cartography 145c; Electronics 235a; Motion Pictures 454d; Munitions 463a; Newspapers and Magazines 489d; Physics 548c; Printing 569b; Pulitzer Prizes 578b

Physics

Chemistry 154a; International Geophysical Year (1957-58) 354b; Kusch, Polykarp 390b; Lamb, Willis E., Jr. 393b; Philosophy 545a; Standards, National Bureau of, 648d

Physiology

Biochemistry 103d; Psychiatry 571d; Vitamins and Nutrition 736a

Picabia, Francis: *see* **Obituaries 54**

Pickersgill, John Whitney 56, 55, 54

Pig Iron: *see* **Iron and Steel**

Pigs: *see* **Livestock**

Pinay, Antoine 53

Pineapples: *see* **Fruit**

Piñero, Jesús Toribio: *see* **Obituaries 53**

Pinetree Chain 751c

Pipelines: *see* **Federal Power Commission**

Pitkin, Walter B.: *see* **Obituaries 54**

Pittsburgh

Pius XII

Roman Catholic Church 603a; Vatican City State 726d

Planned Parenthood: *see* **Birth Control**

Plant Industry, Soils and Agricultural Engineering, Bureau of: *see* **Agricultural Research Administration 54, 53, 52**

Plastics

Architecture 52c; Ceramics 149d; Chemistry 152c; Disasters 211b; Heart and Circulatory Diseases 317d; Horticulture 325c; Marine Corps, U.S. 421d; Motion Pictures 457d; Munitions 464a; Printing 569b

Plastiras, Nicholas: *see* **Obituaries 54**

Platinum: *see* **Mineral and Metal Production and Prices**

Secondary Metals 615b

Pleomycin 152a

Plevon, René 52

Plums: *see* **Fruit**

Plutonium: *see* **Atomic Energy 56, 55, 54, 53, 52. See Physics 55, 54**

Pneumatic Bricks 52c

Pneumonia: *see* **Respiratory Diseases**

Infant Mortality 349c

Poetry: *see* **Jewish Literature 56, 55, 54. See American Literature; Canadian Literature; English Literature; French Literature; Latin-American Literature; Literary Prizes; Russian Literature; Spanish Literature 56, 55, 54, 53, 52. See Book Publishing 52**

Italian Literature 375d

Pogany, Willy (William Andrew) 518a

Poland

Armies of the World 61d; Automobile Industry 77b; Aviation, Civil 80c; Coal 174a; Coke 177b; Disasters 211b; Eastern European Economic Planning 218d; Education 227d; Electrical Industries 233d; Fairs and Exhibitions 252b; Gliding 302c; Horticulture 325d; Immigration, Emigration and Naturalization 339d; Iron and Steel 370d; Mineral and Metal Production and Prices 443; Museums 468b; Navies of the World 477d; Railroads 588c; Shipbuilding 619d; Soil Conservation 639c; Southeast Asia Treaty Organization 644d; Track and Field Sports 684a; Tuberculosis 689a; Yalta Documents 755d; Zinc 759b

Pole Vaulting: *see* **Track and Field Sports**

Police

Crime 191a; Federal Bureau of Investigation 254d; Law 396d

Poliomyelitis 56, 55. See Infantile Paralysis 54, 53, 52

Chemotherapy 155a; Child Welfare 159d; Denmark 207b; Ear, Nose and Throat, Diseases of, 217d; Education 222d; Medical Rehabilitation of the Disabled 428c; Medicine 429a; Public Health Service, U.S. 575b; Salk, Jonas Edward 610b; U.S. 707b; World Health Organization 752c

Political Parties, British 56, 55, 54, 53

Great Britain 306d; Socialism 627a

Political Parties, U.S. 56, 55, 54, 53. See Elections, U.S. 53, 52. See Democratic Party; Republican Party 52

Elections, U.S. 231c; Labour Unions 391d. *See also* under individual states

Political Science 56, 55, 54, 53

Literary Prizes 407c

Polo

Polylysine 154c

Polymethylstyrene 152d

Polyvinylamine 154c

Popular Music: *see* **Music**

Population, Movements of: *see* **Ref-**

ugees

Populations of the Countries of the World: *see* **Areas and Populations of the Countries of the World**

Population Statistics: *see* **Census Data, U.S.**

Pork: *see* **Meat**

Porto Rico: *see* **Puerto Rico**

Portugal

Aviation, Civil 82b; Birth Statistics 105d; Death Statistics 202c; Debt, National 204d; Disasters 211a; Epidemiology 241d; Exchange Control and Exchange Rates 247b; Football 265b; Foreign Investments 271b; Housing 331a; Illiteracy 339a; India 343c; Infant Mortality 349b; Mineral and Metal Production and Prices 443; Navies of the World 477d; Uranium 723c; U.S. 708d; Wines 746d

Portuguese Overseas Territories

India 343c

Post Office

Aviation, Civil 80b; Labour Unions 391b; Newspapers and Magazines 489c; Philately 542a; U.S. 706a; Words and Meanings, New 751a

Potash: *see* **Mineral and Metal Production and Prices**

Potatoes

Agriculture 24c; Nutrition, Experimental 506a

Poultry: *see* **Eggs; Livestock; Meat**

Canning Industry 144c; Frozen Foods 283d; Respiratory Diseases 594d

Powys, Theodore Francis: *see* **Obituaries 54**

Prasad, Rajendra 53

Precious Stones: *see* **Gem Stones**

Prednisolone: Allergy 36c; Endocrinology 238b; Medicine 430d; Public Health Service, U.S. 575b; Rheumatic Diseases 597c

Prednisone: Allergy 36c; Endocrinology 238b; Medicine 429b; Public Health Service, U.S. 575b; Rheumatic Diseases 597c

Presbyterian Church

Christian Unity 165d; Church Membership 168b

Presidents, Sovereigns and Rulers

President's Materials Policy Commission: *see* **Materials Policy Commission 53**

Preysing-Lichtenegg-Moos, Count Konrad von: *see* **Obituaries 51**

Prices

Business Review 131d; Foreign Investments 270c; Income and Product, U.S. 340d; International Trade 359c; Political Parties, U.S. 559b; Railroads 587a. *See also* various commodities, industries and countries

Price Stabilization, Office of: *see* **Defense Mobilization, Office of, 54. See Price Stabilization, Office of, 53**

Priest, Ivy Maude Baker 53

Primary Education: *see* **Education 55, 54, 53, 52**

Prince Edward Island

Principle: *see* **Portuguese Overseas Territories**

Printing

Newspapers and Magazines 490a; Strikes 654c; Wages and Hours 738a

Prisoners of War 54, 53, 52

China 162d; Japan 378d; Red Cross 590d

Prisons

See also various states

Prizes and Awards: *see* **Libraries; Mathematics 56, 55. See Radio and Television 56, 55, 54. See American Library Association; Anthropology; Art Exhibitions; Geography; Literary Prizes; Mineralogy; Motion Pictures; Nobel Prizes; Pulitzer Prizes; Roman Catholic Church; Societies and Associations, U.S.; Theatre; etc. 56, 55, 54, 53, 52**

Archaeology 49d; Architecture 52c; Atomic Energy 72a; Birth Control 105a; Contract Bridge 186d; Dance 199d; Glass 302b; Music 469a; Negroes, American 481c; Newspapers and Magazines 490d; Smithsonian Institution 626b; Sociology 637d. *See also* various sports

Production, Industrial: *see* **Business Review**

See also separate industries and various states, provinces and countries

Profits, Company: *see* **Business Review 56, 55, 54, 53, 52. See Taxation 55, 54, 53, 52**

Prokofiev, Sergi: *see* **Obituaries 54**

Propendin: Physiology 550d; Words and Meanings, New 751c

Protestant Episcopal Church

Protons: *see* **Physics**

Prunes: *see* **Fruit**

Psychiatry

Chemotherapy 155b; Hospitals 327a; Medicine 429c; Narcotics 472d; Psychology 572b; Psychosomatic Medicine 573a; Tuberculosis 690a; Venereal Diseases 728c

Psychology

Philosophy 544c; Psychiatry 571b; Sociology 637a

Psychosomatic Medicine

Hospitals 327a; Psychiatry 571b

Public Assistance: *see* **Child Welfare; Social Security**

Budget, National 126b. *See also* various states

Public Health Engineering

Industrial Health 347d; Municipal Government 462a; Tunnels 691d; World Health Organization 752b

Public Health Service, U.S. 56, 55, 54. See Epidemics and Public Health Services 53, 52

Child Welfare 159d; Medical Rehabilitation of the Disabled 428c; Medicine 429b; Municipal Government 462a; Nursing 505a; Poliomyelitis 555d; Public Health Engineering 574b; Respiratory Diseases 594d; Selective Service, U.S. 617c; Tuberculosis 689a; Venereal Diseases 728c

Public Libraries: *see* **American Library Association; Libraries**

Public Relations 55, 54, 53, 52

Public Utilities

Building and Construction Industry 128b; Business Review 135a; Electrical Industries 232c; Electronics 234c; Employment 236c; Gas, Natural and Manufactured 287c; Income and Product, U.S. 342a; Insurance 350a; Railroads 586d; Securities and Exchange Commission 616a; Strikes 654c; Taxation 667c; Wages and Hours 738a

Publishing: *see* **Book Publishing and Book Sales; Newspapers and Magazines**

Puerto Rico

Birth Statistics 105d; Bridges 118d; Death Statistics 202c; Infant Mortality 349b; Latin-American Literature 393c; National Labor Relations Board 475b; Sugar 656d; Wildlife Conservation 745a

Pugmire, Ernest I.: *see* **Obituaries 54**

Pulitzer, Joseph 518a

Pulitzer Prizes

Music 469b

Pulp Industry: *see* **Paper and Pulp Industry**

Purcell, Edward Mills 53

Pusey, Nathan Marsh 54

Putnam, Herbert 518a

Pyrite: *see* **Mineral and Metal Production and Prices**

Qatar: *see* **Arabia**

Q Fever: *see* **Respiratory Diseases 53, 52. See Veterinary Medicine 52**

Quakers: *see* **Friends, Religious Society of**

Quarles, Donald A (ubrey) 56

Quebec

Quiroga Y Palacios, Fernando 54

Quo Tai-chi: *see* **Obituaries 53**

Raab, Julius 54

Rabbittite 445b

Racial Segregation: *see* **Education; Law 56, 55, 54, 53, 52. See Child Welfare; Political Parties 55**

Alabama 32c; Negroes, American 481a; South Africa, The Union of, 642a; UN 701a; U.S. 707b

Racing and Races: *see* **Air Races and Records; Automobile Racing; Horse Racing; Motor-Boat Racing; Track and Field Sports; Yachting 56, 55, 54, 53, 52. See Olympic Games 53**

Radar: *see* **Telephone 56, 55, 54. See Electronics 56, 54, 53, 52. See Munitions, 53. See Civil Aeronautics Administration 52**

Aviation, Military 83b; Marine Corps, U.S. 421d; Meteorology 436a; Police 554d

Radescu, Nicolas: *see* **Obituaries 54**

Radford, Arthur William 56, 55, 54

Radio and Television 56, 55, 54. See Radio 53, 52

Advertising 20a; Chemistry 153d; Christian Science 165c; Electronics 235b; Federal Communications Commission 255b; Glass 302b; Humour 331c; London 410d; Methodist Church 438c; Motion Pictures 454c; Munitions 463a; Music 468c; Newspapers and Magazines 489b; Police 554d; Poliomyelitis 556a; Public Utilities 577a; Railroads 587d; Shows 623b; Standards, National Bureau of, 648d; Words and Meanings, New 750d; World Health Organization 752d

Radiology: *see* **X-Ray and Radiology**

Railroad Accidents: *see* **Disasters**

Railroads

Disasters 212c; Forests 273d; Interstate Commerce Commission 365c; Labour Unions 391b; Munitions 464b; Newspapers and Magazines 494a; Public Utilities 577a; Social Security 629b; Stocks and Bonds 650a; Strikes 654d; Urban Transportation, U.S. 723d; Words and Meanings, New 751a. *See also* various cities, states and countries

Raine, William MacLeod: *see* **Obituaries 55**

Rainfall: *see* **Meteorology**

Raisins: *see* **Fruit**

INDEX

Ramjets: *see* **Jet Propulsion 55, 54, 53, 52**

Randall, James G(arfield): *see* **Obituaries 54**

Randall Commission: *see* **Tariffs 56, 55. See International Trade 55**

Rapid Transit: *see* **Urban Transportation, U.S. 56, 55, 54. See Electric Transportation 53, 52**

Rascal: Aviation, Military 84a; Munitions 465d

Rates of Exchange: *see* **Exchange Control and Exchange Rates**

Rau, (Sir) Nursing (Benegal Narsinga): *see* **Obituaries 54**

Raunormine 151d

Rawlings, Marjorie Kinnan (Mrs. Norton Sanford Baskin): *see* **Obituaries 54**

Rawson, Arturo: *see* **Obituaries 53**

Rayburn, Sam 53

Political Parties, U.S. 559c

Rayon and Other Synthetic Fibres: *see* **Textile Industry 56, 55. See Rayon and Other Synthetic Fibres 54, 53, 52**

Clothing Industry 173b

Razmara, Ali: *see* **Obituaries 52**

Reclamation: *see* **Soil Conservation 56, 55, 54. See Forests; Irrigation 56, 55, 54, 53, 52. See Soil Erosion and Soil Conservation 53, 52**

Geological Survey, U.S. 293b

Reconstruction Finance Corporation 55, 54, 53, 52

Red Cross

Donations and Bequests 214a

Reed, David Aiken: *see* **Obituaries 54**

Reforestation: *see* **Forests**

Reformed Church: *see* **Presbyterian Church**

Refugees

Foreign Aid Programs, U.S. 267c; Immigration, Emigration and Naturalization 339c; Red Cross 591a; UN 700d

Regulus: Aviation, Military 85a; Munitions 465b

Relay Racing: *see* **Track and Field Sports**

Relief: *see* **Community Chest; Red Cross; Social Security 56, 55, 54, 53, 52. See Child Welfare 52**

See also various cities, provinces and states

Religion

Christian Unity 165d; Communism 182a; Donations and Bequests 214b; Graham, William Franklin 306a; Missions, Foreign (Religious) 447c; Philosophy 544c. *See also* various churches and religious organizations

Religious Denominations: *see* **Church Membership**

Religious Education

Judaism 385c; Roman Catholic Church 603a

Remington, William Walter: *see* **Obituaries 55**

Remon, José Antonio 53

Obituaries 518b

Rent Control: *see* **Rent Stabilization, Office of, 53. See Law 53, 52**

Rent Stabilization, Office of, 53

Rent Stabilization Board: *see* **Defense Mobilization Agencies, U.S. 52**

Representatives, House of: *see* **United States Congress 56, 55. See Elections, U.S. 56, 55, 54, 53, 52. See Congress, United States 54, 53, 52**

Republican Party: *see* **Political Parties, U.S. 56, 55, 54, 53. See Republican Party 52**

See also various states</

- Rheumatism:** *see* Rheumatic Diseases 54, 53, 52
- Rhode Island**
- Rhodesia and Nyasaland, Federation of,** 56, 55, 54. *See* Nyasaland; Rhodesia, Northern; Rhodesia Southern 54, 53, 52
- Law 399c; Newspapers and Magazines 494b; Nickel 498d; Railroads 590b; Refugees 592a; Tariffs 665c; Wildlife Conservation 745c
- Rice, Grantland:** *see* Obituaries 55
- Rice**
- Agriculture 24c; International Trade 360b
- Riddell, Robert Gerald:** *see* Obituaries 52
- Riddle, Samuel D.:** *see* Obituaries 52
- Ridgway, Matthew Bunker** 55, 54, 53, 52
- Riggs, Lynn:** *see* Obituaries 55
- Rightmire, George W.:** *see* Obituaries 53
- Rio De Oro:** *see* Spanish Colonial Empire
- Rio Muni:** *see* Spanish Colonial Empire 53, 52
- Rivers and Harbours**
- Canals and Inland Waterways 141d
- Riza Pahlavi, Mohammed** 54
- Roads and Highways**
- Bridges 117c; Motor Transportation 459d; Tourist Travel 681b. *See* also various states, provinces and countries
- Robbins, Frederick Chapman** 55
- Roberts, Owen Josephus** 518c
- Robey, Sir George (George Edward Wade):** *see* Obituaries 55
- Robinson, Boardman:** *see* Obituaries 53
- Rockefeller Foundation:** *see* Societies and Associations, U.S.
- Education 223c
- Rockets:** *see* Jet Propulsion; Munitions 56, 55, 54, 53, 52. *See* Electronics 55
- International Geophysical Year (1957-58) 354c; Physics 547d
- Rodeos:** *see* Shows
- Rohde, Ruth Bryan (Owen):** *see* Obituaries 55
- Rojas Pinilla, Gustavo** 54
- Roller Derby** 55, 54, 53, 52
- Roman Catholic Church**
- Argentina 54d; Church Membership 168b; Literary Prizes 407c; Missions, Foreign (Religious) 447b; Newspapers and Magazines 494c; Philosophy 544d; Pius XII 551d; Religion 593a; Religious Education 594a; Socialism 627b; Vatican City State 726c
- Romberg, Signund:** *see* Obituaries 52
- Roncagli, Angelo Giuseppe** 54
- Rosenberg, Anna M.** 52
- Rosenberg, Julius and Ethel:** *see* Obituaries 54
- Ross, Harold Wallace:** *see* Obituaries 52
- Ross, John K. L.:** *see* Obituaries 52
- Ross, Norman:** *see* Obituaries 54
- Rostovtzeff, Michael I.:** *see* Obituaries 53
- Rotary International:** *see* Societies and Associations, U.S.
- Rowing**
- Rowntree, Benjamin Seebohm: *see* Obituaries 55
- Ruanda-Urundi:** *see* Belgian Colonial Empire; Trust Territories
- Rubber**
- Chemistry 152d; Employment 236d; Foreign Investments 270d; International Trade 360a; Labour Unions 391b; Marine Corps, U.S. 421d; Paints and Varnishes 529b; Prices 566d; Strikes 654c; Wages and Hours 737b
- Ruffo, Titta:** *see* Obituaries 54
- Rugby:** *see* Football
- Ruiz Cortines, Adolfo** 56, 55, 54, 53
- Rulers:** *see* Presidents, Sovereigns and Rulers
- Rumania**
- Armies of the World 61d; Eastern European Economic Planning 218d; Illiteracy 339a; Mineral and Metal Production and Prices 443; Navies of the World 477d; Wines 747a
- Runstedt, Karl Rudolf Gerd von:** *see* Obituaries 54
- Running:** *see* Track and Field Sports
- Rupprecht, Maria Luitpoldt Ferdinand** 518d
- Rural Electrification Administration**
- Co-operatives 187b
- Rural Rehabilitation Loans:** *see* Farmers Home Administration
- Russell, Richard Brevard** 53, 52
- Russell Sage Foundation:** *see* Societies and Associations, U.S.
- Russia:** *see* Union of Soviet Socialist Republics
- Russian Literature**
- Communism 181c
- Rust, John Daniel:** *see* Obituaries 55
- Rye**
- Agriculture 24c
- Saar**
- Coal 174a; Coke 177b; European Unity 244c; Gas, Natural and Manufactured 287b; Germany 298d; Iron and Steel 370d; NATO 500c; Newspapers and Magazines 495a
- Sabbath, Adolph Joachim:** *see* Obituaries 53
- Safety:** *see* Accidents (Accident Prevention) 56, 55, 54, 53, 52. *See* Railroads 55, 54, 53, 52
- Police 554d
- Sailing:** *see* Yachting
- St. Christopher:** *see* Leeward Islands
- St. Croix:** *see* Virgin Islands
- St. Helena**
- St. John:** *see* Virgin Islands
- St. Kitts-Nevis:** *see* Leeward Islands
- St. Laurent, Louis Stephen**
- St. Lawrence Seaway:** *see* Canals and Inland Waterways
- Dams 198a
- St. Louis**
- St. Lucia:** *see* Windward Islands
- St. Pierre and Miquelon**
- St. Thomas:** *see* Virgin Islands
- St. Vincent:** *see* Windward Islands
- Salary Stabilization Board:** *see* Defense Mobilization Agencies, U.S. 52
- Sales, Retail:** *see* Business Review 53, 52
- Salk, Jonas Edward** 56
- Poliomyelitis 555a
- Salt:** *see* Mineral and Metal Production and Prices
- Saltontall, Leverett** 52
- Salvador, El**
- Birth Statistics 105d; Cartography 145d; Coffee 176d; Death Statistics 202c; Debt, National 204d; Foreign Investments 270d; Honduras 321a; Infant Mortality 349b; International Bank for Reconstruction and Development 353a; International Trade 361d; Organization of Central American States 527c; Roads and Highways 601c
- Salvation Army**
- Church Membership 168b
- Samoa, American**
- Samoa, Western:** *see* New Zealand; Trust Territories
- World Health Organization 752b
- San Francisco**
- San Marino**
- Santayana, George: *see* Obituaries 53
- Santo Domingo:** *see* Dominican Republic
- São Tomé:** *see* Portuguese Overseas Territories
- Sapieha, Adam Stefan Cardinal:** *see* Obituaries 52
- Saracoglu, Sukru:** *see* Obituaries 54
- Sarawak:** *see* British Borneo
- Spices 647d; World Health Organization 752b
- Sarett, Lew:** *see* Obituaries 55
- Saskatchewan**
- Satellite, Artificial:** *see* Physics 56
- International Geophysical Year (1957-58) 354d; U.S. 705d
- Saud** 54
- Saudi Arabia** 56, 55, 54, 53. *See* Arabia 52
- Armies of the World 59b; Education 227d; Egypt 229b; Great Britain 308d; International Trade 364b; Iraq 368d; Islam 373b; Roads and Highways 602b; World Health Organization 752b
- Sauerbruch, (Ernst) Ferdinand:** *see* Obituaries 52
- Savings and Loan Industry** 56
- Banking 91a
- Savings Banks:** *see* Savings and Loan Industry 56. *See* Banking 56, 55, 54, 53, 52
- Sawyer, Charles** 53, 52
- Scheff, Fritz:** *see* Obituaries 55
- Schools:** *see* Education; Universities and Colleges
- See* also various countries and states
- Schroeder, Rudolph W.:** *see* Obituaries 53
- Schumacher, Kurt:** *see* Obituaries 53
- Schuman, Robert** 53, 52
- Schuman Plan:** *see* European Coal and Steel Community; Tariffs 54. *See* European Union 54, 53, 52
- Schuster, Alfredo Ildefonso:** *see* Obituaries 55
- Schweitzer, Albert** 54
- Scotland:** *see* Great Britain & Northern Ireland, United Kingdom of
- Shows 622c
- Scott, John:** *see* Obituaries 52
- Scott, Walter Dill** 518d
- Scott, Walter E. ("Death Valley Scotty"):** *see* Obituaries 55
- Scott-Paine, Hubert:** *see* Obituaries 55
- Scrap:** *see* Secondary Metals
- Sculpture** 54, 53, 52
- Museums 467b
- Seaborg, Glenn Theodore** 52
- "Sea Wolf" 478a
- SEC:** *see* Securities and Exchange Commission
- Secondary Education:** *see* Education
- Secondary Metals**
- Secret Service, U.S.**
- Securities:** *see* Banking; Stocks and Bonds
- Securities and Exchange Commission**
- Foreign Investments 272b
- Seeing Eye, Inc.:** *see* Societies and Associations, U.S.
- Segni, Antonio** 56
- Italy 376b
- Seiberling, Frank A.** 518d
- Seismology**
- Coast and Geodetic Survey, U.S. 174d; Disasters 212b; Geology 294a; International Geophysical Year (1957-58) 354d; Oceanography 522a
- Selective Service, U.S.**
- Armies of the World 58d; Law 397c; U.S. 706a
- Selenium:** *see* Mineral and Metal Production and Prices
- Paints and Varnishes 529b
- Senanayake, Don Stephen:** *see* Obituaries 53
- Senanayake, Dudley Shelton** 53
- Senate:** *see* United States Congress 56, 55. *See* Elections, U.S. 55, 54, 53, 52. *See* Congress, United States 54, 53, 52
- Senegal:** *see* French Union; French West Africa
- Seton-Watson, Robert William:** *see* Obituaries 52
- Seventh-day Adventists**
- Church Membership 167d
- Seychelles**
- Sforza, Count Carlo:** *see* Obituaries 53
- Shafer, Paul W.:** *see* Obituaries 55
- Shamun (Chamoun), Camille** 53
- Sharkey, Thomas Joseph:** *see* Obituaries 54
- Shaver, Clement Lawrence:** *see* Obituaries 55
- Shaw, (Warren) Wilbur:** *see* Obituaries 55
- Shay, Frank:** *see* Obituaries 55
- Sheep:** *see* Livestock
- Shellbarger, Samuel:** *see* Obituaries 55
- Sherman, Forrest Percival:** *see* Obituaries 52
- Sherrington, Sir Charles S.:** *see* Obituaries 53
- Sherwood, Robert E(mmet)** 518d
- Shidehara, Kijuro:** *see* Obituaries 52
- Shipbuilding**
- Atomic Energy 72a; Merchant Marine 431d; Navies of the World 477c
- Shipping, Merchant Marine:** *see* Merchant Marine 56, 55. *See* Shipping, Merchant Marine 54, 53, 52
- Shishakli, Adib Es** 54
- Shoe Industry**
- Munitions 463b; Women's Fashions 750a
- Shooting**
- Shopping Centres:** *see* Building and Construction Industry 56, 55, 54
- Short, Joseph Hudson, Jr.:** *see* Obituaries 53
- Shows**
- Shubert, Lee:** *see* Obituaries 54
- Shulman, Harry** 519a
- Siam:** *see* Thailand
- Sidewinder 465c
- Sierra Leone:** *see* British West Africa
- Diamonds 210b; Iron and Steel 370c; Mineral and Metal Production and Prices 443
- Sigler, Kim:** *see* Obituaries 54
- Sikkim**
- Silk**
- Textile Industry 674a; Women's Fashions 748c
- Silva, Augusto Alvaro da** 54
- Silver**
- Mineral and Metal Production and Prices 442c; Secondary Metals 615b
- Silvers, Louis:** *see* Obituaries 55
- Simon, John Allsebrook Simon, 1st Viscount, of Stackpole Elidor:** *see* Obituaries 55
- Singapore** 56, 55, 54, 53. *See* Malaya (Federation of) and Singapore 52
- Democracy 206b; International Trade 364d
- Siri, Giuseppe** 54
- Skating:** *see* Ice Skating 56, 55, 54, 53, 52. *See* Roller Derby 55, 54, 53, 52
- Skating**
- Skin Diseases:** *see* Dermatology
- Skouras, Charles P.:** *see* Obituaries 55
- Slansky, Rudolf S.:** *see* Obituaries 53
- Sleeping Sickness:** *see* Tropical Diseases 52
- Sloan, George A.** 519b
- Sloan, John:** *see* Obituaries 52
- Sloan Foundation, Inc., Alfred P.:** *see* Societies and Associations, U.S.
- Slum Clearance:** *see* Housing 56, 55, 54. *See* Town and Regional Planning 55, 54
- Slye, Maud:** *see* Obituaries 55
- Small Business Administration** 55, 54
- Smart, David A.:** *see* Obituaries 53
- Smith, George Albert:** *see* Obituaries 52
- Smith, Ida B. Wise:** *see* Obituaries 53
- Smith, Margaret Chase** 53, 52
- Smith, Walter Bodell** 55
- Smith, Willis:** *see* Obituaries 54
- Smithsonian Institution**
- Astronomy 67d
- Smog:** *see* Los Angeles 56, 55
- Public Health Engineering 574a; Public Health Service, U.S. 575d
- Snyder, John Wesley** 53, 52
- S.O.** 4050 Vantour 87a
- Soap and Detergents:** *see* Chemistry 55, 54
- Chemistry 153b
- Soaring:** *see* Gliding
- Soccer**
- Socialism**
- Democracy 206a; Political Parties, British 557b. *See* also various countries
- Socialist Soviet Republics:** *see* Union of Soviet Socialist Republics
- Social Security**
- Civil Service 171c; Insurance 351c; Socialism 627c. *See* also various states and countries
- Social Service:** *see* Child Welfare; Social Security
- Societies and Associations, U.S.**
- Sociology**
- Birth Control 104d; Crime 191b; Juvenile Delinquency 385d; Philosophy 544b; Psychiatry 571c
- Sodality of Our Lady:** *see* Societies and Associations, U.S.
- Softball**
- Soil Conditioners:** *see* Chemistry 54, 53
- Soil Conservation** 56, 55, 54. *See* Soil Erosion and Soil Conservation 53, 52
- Solar System:** *see* Astronomy
- Solh, Riad es:** *see* Obituaries 52
- Solomon Islands:** *see* Pacific Islands, British; Trust Territories
- Somalia** 56, 55, 54. *See* Somaliland, Italian 53, 52
- Trust Territories 688b
- Somaliland, British:** *see* British East Africa
- Cartography 146b
- Somaliland, French**
- Somervell, Brehor Burke 519b
- Soucek, Apollo** 519b
- Soucia, British:** *see* British South African Territories
- South Africa, The Union of**
- Agriculture 29a; Astronomy 67d; Aviation, Civil 80d; Birth Statistics 105d; Children's Books 158d; Coal 174a; Commonwealth of Nations 181a; Copper 188b; Corn 189a; Death Statistics 202c; Debt, National 204d; Diamonds 210b; Disasters 212d; Education 227d; Electrical Industries 233d; Employment 238a; Exchange Control and Exchange Rates 247b; Football 265c; Foreign Investments 271d; Forests 274a; Gold 302d; Infant Mortality 349b; International Law 355c; International Trade 364a; Iron and Steel 370c; Law 399b; Manganese 419b; Mineral and Metal Production and Prices 443; Missions, Foreign (Religious) 447c; Museums 468a; National Parks and Monuments 477b; Navies of the World 477d; Nickel 498c; Prices 568b; Railroads 588c; Roads and Highways 601b; Silver 624a; Sugar 656d; Tariffs 665c; UN 701a; Uranium 723c; Wheat 744a; Wines 747a; Wool 750a
- South America:** *see* French Guiana 56, 55, 54, 53. *See* Argentina; Bolivia; Brazil; British Guiana; Chile; Colombia; Ecuador, Paraguay; Peru; Surinam; Uruguay; Venezuela 56, 55, 54, 53, 52
- American Citizens Abroad 38a; Dance 201b
- South Carolina**
- South Dakota**
- Southeast Asia Defense Treaty** 55
- China 162c; Southeast Asia Treaty Organization 644c
- Southeast Asia Treaty Organization** 56
- Armies of the world 58b; Commonwealth of Nations 179d; Hawaii 315a; Pakistan 530b; Thailand 675c; U.S. 706a
- Southern Rhodesia:** *see* Rhodesia and Nyasaland, Federation of, 56, 55, 54. *See* Rhodesia, Southern 54, 53, 52
- Forests 274a; Gold 302d; Infant Mortality 349b; Mineral and Metal Production and Prices 443
- South Pacific Commission:** *see* Pacific Islands, French 53, 52. *See* Pacific Islands, British 52
- South-West Africa:** *see* United Nations 56, 55. *See* South Africa, The Union of; Trust Territories 56, 55, 54, 53, 52
- Sovereigns, Presidents and Rulers:** *see* Presidents, Sovereigns and Rulers
- Soviet Union:** *see* Union of Soviet Socialist Republics

Soybeans

Agriculture 24c; Vegetable Oils and Animal Fats 727a

Spain

Agriculture 29c; Archaeology 48a; Automobile Industry 77b; Aviation, Civil 80c; Aviation, Military 83b; Baptist Church 93d; Birth Statistics 105d; Ceylon 150c; Coal 174a; Dance 201c; Death Statistics 202c; Debt, National 204d; Electrical Industries 233d; Epidemiology 241d; Football 265b; Foreign Aid Programs, U.S. 266d; Fruit 284c; Housing 331a; Infant Mortality 349b; Iron and Steel 370c; Latin-American Literature 393c; Lead 400d; Marriage and Divorce 423b; Merchant Marine 432b; Mineral and Metal Production and Prices 443; Navies of the World 477c; Nuts 507a; Palaeontology 531a; Railroads 588c; Roads and Highways 602b; Shipbuilding 619d; Soil Conservation 639c; Spanish Literature 647a; Telephone 669c; Wines 746d; Yachting 755a; Zinc 759b

Spalding, Albert: *see* **Obituaries 54**

Spanish-American Literature: *see* **Latin-American Literature**

Spanish Colonial Empire

Spanish Literature

Sparkman, John 53

Sparrow: Aviation, Military 85a; Munitions 465b

Special Libraries Association: *see* **Libraries 53, 52**

Speed Records: *see* **Railroads 56, 55. See Air Races and Records; Automobile Racing; Horse Racing; Motor Boat Racing; Track and Field Sports; Yachting 56, 55, 54, 53, 52**

Speleology: *see* **Exploration and Discovery 53**

Spices 56, 55, 54

Spiramycin: Chemistry 152a; Chemotherapy 154d

Spirits: *see* **Liquors, Alcoholic**

Spitsbergen: *see* **Norway**

Sports and Games: *see* **Angling; Archery; Automobile Racing; Badminton; Baseball; Basketball; Billiards; Bobsledding; Bowling; Boxing; Chess; Contract Bridge; Curling; Cycling; Fencing; Football; Gliding; Golf; Gymnastics; Handball; Hockey, Field; Hockey, Ice; Horse Racing; Ice Skating; Lacrosse; Lawn Bowling; Motor Boat Racing; Olympic Games; Polo; Rowing; Shooting; Skiing; Soccer; Softball; Squash Racquets; Swimming; Table Tennis; Tennis; Track and Field Sports; Wrestling; Yachting 56, 55, 54, 53, 52. See Roller Derby 55, 54, 53, 52. See Cricket 54, 53, 52. See Canasta 52**

Negroes, American 481c

Squash Racquets

Stalin, Joseph Vissarionovich: *see* **Obituaries 54. See Stalin, Joseph Vissarionovich 53, 52**

Stamp Collecting: *see* **Philately**

Standards, National Bureau of Physics 549a

Starilian (Strontium titanate) 445d

Stars: *see* **Astronomy**

Stassen, Harold Edward 56, 54, 53, 52

Political Parties, U.S. 558c

State, U.S. Department of: *see* **Government Departments and Bureaus, U.S.**

State Fairs: *see* **Shows 56, 55, 54. See Fairs and Exhibitions 56, 55, 54, 53, 52**

State Guard: *see* **National Guard**

States Rights: *see* **Law 53, 52**

Staudinger, Hermann 54

Steel: *see* **Iron and Steel**

Stellar System: *see* **Astronomy**

Stepinac, Aloysius 54

Stereophotography: *see* **Photography 56, 55, 54. See Motion Pictures 54**

Stern, Elizabeth Gertrude (Eleanor Morton): *see* **Obituaries 55**

Stevens, Ashton: *see* **Obituaries 52**

Stevens, Robert Ten Broeck 55, 54, 53, 52

Stevens, Wallace 519c

Stevenson, Adlai Ewing 56, 55, 54, 53

Elections, U.S. 231c; Political Parties, U.S. 558c

Stires, Ernest Milmore: *see* **Obituaries 52**

Stocks and Bonds

Banking 91a; Business Review 135c; Farm Credit System 253a; Federal Reserve System 257d; Foreign Investments 268d; Housing 328c; Insurance 350a; International Bank for Reconstruction and Development 353c; National Labor Relations Board 475a; Radio and Television 580b; Railroads 587b; Securities and Exchange Commission 615d; Telegraphy 669a; Telephone 670a; U.S. 703d

Stomach and Intestines, Diseases of the

Medicine 430d; Psychosomatic Medicine 573b; Surgery 659a

Straus, Oscar: *see* **Obituaries 55**

Strawberries: *see* **Fruit**

Street, Charles Eward ("Gabby"): *see* **Obituaries 52**

Street, James Howell: *see* **Obituaries 55**

Streptomycin: *see* **Chemotherapy; Tuberculosis 55, 54, 53, 52. See Medicine 53, 52**

Streptonivicin (Albamyacin) 431a

Strijdom, Johannes Gerhardus 55

Strikes

Business Review 136b; Exchange Control and Exchange Rates 246c; Industrial Health 348c; International Trade 361a; Labour Unions 391c; National Labor Relations Board 475b; Pulitzer Prizes 578b. *See also* various industries, products, cities, states, provinces and countries

Strong, Austin: *see* **Obituaries 55**

Strontium titanate (Starilian) 445d

Struthe, Jan: *see* **Obituaries 54**

Stryker, Lloyd Paul 519c

Suarez, Emmanuel: *see* **Obituaries 55**

Subsides: *see* **Agriculture 53, 52**

Benson, Ezra Taft 101b

Succinylcholine chloride 429d

Sudan: *see* **Anglo-Egyptian Sudan; French Union; French West Africa**

Communism 183b; Great Britain 308d; Islam 373b; Railroads 590b

Suez Canal 55, 52

Canals and Inland Waterways 142d

Sugar

Cuba 193b; Foreign Investments 270c; International Trade 363c

Suicide Statistics

Sullivan, Mark: *see* **Obituaries 53**

Sulphur

Eastern European Economic Planning 219a; Foreign Investments 270d

Sumatra: *see* **Indonesia 56, 55, 54, 53**

Summerville, Charles Pelot 519d

Sumnerfield, Arthur E.(Ilsworth) 56, 55, 54, 53

Super Mystery 87a

Support Prices: *see* **Agriculture**

Supreme Court of the United States

Civil Service 171c; Federal Power Commission 256a; International Law 356a; Law 395a

Surgery

Blood, Diseases of the, 108b; Cancer 143c; Ear, Nose and Throat, Diseases of, 217d; Hearing 317a; Heart and Circulatory Diseases 317d; Medicine 429b; Stomach and Intestines, Diseases of the, 652d; Tuberculosis 689c

Surinam

Svalbard: *see* **Norway**

Swains Island: *see* **Samoa, American**

Swaziland: *see* **British South African Territories**

Cartography 146b

Sweden

Armies of the World 62d; Astronomy 67d; Automobile Industry 77b; Aviation, Civil 80d; Aviation, Military 87b; Birth Statistics 105d; Cartography 145d; Dance 201d; Death Statistics 202c; Debt, National 204d; Electrical Industries 233d; Exchange Control and Exchange Rates 247b; Fairs and Exhibitions 252b; Housing 331a; Ice Skating 336c; Immigration, Emigration and Naturalization 339c; Infant Mortality 349b; Insurance 351a; International Trade 363c; Iron and Steel 370c; Lumber 413b; Marriage and Divorce 423b; Medical Rehabilitation of the Disabled 429a; Merchant Marine 432b; Mineral and Metal Production and Prices 443; Motion Pictures 454c; Navies of the World 477c; Norway 503d; Prices 568b; Railroads 588c; Shipbuilding 619d; Silver 624a; Socialism 627c; Social Security 630c; Sociology 638a; Tariffs 665b; Telephone 669c; Town and Regional Planning 681d; Tuberculosis 689b; Tunnels 691a; Yachting 755b

Sweet Potatoes: *see* **Potatoes**

Swimming

Switzerland

Aluminum 36d; Atomic Energy 70b; Automobile Industry 77b; Aviation, Civil 80d; Birth Statistics 105d; Bobsledding 109a; Dams 198b; Death Statistics 202c; Debt, National 204d; Electrical Industries 233d; Exchange Control and Exchange Rates 247b; Fairs and Exhibitions 252b; Foreign Investments 272c; Housing 331a; Infant Mortality 349a; Linen and Flax 406b; Lumber 413c; Mineral and Metal Production and Prices 443; Mormons 452c; Museums 468b; Prices 568a; Railroads 588c; Roads and Highways 602b; Silk 623d; Soccer 626d; Socialism 627a; Tariffs 665c; Telephone 669c; Tuberculosis 690a; Tunnels 691b; Wines 747a

Symphony Orchestras: *see* **Music**

Synge, Richard Laurence Millington 53

Synthetic Products: *see* **Chemistry 56, 55, 54. See Plastics; Rubber;**

Textile Industry 56, 55, 54, 53, 52. See Rayon and Other Synthetic

Fibres 54, 53, 52. See Standards, National Bureau of, 53

Furs 286d

Syphilis: *see* **Venereal Diseases**

Syria

Archaeology 48b; Armies of the World 59b; Aviation, Civil 80d; Egypt 229b; International Bank for Reconstruction and Development 353d; International Trade 364c; Iraq 368d; Saudi Arabia 613d; Tariffs 665d; Wines 747a; World Health Organization 752b

Syrup, Sorgo and Cane: *see* **Sugar 55, 54, 53, 52**

Szasz, Otto: *see* **Obituaries 53**

Table Tennis

Taft, Robert A.: *see* **Obituaries 54. See Taft, Robert A. 53, 52**

Taft-Hartley Act: *see* **National Labor Relations Board 54, 53, 52**

Tahiti: *see* **French Union 52**

Taiwan: *see* **Formosa**

Talal I 52

Talbot, Francis X.: *see* **Obituaries 54**

Talbot, Harold Elstner 55, 54

Talos 465d

Tanganyika: *see* **British East Africa; Trust Territories**

Cartography 146b; Diamonds 210b; International Bank for Reconstruction and Development 353a; Mineral and Metal Production and Prices 443; National Parks and Monuments 477b; Wildlife Conservation 746a

Tangerines: *see* **Fruit**

Tangier

Tanguy, Yves 519d

Tanks: *see* **Munitions 55, 54, 53, 52**

Tariffs

International Trade 359c; Japan 379a

Taxation

Betting and Gambling 102d; Brewing and Beer 116d; Budget, National 125d; Business Review 136b; Foreign Investments 269a; Liquors, Alcoholic 406c; Motion Pictures 458a; Motor Transportation 460b; Municipal Government 461b; Political Parties, U.S. 559a; Railroads 587b. *See also* various cities, states and countries

Taylor, Maxwell Davenport 56

Tchernov (Chernov), Victor: *see* **Obituaries 53**

Tea

International Trade 363d; Prices 567d

Technicolor: *see* **Motion Pictures 54, 53, 52**

Telegraphy

Federal Communications Commission 255c; Wages and Hours 738a

Telephone

Electronics 234c; Federal Communications Commission 255c; Labour Unions 391b; Public Utilities 577a; Rural Electrification Administration 607b; Strikes 654d; Wages and Hours 738a. *See also* various states, provinces and countries

Telescopes: *see* **Astronomy 52**

Television: *see* **Federal Communications Commission; Radio and Television 56, 55, 54. See Television 53, 52**

Tellurium: *see* **Mineral and Metal Production and Prices**

Temperance League of America: *see* **Societies and Associations, U.S. 52**

Tennessee

Tennessee Valley Authority

Tennis

Tensing Norkey (Bhutia) 54

Tenth Conference of American States: *see* **Inter-American Conference 55**

Terramycin: *see* **Chemistry 55, 54, 53. See Chemotherapy 55, 54, 53, 52**

Medicine 430d

Terrier: Aviation, Military 85a; Munitions 464d

Texas

Bridges 117d

Texas Tower 751c

Textile Industry

Chemistry 153a; Cotton 190b; Dyes 216d; Employment 236d; Interior Decoration 352c; International Trade 360b; Labour Unions 391b; Linen and Flax 405d; Marine Corps, U.S. 421d; Prices 566b; Silk 623d; Strikes 654c; Wages and Hours 738a; Women's Fashions 748b

Thailand

Armies of the World 59d; Aviation, Civil 80d; Burma 130d; Communism 183b; Democracy 206b; Disasters 212c; Education 227d; Exchange Control and Exchange Rates 248b; Foreign Aid Programs, U.S. 266c; Foreign Investments 272a; Illiteracy 338d; International Bank for Reconstruction and Development 353b; Japan 379b; Mineral and Metal Production and Prices 443; Narcotics 472b; Navies of the World 477d; Rice 600a; Southeast Asia Treaty Organization 644c; Tin 679a; World Health Or-

INDEX

775

ganization 752c

Tharaud, Jérôme: *see* **Obituaries 54**

Theatre

Disasters 211b; Literary Prizes 408a; Music 470c; Pulitzer Prizes 577d; Radio and Television 581d; Words and Meanings, New 751b

Theiler, Max 52

Thelemes, Timotheos 520a

Theorell, Axel Hugo Teodor 56

Nobel Prizes 499c

Therapy: *see* **Psychiatry 55, 54, 53, 52. See Chemotherapy 54, 53, 52. See Medical Rehabilitation 52**

See also various diseases and medical sciences

Thermidity 751d

Thermionuclear Weapons: *see* **Atomic Energy 56, 55, 54**

Thibaud, Jacques: *see* **Obituaries 54**

Thomas, Charles S. 56, 55

Thomas, Dylan Marlais: *see* **Obituaries 54**

Thomas, Elbert Duncan: *see* **Obituaries 54**

Thorpe, James Francis (Jim): *see* **Obituaries 54**

Thorpe, Merle 520a

Three-Dimensional Motion Pictures: *see* **Motion Pictures; Photography 55, 54**

Throat: *see* **Ear, Nose and Throat, Diseases of**

Thruston, Lee M.: *see* **Obituaries 54**

Thyssen, Fritz: *see* **Obituaries 52**

Tibet

Roads and Highways 602c

Tilden, William Tatem II: *see* **Obituaries 54**

Timber: *see* **Forests; Lumber**

Timor: *see* **Portuguese Overseas Territories**

Tin

Exchange Control and Exchange Rates 245d; Mineral and Metal Production and Prices 445; Prices 567c; Secondary Metals 615a

Tires: *see* **Rubber**

Textile Industry 674d

Titanium: *see* **Mineral and Metal Production and Prices**

Chemistry 154a; Foreign Investments 269d; Metallurgy 433b

Tito

Communism 182b

Tobacco

Agriculture 24c; Cancer 143c; Employment 236d; Federal Trade Commission 258b; Heart and Circulatory Diseases 317c; Newspapers and Magazines 489c; Prices 566d; Strikes 654c; Taxation 667d; Wages and Hours 738a

Tobago: *see* **Trinidad and Tobago**

Tobey, Charles William: *see* **Obituaries 54**

Tobin, Daniel J. 520a

Tobin, Maurice Joseph: *see* **Obituaries 54. See Tobin, Maurice Joseph 53, 52**

Togoland: *see* **British West Africa; French West Africa; Trust Territories**

Cocoa 176b

Tonga 56

Tongan Island Protectorate: *see* **Pacific Islands, British 55, 54, 53, 52**

T

Transportation: *see* **Urban Transportation**, U.S. 56, 55, 54. *See* **Aviation, Civil; Motor Transportation; Railroads** 56, 55, 54, 53, 52. *See* **Electric Transportation** 53, 52. Accidents 17d; Employment 236c; Income and Product, U.S. 342a; International Bank for Reconstruction and Development 352d; Interstate Commerce Commission 365c; Municipal Government 461a; Prices 566c; Refugees 592a; Strikes 654c; Wages and Hours 738a. *See* also various countries

Trap-shooting: *see* **Shooting**

Travel: *see* **Tourist Travel**

Treasury, U.S. Department of: *see* **Government Departments and Bureaus**, U.S. Banking 91b

Treponea pallidum Complement Fixation (TPCFC) 728c

Tribhuvan Bir Bikram 520b

Trieste 55, 54, 53, 52

Immigration and Naturalization 340a; International Law 356d; Italy 377b; Radio and Television 585d; Shipbuilding 619d

Trinidad and Tobago

Birth Statistics 105d; Death Statistics 202c; Gas, Natural and Manufactured 287b; Seismology 617a; Tropical Diseases 688a

Tripolitania: *see* **Libya** 55, 54, 53, 52

Tritium: *see* **Atomic Energy; Physics** 54

Trolley Coaches: *see* **Urban Transportation**, U.S. 55, 54. *See* **Electric Transportation** 53, 52

Tropical Diseases: Epidemiology 241c; World Health Organization 752b

Trucial Sheikdoms: *see* **Arabia**

Truck Crops: *see* **Vegetables**

Trucks: *see* **Automobile Industry; Motor Transportation**

Truman, Harry S. 53, 52

Political Parties, U.S. 558d

Trust Territories

United Nations 702a

Trust Territory of the Pacific Islands: *see* **Marshall, Caroline and Mariana Islands**

Tuberculosis

Bacteriology 88a; Chemistry 152a; Chemotherapy 154c; Child Welfare 159d; Drug Administration 215b; Eye, Diseases of the, 251a; Public Health Service, U.S. 575b; Tropical Diseases 687c; Words and Meanings, New, 751a

Tumulty, Joseph Patrick: *see* **Obituaries** 55

Tungsten: *see* **Mineral and Metal Production and Prices**

Tunisia

France 278a; French Union 281d; Islam 373b; Mineral and Metal Production and Prices 443; Tuberculosis 689a; Wines 747a

Tunnels

Turbojets and Turboprops: *see* **Aviation, Civil; Jet Propulsion**

Turkey

Agriculture 29c; Archaeology 48c; Armies of the World 58b; Aviation, Civil 80d; Barley 94d; Communism 183c; Cotton 190d; Cyprus 194d; Dams 198b; Debt, National 204d; Disasters 211b; Exchange Control and Exchange Rates 247c; Foreign Aid Programs, U.S. 260c; Foreign Investments 271b; Fruit 285a; Great Britain 308c; Greece 310a; International Monetary Fund 358c; International Trade 364c; Iran 368a; Iraq 368c; Islam 373b; Israel 373d; Lebanon 401a; Manganese 419b; Middle Eastern Affairs 441b; Mineral and Metal Production and Prices 443; Narcotics 472b; NATO 500c; Navies of the World 477c; Nuts 507a; Roads and Highways 602b; Shipbuilding 619d; Sociology 637d; Syria 663a; Tariffs 664d; Tobacco 680b; Wheat 744a; Wines 747a; Women's Fashions 748b; World Health Organization 752c

Turkeys: *see* **Livestock**

TVA: *see* **Tennessee Valley Authority**

Twentieth Century Fund: *see* **Societies and Associations, U.S.**

Twining, Nathan Farragut 56, 55, 54

Uganda: *see* **British East Africa**

Coffee 176d; Cotton 190d; International Bank for Reconstruction and Development 353a; Mineral and Metal Production and Prices 443

Ulcer: *see* **Stomach and Intestines, Diseases of the**

Unemployment: *see* **Census Data, U.S.; Employment**

Unemployment Insurance: *see* **Social Security**

UNESCO (United Nations Educa-

tional, Scientific and Cultural Organization): *see* **Education; Libraries** 56, 55, 54, 53, 52. *See* **United Nations** 55, 54, 53, 52

Communism 181d; Latin-American Literature 393c; Museums 467d

Union of American Republics: *see* **Organization of American States**

Union of South Africa: *see* **South Africa, The Union of**

Union of Soviet Socialist Republics

Agriculture 29d; Albania 34d; Aluminum 36d; Antarctica 44b; Armies of the World 58b; Atomic Energy 70a; Australia 73b; Austria 74a; Automobile Industry 77b; Aviation, Military 85b; Baptist Church 93d; Barley 94d; Book Collecting 110a; Canada 139a; Cartography 146a; China 161d; Coal 174a; Coke 177b; Communism 181c; Copper 188b; Corn 189a; Disasters 211a; Eastern European Economic Planning 219a; Education 227d; Egypt 229c; Electrical Industries 233d; Fairs and Exhibitions 252b; Finland 259c; Geneva Big Four Conferences (1955) 289a; Germany 298b; Gold 302d; Great Britain 308c; Horticulture 325d; Housing 331c; Ice Skating 336c; Immigration, Emigration and Naturalization 339d; India 344b; International Law 355c; International Trade 363c; Iran 368a; Iraq 368d; Iron and Steel 370c; Japan 379a; Jet Propulsion 382b; Lead 400d; Lumber 413b; Manganese 419b; Marriage and Divorce 423b; Meat 428c; Merchant Marine 432b; Middle Eastern Affairs 441d; Mineral and Metal Production and Prices 443; Motor Transportation 460a; Music 469b; NATO 500a; Navies of the World 477c; Nickel 498c; Oats 507c; Palaeontology 531b; Physics 542b; Poland 553b; Railroads 590a; Religion 593b; Roman Catholic Church 602d; Rubber 604c; Rumania 606d; Russian Literature 607c; Silver 624a; Sugar 656d; Sweden 660b; Table Tennis 663d; Tourist Travel 681d; Track and Field Sports 683b; UN 698d; U.S. 705a; Vietnam 733c; Weight Lifting 742a; Wheat 744a; Wines 747a; Wool 750c; World Health Organization 752d; Yalta Documents 755d; Yugoslavia 757c; Zinc 759b

Unitarian Church

United Church of Canada

Christian Unity 166b

United Fund: *see* **Community Chest**

United Kingdom: *see* **Great Britain**

& Northern Ireland, United Kingdom of

United Nations

Armies of the World 59a; Atomic Energy 70a; Blind, Education of the, 106b; Cartography 145b; Child Welfare 159b; Crime 192a; Fisheries 260d; Infant Mortality 349b; International Bank for Reconstruction and Development 352d; International Law 355b; Judaism 385b; Libraries 404c; Marine Corps, U.S. 422a; Narcotics 472a; Nobel Prizes 499c; Organization of Central American States 527c; Refugees 591b; Sociology 637c; Southeast Asia Treaty Organization 644d; Trust Territories 688c; Vatican City State 726d; World Health Organization 752b. *See* also various countries

United States

Accidents 17b; Advertising 20a; Agricultural Research Service 22c; Agriculture 23d; Aircraft Manufacture 30c; Air Races and Records 31c; Aluminum 36d; Ambassadors and Envoys 37b; American Citizens Abroad 37d; American Literature 39a; Angling 42b; Antarctica 43c; Anthropology 44c; Archaeology 49b; Archery 51c; Architecture 52a; Armies of the World 58b; Art Exhibitions 62d; Art Sales 65b; Atomic Energy 68d; Automobile Industry 75c; Automobile Racing 78b; Aviation, Civil 79c; Aviation, Military 83b; Badminton 89b; Baking Industry 89d; Banking 90d; Baptist Church 94a; Barley 94c; Baseball 94d; Basketball 98b; Belgium 100b; Betting and Gambling 102d; Billiards 103c; Birth Control 105b; Birth Statistics 105c; Blind, Education of the, 106b; Bobsledding 108d; Bolivia 109b; Book Collecting 109d; Book Publishing and Book Sales 110b; Botany 111d; Bowling 113b; Boxing 113d; Brewing and Beer 116d; Bridges 117b; Budget, National 125b; Building and Construction Industry 127c; Business Review 131c; Canada 138d; Canals and Inland Waterways 141c; Cancer 143a; Candy 144a; Canning Industry 144b; Cartography 145c; Cement 146c; Census Data, U.S. 146d; Chemistry 151a; Chess 155c; Child Labour 157b; Children's Books 158a; Child Welfare 159d; Chile 161a; China 162a; Christian Unity 165d; Churches of Christ 167a; Church Membership 167c; Civil Aeronautics Administration

168c; Civil Defense, U.S. 169c; Civil Service 171b; Clothing Industry 172d; Coal 174a; Coast and Geodetic Survey, U.S. 174c; Coast Guard, U.S. 175a; Cocoa 176b; Coffee 176c; Coinage 176d; Coke 177b; Commonwealth of Nations 179d; Communism 182a; Community Chest 183c; Community Trusts 184a; Congregational Christian Churches 184b; Consumer Credit 185d; Contract Bridge 186d; Co-operatives 187b; Copper 188b; Corn 188d; Costa Rica 189c; Cotton 190b; Crime 191a; Curling 194a; Cycling 194c; Dairy Products 196b; Dams 197d; Dance 198c; Death Statistics 202b; Debt, National 202d; Dentistry 207d; Diabetes 209c; Diamonds 210c; Disasters 210d; Disciples of Christ 213a; Dominican Republic 213c; Donations and Bequests 214a; Drug Administration 214c; Dyes 216d; Economics 220c; Education 222b; Eggs 228b; Eisenhower, Dwight D. 230d; Elections, U.S. 231c; Electrical Industries 232c; Electronics 234a; Employment 236b; Epidemiology 241d; European Unity 244b; Exchange Control and Exchange Rates 245b; Exploration and Discovery 248c; Export-Import Bank of Washington 250a; Fairs and Exhibitions 251c; Farm Credit System 252c; Farmers Home Administration 253c; Federal Bureau of Investigation 254b; Federal Communications Commission 255b; Federal Deposit Insurance Corporation 255d; Federal Power Commission 256a; Federal Reserve System 257a; Federal Trade Commission 257d; Fencing 258c; Fires and Fire Losses 260b; Fisheries 261a; Floods and Flood Control 261d; Football 263d; Foreign Aid Programs, U.S. 265d; Foreign Investments 268d; Forests 272d; Formosa 274c; Four-H Clubs 277a; Friends, Religious Society of, 283c; Frozen Foods 283d; Fruit 284a; Furniture Industry 286a; Furs 286d; Gas, Natural and Manufactured 287b; Gem Stones 287d; Geneva Big Four Conferences (1955) 289a; Geography 291a; Geological Survey, U.S. 292c; Germany 300b; Glass 302a; Gliding 302b; Gold 302d; Golf 304a; Government Departments and Bureaus, U.S. 305a; Guam 311b; Guatemala 311d; Gymnastics 312c; Handball 314a; Hawaii 314d; Hay and Pastures 315d; Hearing 316b; Heart and Circulatory Diseases 317c; Hockey, Field 318b; Hockey, Ice 318c; Home Economics 319b; Hoover Commission 321d; Horse Racing 323c; Horticulture 325c; Hospitals 326b; Hotels, U.S. 327b; Housing 328a; Humour 331c; Iceland 335c; Ice Skating 335d; Illiteracy 338d; Immigration, Emigration and Naturalization 339b; Income and Product, U.S. 340d; Indians, American 345d; Industrial Health 347d; Infant Mortality 348d; Insurance 349c; International Geophysical Year (1957-58) 354a; International Labour Organization 354d; International Law 355d; International Trade 359c; Interstate Commerce Commission 365c; Intoxication, Alcoholic 366a; Iran 368a; Iron and Steel 370b; Irrigation 371c; Islam 373c; Israel 373d; Italy 377b; Japan 378c; Jet Propulsion 381b; Jewish Literature 383b; Judaism 385b; Juvenile Delinquency 385d; Korea 389c; Labour Unions 390c; Lacrosse 392d; Laos 393b; Law 395a; Lawn Bowling 400a; Lead 400c; Liberia 402b; Libraries 402c; Linen and Flax 406a; Liquors, Alcoholic 406c; Literary Prizes 407c; Livestock 409a; Lumber 412d; Machinery and Machine Tools 414d; Manganese 419a; Marine Corps, U.S. 421b; Marriage and Divorce 422a; Marshall, Caroline and Mariana Islands 423d; Meat 427c; Medical Rehabilitation of the Disabled 428c; Medicine 429a; Merchant Marine 431c; Metallurgy 432d; Methodist Church 438b; Middle Eastern Affairs 441c; Mineral and Metal Production and Prices 442c; Mineralogy 445b; Motion Pictures 454a; Motor-Boat Racing 459b; Motor Transportation 459d; Municipal Government 460c; Munitions 462d; Museums 466a; Music 468b; Narcotics 472b; National Geographic Society 473c; National Guard 474b; National Labor Relations Board 475a; National Parks and Monuments 476a; NATO 500a; Navies of the World 477c; Negroes, American 481a; Newspapers and Magazines 489b; New Zealand 497c; Nickel 498c; Nursing 505a; Nuts 506d; Oats 507a; Oceanography 522b; Organization of American States 520d; Paints and Varnishes 529b; Palaeontology 531c; Panama 533a; Panama Canal Zone 533d; Paper and Pulp Industry 534b; Patents 536c; Peanuts 537a; Peru 539a; Petroleum

539d; Philately 542a; Philosophy 544c; Photography 545a; Physics 547d; Plastics 552b; Police 554c; Poliomyelitis 555a; Political Parties, U.S. 557d; Polo 560c; Post Office 562c; Potatoes 563d; Presbyterian Church 564b; Prices 565c; Prisons 570a; Psychiatry 571b; Psychology 572c; Public Health Engineering 574a; Public Health Service, U.S. 575a; Public Utilities 576a; Puerto Rico 577a; Pulitzer Prizes 577d; Radio and Television 579c; Railroads 586d; Red Cross 590c; Refugees 591d; Religion 593b; Religious Education 593d; Respiratory Diseases 594d; Rheumatic Diseases 596d; Rice 599d; Rivers and Harbours 600b; Roads and Highways 601a; Roman Catholic Church 602d; Rowing 603d; Rubber 604c; Rural Electrification Administration 607a; Rye 608a; Savings and Loan Industry 614a; Secret Service, U.S. 615b; Securities and Exchange Commission 615d; Seismology 617a; Selective Service, U.S. 617c; Seventh-day Adventists 618b; Shipbuilding 618d; Shoe Industry 620b; Shooting 620d; Shows 621c; Silk 623d; Silver 624a; Skiing 624d; Soccer 626d; Socialism 628b; Social Security 628c; Societies and Associations, U.S. 630c; Sociology 637a; Softball 638b; Soil Conservation 638d; Southeast Asia Treaty Organization 644c; Soybeans 645b; Spain 645c; Spices 647c; Squash Racquets 648a; Standards, National Bureau of, 648b; Stocks and Bonds 650a; Strikes 653d; Sugar 656b; Suicide Statistics 657b; Sulphur 657c; Swimming 660d; Table Tennis 663c; Tariffs 664d; Taxation 666d; Tea 668c; Telegraphy 668d; Telephone 669b; Tennis 672a; Textile Industry 674a; Theatre 676a; Tin 679a; Tobacco 679d; Tourist Travel 681a; Town and Regional Planning 681d; Toy Industry 682d; Track and Field Sports 683b; Tropical Diseases 688a; Tuberculosis 689a; Tunnels 691c; TVA 671c; UN 698d; Unitarian Church 696c; United States Air Force Academy 709c; United States Congress 710b; Universities and Colleges 713b; Uranium 723c; Urban Transportation, U.S. 723d; U.S.S.R. 696a; Vegetable Oils and Animal Fats 727a; Vegetables 727c; Veneer Diseases 728b; Veterans Administration (U.S.) 730c; Veterans' Organizations, U.S. 731d; Veterinary Medicine 732c; Vietnam 733d; Wages and Hours 737a; Wealth and Income, Distribution of, 740a; Weight Lifting 742a; Wheat 743c; Wildlife Conservation 744d; Wines 747a; Women's Fashions 748b; Wool 750a; Words and Meanings, New, 750d; Wrestling 752d; Yachting 754d; Yalta Documents 755c; Yugoslavia 757d; Zinc 759b. *See* also various cities, states, territories and possessions

United States Air Force Academy 56

Aviation, Military 84b

United States Congress 56, 55, *See* **Congress, United States** 54, 53, 52

Foreign Aid Programs, U.S. 267c; Hawaii 314d; Panama 533a; Political Parties, U.S. 558d; Post Office 562c; Public Health Engineering 574b; Public Utilities 576a; Shipbuilding 619b

United States Government Departments and Bureaus: *see* **Government Departments and Bureaus, U.S.** Also *see* under specific name, e.g., **Coast Guard, U.S., etc.**

United States Information Agency 55, 54

United States Investments Abroad: *see* **Foreign Investments**

United States Junior Chamber of Commerce: *see* **Societies and Associations, U.S.**

United States Mint: *see* **Coinage**

Universal Military Training: *see* **Law** 52

Universities and Colleges

Astronomy 67d; Belgian Colonial Empire 99b; Donations and Bequests 214b; Education 223b; Forests 273b; Home Economics 319d; Libraries 402d; Negroes, American 481b; Newspapers and Magazines 490c; Nursing 505a; Physics 547d; Psychology 572c; Selective Service, U.S. 618b; Sociology 637a. *See* also various sports and games

Uranium

Atomic Energy 71b; Cartography 145c; Disasters 211b; Drug Administration 215b; Foreign Investments 271c; Geology 294c; Metallurgy 433b; Mineral and Metal Production and Prices 442d

Urban Redevelopment: *see* **Urban Transportation**, U.S. 56, 55, 54. *See* **Building and Construction Industry; Housing; Municipal Government; Town and Regional Planning** 56, 55, 54, 53, 52. *See* **Electric Transportation** 53, 52

Urban Transportation, U.S. 56, 55, 54. *See* **Electric Transportation** 53, 52

Municipal Government 461a; **Town and Regional Planning** 682b

Uruguay
Cartography 145d; Epidemiology 241d; Exchange Control and Exchange Rates 246b; Foreign Investments 272a; International Bank for Reconstruction and Development 353b; International Trade 361d; Latin-American Literature 393c; Navies of the World 477d; Roads and Highways 601d; Wines 747a; Wool 750a; World Health Organization 752c

U.S.S.R.: *see* **Union of Soviet Socialist Republics**

Utah
Utilities, Public: *see* **Public Utilities**

Utrillo, Maurice 520c

Vacation: *see* **Tourist Travel**

Valera, Eamon de: *see* **De Valera, Eamon** 52

Valeri, Valerio 54

Valtin, Jan (Richard Julius Herman Krebs): *see* **Obituaries** 52

Vanadium: *see* **Mineral and Metal Production and Prices**

Van Alen, William: *see* **Obituaries** 55

Van Alstyne, Egbert A.: *see* **Obituaries** 52

Vandenberg, Arthur H.: *see* **Obituaries** 52

Vandenberg, Hoyt Sanford: *see* **Obituaries** 55

Vanderblue, Homer Bews: *see* **Obituaries** 53

Van Fleet, James Alward 53, 52

Vapam 152c

Vargas, Getúlio Dornellas: *see* **Obituaries** 55

Varnishes: *see* **Paints and Varnishes**

Vatican City State
Pius XII 552a

Vavilov, Sergey Ivanovich: *see* **Obituaries** 52

Veal: *see* **Meat**

Vegetable Oils and Animal Fats
International Trade 363c; Physiology 550b

Vegetables
Agricultural Research Service 22c; Canning Industry 144d; Chemistry 152c; Frozen Foods 283d; Potatoes 563d; Public Health Engineering 574d

Velasco Ibarra, José María 53

Venereal Diseases
Public Health Service, U.S. 575d; Tropical Diseases 687c; World Health Organization 752c

Venezuela
Aviation, Civil 80d; Birth Statistics 105d; Bridges 118d; Cartography 145d; Coffee 176d; Coinage 177a; Death Statistics 202c; Epidemiology 241d; Exploration and Discovery 249b; Foreign Investments 271a; Gas, Natural and Manufactured 287b; Illiteracy 338d; Infant Mortality 349b; International Trade 360c; Iron and Steel 370b; Irrigation 373a; Latin-American Literature 393c; Mineral and Metal Production and Prices 443; Music 469a; Navies of the World 477d; Organization of American States 527b; Roads and Highways 601d; Soil Conservation 640b

Vermont
Verneuil, Louis: *see* **Obituaries** 53

Veterans Administration (U.S.)
Budget, National 126b; Housing 328b; Insurance 349d; Social Security 629b; Stocks and Bonds 651a; Tuberculosis 689c

Veterans' Organizations, U.S.

Veterinary Medicine
Drug Administration 215b

Vietnam 56. *See* **Indochina** 55, 54, 53, 52

Foreign Aid Programs, U.S. 266d; France 279c; Illiteracy 338d; Navies of the World 477d; U.S. 705c; World Health Organization 752c

Vinson, Frederick Moore: *see* **Obituaries** 54. *See* **Vinson, Frederick**

Moore 52

Vinyon 153a

Virginia
Bridges 118c

Virgin Islands
Marriage and Divorce 422c

Virgin Islands, British: *see* **Leeward Islands**

Viridogrisein: Chemistry 152a; Chemotherapy 154d

Viruses: *see* **Poliomyelitis** 56, 55. *See* **Medicine; Respiratory Diseases** 56, 55, 54, 53, 52. *See* **Infantile Paralysis** 54, 53, 52

Bacteriology 89a; Blood, Diseases of the, 108c; Chemotherapy 154c; Physiology 550d; Salk, Jonas Edward 610c; Stomach and Intestines, Diseases of the, 653b; Veterinary Medicine 732c

Vishinsky, Andrei Y.: *see* **Obituaries** 55

Visual Education: *see* **Motion Pictures**

Vital Statistics: *see* **Birth Statistics; Census Data, U.S.; Death Statistics; Infant Mortality; Marriage and Divorce; Suicide Statistics**

Vitamins and Nutrition
Blood, Diseases of the, 107d; Drug Administration 214d; Heart and Circulatory Diseases 317c; Nutrition, Experimental 506c; Tropical Diseases 687b

Vocational Rehabilitation, Office of, 53, 52

Voice of America: *see* **Radio and Television; United States Information Agency** 55, 54

Von (in personal names): *see* under proper names

Voronoff, Sergei (Sergei Voronov): *see* **Obituaries** 52

Voroshilov, Klimenty Efremovich 54

Vukovich, Bill 520d

Wages and Hours
Building and Construction Industry 129a; Business Review 134b; Income and Product, U.S. 342c; Insurance 351a; Labour Unions 391a; Law 397d; National Labor Relations Board 475a; Newspapers and Magazines 490d; Police 554c; Political Parties, U.S. 559b; Post Office 562c; Prices 567d; Railroads 587a; Social Security 628d; Strikes 654a; U.S. 704a; Words and Meanings, New 751b. *See* also specific industries and various states

Wage Stabilization Board 53. *See* **Defense Mobilization Agencies, U.S.** 52

Wagner, John P. (Honus) 520d

Wagner, Robert F.: *see* **Obituaries** 54

Wainwright, Jonathan M.: *see* **Obituaries** 54

Waksman, Selman Abraham 53

Wales: *see* **Great Britain & Northern Ireland, United Kingdom of**

Bridges 118d

Walnuts: *see* **Nuts**

Walton, Ernest Thomas Sinton 52

War, Law of: *see* **International Law**

Ward, Arch 521a

Warfield, David: *see* **Obituaries** 52

Warner, Glenn Scobey ("Pop"): *see* **Obituaries** 55

War Prisoners: *see* **Prisoners of War** 54, 53, 52

Warren, Earl 56, 55, 54, 52

Political Parties, U.S. 558b

War Savings Stamps: *see* **Post Office** 54, 53, 52

Washington
Bridges 118c

Washington, D.C.
Water Polo: *see* **Swimming** 55, 54

Water Supply and Conservation: *see* **Municipal Government** 56, 55. *See* **Geological Survey, U.S.; Soil Conservation** 56, 55, 54. *See* **Dams; Irrigation; Public Health Engineering; Tunnels** 56, 55, 54, 53, 52. *See* **Floods and Flood Control** 54, 53, 52

Federal Power Commission 256d

Wealth and Income, Distribution of

Agriculture 26a; Business Review 131d; Census Data, U.S. 148b; Income and Product, U.S. 341a; Insurance 349c; Savings and Loan Industry 614a; Wages and Hours 737a

Weapons: *see* **Munitions**

Weather: *see* **Meteorology**

Webster, H(arold) T.: *see* **Obituaries** 53

Weeks, Sinclair 56, 55, 54, 53

Weight Lifting 56

Weinman, Adolph A.: *see* **Obituaries** 53

Weizmann, Chaim: *see* **Obituaries** 53

Weller, Thomas Huckle 55

Wellite 569d

Wendel, Josef 54

West Africa, British: *see* **British West Africa**

Westermann, William Linn: *see* **Obituaries** 55

Western European Union: *see* **European Unity** 56, 55. *See* **London Conference and Paris Agreements; United States** 55. *See* **European Union** 54, 53, 52

Western Samoa: *see* **New Zealand; Trust Territories**

West Indies, British: *see* **British West Indies** 56, 55, 54. *See* **Bahama Islands; Barbados; Jamaica; Leeward Islands; Trinidad and Tobago; Windward Islands** 56, 55, 54, 53, 52

West Virginia
"Wetbacks": *see* **Immigration, Emigration and Naturalization** 55. *See* **Agriculture** 52

Whaling: *see* **Fisheries** 55, 54, 53, 52

Wheat
Agriculture 24c; International trade 362a; Soil Conservation 639d

Wherry, Kenneth Spicer: *see* **Obituaries** 52

White, Walter (Francis) 521a

Widtsoe, John Andreas: *see* **Obituaries** 53

Wilbur, Curtis Dwight: *see* **Obituaries** 55

Wilderness Preservation 55

Wildlife Conservation

Wiley, Alexander 53

Wilhelm Von Hohenzollern, Prince: *see* **Obituaries** 52

Williams, Ben Ames: *see* **Obituaries** 54

Wilson, Charles Edward 52

Wilson, Charles Erwin 56, 55, 54, 53

Wilson, Halsey William: *see* **Obituaries** 55

Wilson, Leroy A(ugust): *see* **Obituaries** 52

Windward Islands

Wines

Wirth, Louis: *see* **Obituaries** 53

Wisconsin
Withholding Tax: *see* **Law** 53, 52

Wojciechowski, Stanislaw: *see* **Obituaries** 54

Wolgast, Adolf (Ad) 521b

Woman's Christian Temperance Union, National: *see* **Societies and Associations, U.S.**

Women's Clubs, General Federation of: *see* **Societies and Associations, U.S.**

Women's Fashions 56, 55, 54, 53. *See* **Fashion and Dress** 52

Clothing Industry 173b; Furs 286d; Shoe Industry 620c; Words and Meanings, New 750d

Wood, Robert Williams 521b

Wood: *see* **Forests; Lumber**

Woodruff, Roy Orchard: *see* **Obituaries** 54

Woods, Albert H(erman): *see* **Obituaries** 52

Wool
International Trade 363c; Livestock 410a; Prices 567c; Textile Industry 674a; Women's Fashions 748c

Words and Meanings, New

World Assembly for Moral Re-Armament 56, 55, 54, 53

World Bank: *see* **International Bank for Reconstruction and Development**

World Commerce: *see* **International Trade** 52

World Council of Christian Educa-

tion: *see* **Religious Education**

World Council of Churches: *see* **Societies and Associations, U.S.** 56. *See* **Christian Unity; Religion** 56, 55, 54, 53, 52. *See* **Methodist Church** 55. *See* **Missions, Foreign (Religious)** 55, 54

World Federation of Trade Unions: *see* **Labour Unions** 52

World Health Organization 56, 55, 54, 53. *See* **Child Welfare; United Nations** 52

Child Welfare 159b; Libraries 405a; Tropical Diseases 687a; Tuberculosis 689d

Wrestling

Wright, Louis T.: *see* **Obituaries** 53

Wright, William Henry: *see* **Obituaries** 52

Wrong, Humphrey Hume: *see* **Obituaries** 55

Wu Te-chen: *see* **Obituaries** 54

Wyoming

Wyszynski, Stefan 54

XF-84H 83d

X-Ray and Radiology
Blood, Diseases of the, 108c; Cancer 143d; Ear, Nose and Throat, Diseases of, 218c; Electronics 235b; Medicine 429b; Munitions 463b; Physiology 551a; Standards, National Bureau of, 648d; Tuberculosis 689a; Words and Meanings, New 750d

Yachting

Yalta Documents 56

Yancey, Jimmy: *see* **Obituaries** 52

Yellow Fever: *see* **Tropical Diseases** 56, 55, 54, 53

Yemen
Aden 19b; Aviation, Civil 83a; International Trade 364c; Iraq 368d

Yiddish Literature: *see* **Jewish Literature** 56, 55, 54

Yoshida, Shigeru 52

Young, Denton True (Cy) 521c

Young, Robert Ralph 55

Young, Roland: *see* **Obituaries** 54

Young Men's Christian Association: *see* **Societies and Associations, U.S.**

Young Women's Christian Association: *see* **Societies and Associations, U.S.**

Yugoslavia
Agriculture 30a; Automobile Industry 77b; Birth Statistics 105d; Burma 130d; China 162b; Coal 174a; Communism 182b; Copper 188b; Death Statistics 202c; Disasters 211d; Foreign Aid Programs, U.S. 266d; Immigration, Emigration and Naturalization 339d; Infant Mortality 349a; International Law 355d; International Trade 360b; Iron and Steel 370c; Italy 377b; Lead 400d; Lumber 413c; Marriage and Divorce 423b; Middle Eastern Affairs 441b; Mineral and Metal Production and Prices 443; Museums 468b; National Parks and Monuments 477b; NATO 500d; Navies of the World 477d; Radio and Television 585d; Railroads 588c; Rumania 606d; Tuberculosis 689a; Turkey 692c; U.S.S.R. 695c; Wines 747a

Yukon Territory

Zahedi, Fazlollah 54

Zanzibar: *see* **British East Africa**

Zernike, Frits 54

Zhukov, Georgi Konstantinovich 56

Zinc
Eastern European Economic Planning 219a; Mineral and Metal Production and Prices 445; Prices 567d; Secondary Metals 615a

Zionist Organization of America: *see* **Societies and Associations, U.S.** 53, 52

Zonta International: *see* **Societies and Associations, U.S.**

Zoology
Exploration and Discovery 249d; Marine Biology 420a; Palaeontology 531a; Smithsonian Institution 626b

